High-Performance Mixed-Signal Microcontrollers

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	Part No.	Flash Memory (bytes)	MIPS (peak)	RAM (bytes)	Digital Port I/O Pins	Serial Buses	Timers (16-bit)	PWM/PCA	Internal Oscillator	ADC	DAC	Temp Sensor	VREF	Comparators	Other	Package	EPROM Version	Evaluation Kit
	Automotive MCUs																	
New	**C8051F500**	64 kB	50	4 kB	40	CAN 2.0, LIN 2.0, SPI, UART, I^2C	4	6	0.5%	12-bit, 32-ch., 200 ksps	—	Y	Y	2	Volt Reg, –40 to 125 ºC	QFP48	—	C8051F500DK
New	**C8051F501**	64 kB	50	4 kB	40	SPI, UART, I^2C	4	6	1.0%	12-bit, 32-ch., 200 ksps	—	Y	Y	2	Volt Reg, –40 to 125 ºC	QFP48	—	C8051F500DK
New	**C8051F502**	64 kB	50	4 kB	25	CAN 2.0, LIN 2.0, SPI, UART, I^2C	4	6	0.5%	12-bit, 25-ch., 200 ksps	—	Y	Y	2	Volt Reg, –40 to 125 ºC	QFP32	—	C8051F500DK
New	**C8051F503**	64 kB	50	4 kB	25	SPI, UART, I^2C	4	6	1.0%	12-bit, 25-ch., 200 ksps	—	Y	Y	2	Volt Reg, –40 to 125 ºC	QFP32	—	C8051F500DK
New	**C8051F504**	32 kB	50	4 kB	40	CAN 2.0, LIN 2.0, SPI, UART, I^2C	4	6	0.5%	12-bit, 32-ch., 200 ksps	—	Y	Y	2	Volt Reg, –40 to 125 ºC	QFP48	—	C8051F500DK
New	**C8051F505**	32 kB	50	4 kB	40	SPI, UART, I^2C	4	6	1.0%	12-bit, 32-ch., 200 ksps	—	Y	Y	2	Volt Reg, –40 to 125 ºC	QFP48	—	C8051F500DK
New	**C8051F506**	32 kB	50	4 kB	25	CAN 2.0, LIN 2.0, SPI, UART, I^2C	4	6	0.5%	12-bit, 25-ch., 200 ksps	—	Y	Y	2	Volt Reg, –40 to 125 ºC	QFP32	—	C8051F500DK
New	**C8051F507**	32 kB	50	4 kB	25	SPI, UART, I^2C	4	6	1.0%	12-bit, 25-ch., 200 ksps	—	Y	Y	2	Volt Reg, –40 to 125 ºC	QFP32	—	C8051F500DK
New	**C8051F520A**	8 kB	25	256	6	LIN 2.1, SPI, UART	3	3	0.5%	12-bit, 6ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	DFN10	—	C8051F530DK
New	**C8051F521A**	8 kB	25	256	6	SPI, UART	3	3	0.5%	12-bit, 6ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	DFN10	—	C8051F530DK
New	**C8051F523A**	4 kB	25	256	6	LIN 2.1, SPI, UART	3	3	0.5%	12-bit, 6ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	DFN10	—	C8051F530DK
New	**C8051F524A**	4 kB	25	256	6	SPI, UART	3	3	0.5%	12-bit, 6ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	DFN10	—	C8051F530DK
New	**C8051F526A**	2 kB	25	256	6	LIN 2.1, SPI, UART	3	3	0.5%	12-bit, 6ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	DFN10	—	C8051F530DK
New	**C8051F527A**	2 kB	25	256	6	SPI, UART	3	3	0.5%	12-bit, 6ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	DFN10	—	C8051F530DK
New	**C8051F530A**	8 kB	25	256	16	LIN 2.1, SPI, UART	3	3	0.5%	12-bit, 16ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	TSSOP20	—	C8051F530DK
New	**C8051F531A**	8 kB	25	256	16	SPI, UART	3	3	0.5%	12-bit, 16ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	QFN20	—	C8051F530DK
New	**C8051F533A**	4 kB	25	256	16	LIN 2.1, SPI, UART	3	3	0.5%	12-bit, 16ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	QFN20	—	C8051F530DK
New	**C8051F534A**	4 kB	25	256	16	SPI, UART	3	3	0.5%	12-bit, 16ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	QFN20	—	C8051F530DK
New	**C8051F536A**	2 kB	25	256	16	LIN 2.1, SPI, UART	3	3	0.5%	12-bit, 16ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	QFN20	—	C8051F530DK
New	**C8051F537A**	2 kB	25	256	16	SPI, UART	3	3	0.5%	12-bit, 16ch., 200ksps	—	Y	Y	1	Volt Reg, –40 to 125 ºC	QFN20	—	C8051F530DK
	Interface MCUs																	
	CP2102	1 kB	—	1 kB	—	UART to USB Bridge	—	—	Y	—	—	—	—	—	Voltage Reg.	QFN28	—	CP2102EK
	CP2103	1 kB	—	1 kB	4	UART to USB Bridge	—	—	Y	—	—	—	—	—	Voltage Reg., RS485, Split V_{DDIO}	QFN28	—	CP2103EK
	Low-Voltage/Low-Power MCUs																	
	C8051F920	64 kB	25	4 kB	24	UART, EMIS, I^2C, 2 SPI	4	6	±2%	10-bit, 23ch., 300 ksps	—	Y	Y	2	smaRTClock; up to 23 touch sense inputs	QFN32/ LQFP32	—	C8051F930DK
	C8051F921	64 kB	25	4 kB	16	UART, EMIS, I^2C, 2 SPI	4	6	±2%	10-bit, 15ch., 300 ksps	—	Y	Y	2	smaRTClock; up to 23 touch sense inputs	QFN24	—	C8051F930DK
	C8051F930	32 kB	25	4 kB	24	UART, EMIS, I^2C, 2 SPI	4	6	±2%	10-bit, 23ch., 300 ksps	—	Y	Y	2	smaRTClock; up to 23 touch sense inputs	QFN32/ LQFP32	—	C8051F930DK

Part No.	Flash Memory (bytes)	MIPS (peak)	RAM (bytes)	Digital Port I/O Pins	Serial Buses	Timers (16-bit)	PWM/PCA	Internal Oscillator	ADC	DAC	Temp Sensor	VREF	Comparators	Other	Package	Flash Version	Evaluation Kit
C8051F931	32 kB	25	4 kB	16	UART, EMIS, I^2C, 2 SPI	4	6	±2%	10-bit, 15ch., 300 ksps	—	Y	Y	2	smaRTClock; up to 23 touch sense inputs	QFN24	—	C8051F930DK
One Time Programmable EPROM-Based MCUs																	
C8051T600	8 kB	25	256	8	UART, I^2C	3	3	±2%	10-bit, 8ch., 500 ksps	—	Y	—	1	VREG	QFN11/ SOIC14	F300	C8051T600DK
C8051T601	8 kB	25	256	8	UART, I^2C	3	3	±2%	—	—	—	—	1	VREG	QFN11/ SOIC14	F301	C8051T600DK
C8051T602	4 kB	25	256	8	UART, I^2C	3	3	±2%	10-bit, 8ch., 500 ksps	—	Y	—	1	VREG	QFN11/ SOIC14	F302	C8051T600DK
C8051T603	4 kB	25	256	8	UART, I^2C	3	3	±2%	—	—	—	—	1	VREG	QFN11/ SOIC14	F303	C8051T600DK
C8051T604	2 kB	25	256	8	UART, I^2C	3	3	±2%	10-bit, 8ch., 500 ksps	—	Y	—	1	VREG	QFN11/ SOIC14	F304	C8051T600DK
C8051T605	2 kB	25	256	8	UART, I^2C	3	3	±2%	—	—	—	—	1	VREG	QFN11/ SOIC14	F305	C8051T600DK
C8051T610	16 kB	25	1280	29	I^2C, SPI, UART	4	5	±2%	10-bit, 21ch., 500 ksps	—	Y	Y	2	VREG	LQFP32	F310	C8051T610DK
C8051T611	16 kB	25	1280	25	I^2C, SPI, UART	4	5	±2%	10-bit, 21ch., 500 ksps	—	Y	—	2	VREG	QFN28	F311	C8051T610DK
C8051T612	8 kB	25	1280	29	I^2C, SPI, UART	4	5	±2%	10-bit, 21ch., 500 ksps	—	Y	—	2	VREG	LQFP32	F312	C8051T610DK
C8051T613	8 kB	25	1280	25	I^2C, SPI, UART	4	5	±2%	10-bit, 21ch., 500 ksps	—	Y	—	2	VREG	QFN28	F313	C8051T610DK
C8051T614	8 kB	25	1280	29	I^2C, SPI, UART	4	5	±2%	—	—	—	—	2	VREG	LQFP32	F314	C8051T610DK
C8051T615	8 kB	25	1280	25	I^2C, SPI, UART	4	5	±2%	—	—	—	—	2	VREG	QFN28	F315	C8051T610DK
C8051T616	16 kB	25	1280	21	I^2C, SPI, UART	4	5	±2%	10-bit, 17ch., 500 ksps	—	Y	—	2	VREG	QFN24	F316	C8051T610DK
C8051T617	16 kB	25	1280	21	I^2C, SPI, UART	4	5	±2%	—	—	—	—	2	VREG	QFN24	F317	C8051T610DK
C8051T630	8 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	10-bit, 6ch., 500 ksps	10-bit,1ch	Y	Y	1	VREG, LFO	QFN20	F330	C8051T630DK
C8051T631	8 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	—	—	—	—	1	VREG, LFO	QFN20	F331	C8051T630DK
C8051T632	4 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 500 ksps	10-bit,1ch	Y	Y	1	VREG, LFO	QFN20	F332	C8051T630DK
C8051T633	4 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	—	—	—	—	1	VREG, LFO	QFN20	F333	C8051T630DK
C8051T634	2 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 500 ksps	10-bit,1ch	Y	T	1	VREG, LFO	QFN20	F334	C8051T630DK
C8051T635	2 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	—	—	—	—	1	VREG, LFO	QFN20	F335	C8051T630DK
Precision Mixed-Signal MCUs																	
C8051F000	32 kB	20	256	32	UART, I^2C, SPI	4	5	±20%	12-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP64	—	C8051F005DK
C8051F001	32 kB	20	256	16	UART, I^2C, SPI	4	5	±20%	12-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP48	—	C8051F005DK
C8051F002	32 kB	20	256	8	UART, I^2C, SPI	4	5	±20%	12-bit, 4ch., 100 ksps	12-bit, 2ch.	Y	Y	1	—	LQFP32	—	C8051F005DK
C8051F005	32 kB	25	2304	32	UART, I^2C, SPI	4	5	±20%	12-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP64	—	C8051F005DK
C8051F006	32 kB	25	2304	16	UART, I^2C, SPI	4	5	±20%	12-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP48	—	C8051F005DK
C8051F007	32 kB	25	2304	8	UART, I^2C, SPI	4	5	±20%	12-bit, 4ch., 100 ksps	12-bit, 2ch.	Y	Y	1	—	LQFP32	—	C8051F005DK
C8051F010	32 kB	20	256	32	UART, I^2C, SPI	4	5	±20%	10-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP64	—	C8051F005DK
C8051F011	32 kB	20	256	16	UART, I^2C, SPI	4	5	±20%	10-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP48	—	C8051F005DK
C8051F012	32 kB	20	256	8	UART, I^2C, SPI	4	5	±20%	10-bit, 4ch., 100 ksps	12-bit, 2ch.	Y	Y	1	—	LQFP32	—	C8051F005DK
C8051F015	32 kB	25	2304	32	UART, I^2C, SPI	4	5	±20%	10-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP64	—	C8051F005DK
C8051F016	32 kB	25	2304	16	UART, I^2C, SPI	4	5	±20%	10-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP48	—	C8051F005DK
C8051F017	32 kB	25	2304	8	UART, I^2C, SPI	4	5	±20%	10-bit, 4ch., 100 ksps	12-bit, 2ch.	Y	Y	1	—	LQFP32	—	C8051F005DK
C8051F018	16 kB	25	1280	32	UART, I^2C, SPI	4	5	±20%	10-bit, 8ch., 100 ksps	—	Y	Y	2	—	TQFP64	—	C8051F005DK
C8051F019	16 kB	25	1280	16	UART, I^2C, SPI	4	5	±20%	10-bit, 8ch., 100 ksps	—	Y	Y	2	—	TQFP48	—	C8051F005DK

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C8051F020	64 kB	25	4352	64	2 UARTs, I^2C, SPI	5	5	±20%	12-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP100	—	C8051F020DK
C8051F021	64 kB	25	4352	32	2 UARTs, I^2C, SPI	5	5	±20%	12-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP64	—	C8051F020DK
C8051F022	64 kB	25	4352	64	2 UARTs, I^2C, SPI	5	5	±20%	10-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP100	—	C8051F020DK
C8051F023	64 kB	25	4352	32	2 UARTs, I^2C, SPI	5	5	±20%	10-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP64	—	C8051F020DK
C8051F040	64 kB	25	4352	64	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	12-bit, 13ch., 100 ksps	12-bit, 2ch.	Y	Y	3	±60 V PGA	TQFP100	—	C8051F040DK
C8051F041	64 kB	25	4352	32	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	12-bit, 13ch., 100 ksps	12-bit, 2ch.	Y	Y	3	±60 V PGA	TQFP64	—	C8051F040DK
C8051F042	64 kB	25	4352	64	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 13ch., 100 ksps	12-bit, 2ch.	Y	Y	3	±60 V PGA	TQFP100	—	C8051F040DK
C8051F043	64 kB	25	4352	32	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 13ch., 100 ksps	12-bit, 2ch.	Y	Y	3	±60 V PGA	TQFP64	—	C8051F040DK
C8051F044	64 kB	25	4352	64	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 13ch., 100 ksps	—	Y	Y	3	±60 V PGA	TQFP100	—	C8051F040DK
C8051F045	64 kB	25	4352	32	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 13ch., 100 ksps	—	Y	Y	3	±60 V PGA	TQFP64	—	C8051F040DK
C8051F046	32 kB	25	4352	64	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 13ch., 100 ksps	—	Y	Y	3	±60 V PGA	TQFP100	—	C8051F040DK
C8051F047	32 kB	25	4352	32	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 13ch., 100 ksps	—	Y	Y	3	±60 V PGA	TQFP64	—	C8051F040DK
C8051F060	64 kB	25	4352	59	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	16-bit, 2ch., 1 Msps	12-bit, 2ch.	Y	Y	3	DMA	TQFP100	—	C8051F060DK
C8051F061	64 kB	25	4352	24	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	16-bit, 2ch., 1 Msps	12-bit, 2ch.	Y	Y	3	DMA	TQFP64	—	C8051F060DK
C8051F062	64 kB	25	4352	59	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	16-bit, 2ch., 1 Msps	12-bit, 2ch.	Y	Y	3	DMA	TQFP100	—	C8051F060DK
C8051F063	64 kB	25	4352	24	CAN2.0B, 2 UARTs, I^2C, SPI	5	6	±2%	16-bit, 2ch., 1 Msps	12-bit, 2ch.	Y	Y	3	DMA	TQFP64	—	C8051F060DK
C8051F064	64 kB	25	4352	59	2 UARTs, I^2C, SPI	5	6	±2%	16-bit, 2ch., 1 Msps	—	—	Y	3	DMA	TQFP100	—	C8051F060DK
C8051F065	64 kB	25	4352	24	2 UARTs, I^2C, SPI	5	6	±2%	16-bit, 2ch., 1 Msps	—	—	Y	3	DMA	TQFP64	—	C8051F060DK
C8051F066	32 kB	25	4352	59	2 UARTs, I^2C, SPI	5	6	±2%	16-bit, 2ch., 1 Msps	—	—	Y	3	DMA	TQFP100	—	C8051F060DK
C8051F067	32 kB	25	4352	24	2 UARTs, I^2C, SPI	5	6	±2%	16-bit, 2ch., 1 Msps	—	—	Y	3	DMA	TQFP64	—	C8051F060DK
C8051F120	128 kB	100	8448	64	2 UARTs, I^2C, SPI	5	6	±2%	12-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	16x16 MAC	TQFP100	—	C8051F120DK
C8051F121	128 kB	100	8448	32	2 UARTs, I^2C, SPI	5	6	±2%	12-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	16x16 MAC	TQFP64	—	C8051F120DK
C8051F122	128 kB	100	8448	64	2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	16x16 MAC	TQFP100	—	C8051F120DK
C8051F123	128 kB	100	8448	32	2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	16x16 MAC	TQFP64	—	C8051F120DK
C8051F124	128 kB	50	8448	64	2 UARTs, I^2C, SPI	5	6	±2%	12-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP100	—	C8051F120DK
C8051F125	128 kB	50	8448	32	2 UARTs, I^2C, SPI	5	6	±2%	12-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP64	—	C8051F120DK
C8051F126	128 kB	50	8448	64	2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP100	—	C8051F120DK
C8051F127	128 kB	50	8448	32	2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 8ch., 100 ksps	12-bit, 2ch.	Y	Y	2	—	TQFP64	—	C8051F120DK
C8051F130	128 kB	100	8448	64	2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 8ch., 100 ksps	—	Y	Y	2	16x16 MAC	TQFP100	—	C8051F120DK
C8051F131	128 kB	100	8448	32	2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 8ch., 100 ksps	—	Y	Y	2	16x16 MAC	TQFP64	—	C8051F120DK
C8051F132	64 kB	100	8448	64	2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 8ch., 100 ksps	—	Y	Y	2	16x16 MAC	TQFP100	—	C8051F120DK
C8051F133	64 kB	100	8448	32	2 UARTs, I^2C, SPI	5	6	±2%	10-bit, 8ch., 100 ksps	—	Y	Y	2	16x16 MAC	TQFP64	—	C8051F120DK
C8051F350	8 kB	50	768	17	UART, I^2C, SPI	4	3	±2%	24-bit, 8ch., 1 ksps	8-bit, 2ch.	Y	—	1	—	LQFP32	—	C8051F350DK
C8051F351	8 kB	50	768	17	UART, I^2C, SPI	4	3	±2%	24-bit, 8ch., 1 ksps	8-bit, 2ch.	Y	—	1	—	QFN28	—	C8051F350DK
C8051F352	8 kB	50	768	17	UART, I^2C, SPI	4	3	±2%	16-bit, 8ch., 1 ksps	8-bit, 2ch.	Y	—	1	—	LQFP32	—	C8051F350DK
C8051F353	8 kB	50	768	17	UART, I^2C, SPI	4	3	±2%	16-bit, 8ch., 1 ksps	8-bit, 2ch.	Y	—	1	—	QFN28	—	C8051F350DK
Small Form Factor MCUs																	
C8051F206	8 kB	25	1280	32	UART, SPI	3	—	±20%	12-bit, 32ch., 100 ksps	—	—	—	2	—	TQFP48	—	C8051F206DK
C8051F220	8 kB	25	256	32	UART, SPI	3	—	±20%	8-bit, 32ch., 100 ksps	—	—	—	2	—	TQFP48	—	C8051F226DK
C8051F221	8 kB	25	256	22	UART, SPI	3	—	±20%	8-bit, 32ch., 100 ksps	—	—	—	2	—	LQFP32	—	C8051F226DK
C8051F226	8 kB	25	1280	32	UART, SPI	3	—	±20%	8-bit, 32ch., 100 ksps	—	—	—	2	—	TQFP48	—	C8051F226DK
C8051F230	8 kB	25	256	32	UART, SPI	3	—	±20%	—	—	—	—	2	—	TQFP48	—	C8051F226DK
C8051F231	8 kB	25	256	22	UART, SPI	3	—	±20%	—	—	—	—	2	—	LQFP32	—	C8051F226DK
C8051F236	8 kB	25	1280	32	UART, SPI	3	—	±20%	—	—	—	—	2	—	TQFP48	—	C8051F226DK
C8051F300	8 kB	25	256	8	UART, I^2C	3	3	±2%	8-bit, 8ch., 500 ksps	—	Y	—	1	—	QFN11	T600	C8051F300DK

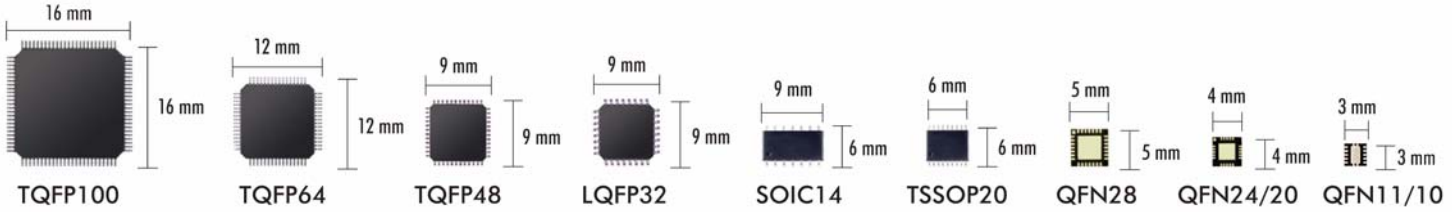
Part No.	Flash Memory (bytes)	MIPS (peak)	RAM (bytes)	Digital Port I/O Pins	Serial Buses	Timers (16-bit)	PWM/PCA	Internal Oscillator	ADC	DAC	Temp Sensor	VREF	Comparators	Other	Package	EPROM Version	Evaluation Kit
C8051F301	8 kB	25	256	8	UART, I^2C	3	3	±2%	—	—	—	—	1	—	QFN11	T601	C8051F300DK
C8051F302	8 kB	25	256	8	UART, I^2C	3	3	±20%	8-bit, 8ch., 500 ksps	—	Y	—	1	—	QFN11	T602	C8051F300DK
C8051F303	8 kB	25	256	8	UART, I^2C	3	3	±20%	—	—	—	—	1	—	QFN11	T603	C8051F300DK
C8051F304	4 kB	25	256	8	UART, I^2C	3	3	±20%	—	—	—	—	1	—	QFN11	T604	C8051F300DK
C8051F305	2 kB	25	256	8	UART, I^2C	3	3	±20%	—	—	—	—	1	—	QFN11	T605	C8051F300DK
C8051F310	16 kB	25	1280	29	I^2C, SPI, UART	4	5	±2%	10-bit, 21ch., 200 ksps	—	Y	—	2	—	LQFP32	T610	C8051F310DK
C8051F311	16 kB	25	1280	25	I^2C, SPI, UART	4	5	±2%	10-bit, 17ch., 200 ksps	—	Y	—	2	—	QFN28	T611	C8051F310DK
C8051F312	8 kB	25	1280	29	I^2C, SPI, UART	4	5	±2%	10-bit, 21ch., 200 ksps	—	Y	—	2	—	LQFP32	T612	C8051F310DK
C8051F313	8 kB	25	1280	25	I^2C, SPI, UART	4	5	±2%	10-bit, 17ch., 200 ksps	—	Y	—	2	—	QFN28	T613	C8051F310DK
C8051F314	8 kB	25	1280	29	I^2C, SPI, UART	4	5	±2%	—	—	Y	—	2	—	LQFP32	T614	C8051F310DK
C8051F315	8 kB	25	1280	25	I^2C, SPI, UART	4	5	±2%	—	—	Y	—	2	—	QFN28	T615	C8051F310DK
C8051F316	16 kB	25	1280	32	I^2C, SPI, UART	4	5	±2%	10-bit, 16ch., 200 ksps	—	Y	—	2	—	QFN24	T616	C8051F310DK
C8051F317	16 kB	25	1280	21	I^2C, SPI, UART	4	5	±2%	—	—	Y	—	2	—	QFN24	T617	C8051F310DK
C8051F330	8 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	10-bit, 1ch.	Y	Y	1	—	QFN20	T630	C8051F330DK
C8051F330D	8 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	10-bit, 1ch.	Y	Y	1	—	PDIP20	—	C8051F330DK
C8051F331	8 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	—	—	—	—	1	—	QFN20	T631	C8051F330DK
C8051F332	4 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	—	Y	Y	1	—	QFN20	T632	C8051F330DK
C8051F333	4 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	—	—	—	—	1	—	QFN20	T633	C8051F330DK
C8051F334	2 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	—	Y	Y	1	—	QFN20	T634	C8051F330DK
C8051F335	2 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	—	—	—	—	1	—	QFN20	T635	C8051F330DK
C8051F336	16 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	10-bit, 1ch.	—	—	1	LFO	QFN20	—	C8051F336DK
C8051F337	16 kB	25	768	17	I^2C, SPI, UART	4	3	±2%	—	—	—	—	1	LFO	QFN20	—	C8051F336DK
C8051F338	16 kB	25	768	21	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	10-bit, 1ch.	—	—	1	LFO	QFN24	—	C8051F336DK
C8051F339	16 kB	25	768	21	I^2C, SPI, UART	4	3	±2%	—	—	—	—	1	LFO	QFN24	—	C8051F336DK
C8051F360	32 kB	100	1 kB	39	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	10-bit, 2ch.	Y	Y	2	16x16 MAC	TQFP48	—	C8051F360DK
C8051F361	32 kB	100	1 kB	27	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	10-bit, 2ch.	Y	Y	2	16x16 MAC	LQFP32	—	C8051F360DK
C8051F362	32 kB	100	1 kB	24	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	10-bit, 2ch.	Y	Y	2	16x16 MAC	QFN28	—	C8051F360DK
C8051F363	32 kB	100	1 kB	39	I^2C, SPI, UART	4	3	±2%	—	—	—	—	2	16x16 MAC	TQFP48	—	C8051F360DK
C8051F364	32 kB	100	1 kB	27	I^2C, SPI, UART	4	3	±2%	—	—	—	—	2	16x16 MAC	LQFP32	—	C8051F360DK
C8051F365	32 kB	100	1 kB	24	I^2C, SPI, UART	4	3	±2%	—	—	—	—	2	16x16 MAC	QFN28	—	C8051F360DK
C8051F366	32 kB	50	1 kB	29	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	—	Y	Y	2	16x16 MAC	LQFP32	—	C8051F360DK
C8051F367	32 kB	50	1 kB	25	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	—	Y	Y	2	16x16 MAC	QFN28	—	C8051F360DK
C8051F368	16 kB	50	1 kB	29	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	—	Y	Y	2	16x16 MAC	LQFP32	—	C8051F360DK
C8051F369	16 kB	50	1 kB	25	I^2C, SPI, UART	4	3	±2%	10-bit, 16ch., 200 ksps	—	Y	Y	2	16x16 MAC	QFN28	—	C8051F360DK
C8051F410	32 kB	50	2304	24	I^2C, SPI, UART	4	6	±2%	12-bit, 24ch., 200 ksps	12-bit, 2ch.	Y	Y	2	VREG, RTC	LQFP32	—	C8051F410DK
C8051F411	32 kB	50	2304	20	I^2C, SPI, UART	4	6	±2%	12-bit, 20ch., 200 ksps	12-bit, 2ch.	Y	Y	2	VREG, RTC	QFN28	—	C8051F410DK
C8051F412	16 kB	50	1280	24	I^2C, SPI, UART	4	6	±2%	12-bit, 24ch., 200 ksps	12-bit, 2ch.	Y	Y	2	VREG, RTC	LQFP32	—	C8051F410DK
C8051F413	16 kB	50	1280	20	I^2C, SPI, UART	4	6	±2%	12-bit, 20ch., 200 ksps	12-bit, 2ch.	Y	Y	2	VREG, RTC	QFN28	—	C8051F410DK
USB MCUs																	
C8051F320	16 kB	25	2304	25	USB 2.0, UART, I^2C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	Y	Y	2	—	LQFP32	—	C8051F320DK
C8051F321	16 kB	25	2304	21	USB 2.0, UART, I^2C, SPI	4	5	±1.5%	10-bit, 13ch., 200 ksps	—	Y	Y	2	—	QFN28	—	C8051F320DK

	Part No.	Flash Memory (bytes)	MIPS (peak)	RAM (bytes)	Digital Port I/O Pins	Serial Buses	Timers (16-bit)	PWM/PCA	Internal Oscillator	ADC	DAC	Temp Sensor	VREF	Comparators	Other	Package	EPROM Version	Evaluation Kit
	C8051F326	16 kB	25	1536	15	USB 2.0, UART	2	—	±1.5%	—	—	—	—	—	Separate I/O Supply Pin	QFN28	—	C8051F326DK
	C8051F327	16 kB	25	1536	15	USB 2.0, UART	2	—	±1.5%	—	—	—	—	—	—	QFN28	—	C8051F326DK
	C8051F340	64 kB	48	5376	40	USB 2.0, 2 x UART, I²C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	Y	Y	2	—	TQFP48	—	C8051F340DK
	C8051F341	32 kB	48	3328	40	USB 2.0, 2 x UART, I²C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	Y	Y	2	—	TQFP48	—	C8051F340DK
	C8051F342	64 kB	48	5376	25	USB 2.0, UART, I²C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	Y	Y	2	—	LQFP32	—	C8051F340DK
	C8051F343	32 kB	48	3328	25	USB 2.0, UART, I²C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	Y	Y	2	—	LQFP32	—	C8051F340DK
	C8051F344	64 kB	25	5376	40	USB 2.0, 2 x UART, I²C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	Y	Y	2	—	TQFP48	—	C8051F340DK
	C8051F345	32 kB	25	3328	40	USB 2.0, 2 x UART, I²C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	Y	Y	2	—	TQFP48	—	C8051F340DK
	C8051F346	64 kB	25	5376	25	USB 2.0, UART, I²C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	Y	Y	2	—	LQFP32	—	C8051F340DK
	C8051F347	32 kB	25	3328	25	USB 2.0, UART, I²C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	Y	Y	2	—	LQFP32	—	C8051F340DK
New	C8051F348	32 kB	25	256	40	SMBus, SPI, UART0, UART1	4	5	±1.5%	—	—	—	—	2	Volt. Reg. EMIF	QFP48	—	C8051F340DK
New	C8051F349	32 kB	25	256	25	SMBus, SPI, UART0	4	5	±1.5%	—	—	—	—	2	Volt. Reg.	QFP32	—	C8051F340DK
New	C8051F34A	64 kB	48	5376	25	USB 2.0, 2x UART, I²C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	1	1	2	—	LQFP32	—	C8051F340DK
New	C8051F34B	32 kB	48	3328	25	USB 2.0, 2x UART, I²C, SPI	4	5	±1.5%	10-bit, 17ch., 200 ksps	—	1	1	2	—	LQFP32	—	C8051F340DK

Interface MCUs (Ethernet)

Part Number	Flash	Parallel Host Inteface	Parallel Host Interface Speed	Auto-Negotiation	Pre-Programmed MAC Address	RAM Size	LEDs	Temp. Range	Transceiver	Package	Eval Kit	Dev Kit
CP2200	8 kB	8-bit non-multiplexed EMIF	30 Mbps	Y	Y	2 kB TX & 4 kB RX buffer	Seperate link and activity	–40 to +85	Included	TQFP48	CP2201EK	ETHERNETDK
CP2201	8 kB	8-bit multiplexed EMIF	25 Mbps	Y	Y	2 kB TX & 4 kB RX buffer	Combined link and activity	–40 to +85	Included	QFN28	CP2201EK	ETHERNETDK

Package Sizes



Automotive MCUs

Analog Peripherals

12-Bit ADC, 5 V input signal; up to 32 external inputs
- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Two Comparators
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector
On-Chip Debug
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Multiple power saving sleep and shutdown modes

Temperature Range: –40 to +125 °C

Operating Voltage: 1.8 to 5.25 V

High-Speed 8051 µC Core
- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput

Memory
- 64 kB Flash; in-system programmable; flexible security features
- 4352 bytes data RAM (256 + 4 kB)

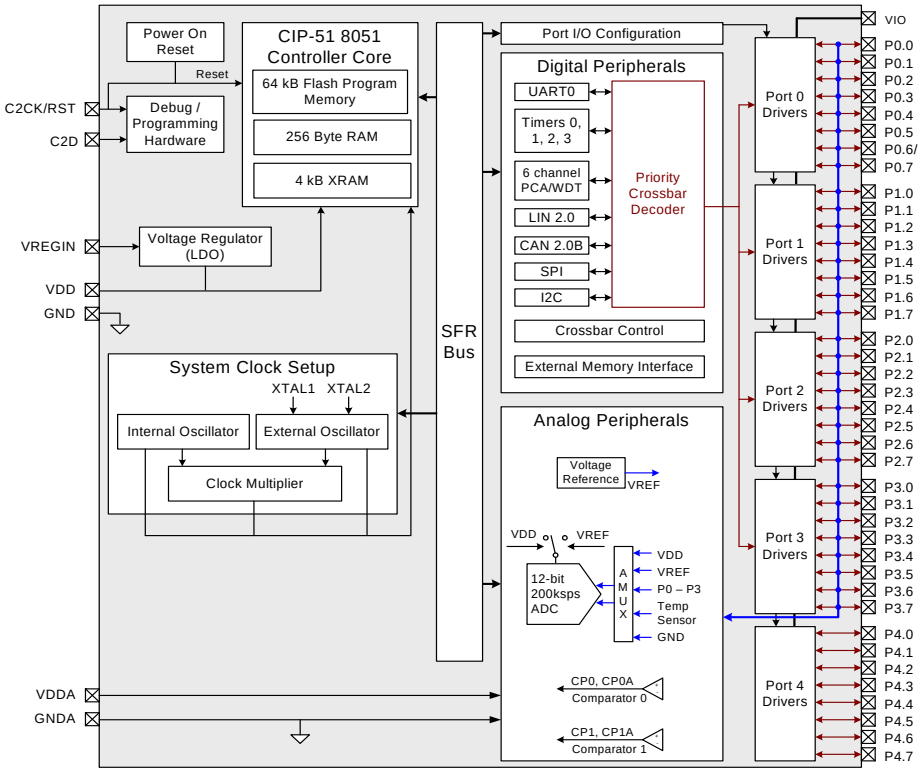
CAN 2.0B
- 32 message objects

LIN 2.1
- Master or slave operation using dedicated hardware

Digital Peripherals
- Up to 40 digital I/O; all are 5 V push-pull
- Hardware I^2C, SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 4 general-purpose 16-bit counter/timers
- External Memory Interface (EMIF)

Clock Sources
- Internal programmable 0.5% oscillator: up to 50 MHz
- External oscillator: Crystal, RC, C, or CMOS Clock

Ordering Part Numbers
- C8051F500-IM, 48-Pin QFN (RoHS-compliant), 7x7 mm^2
- C8051F500-IQ, 48-Pin QFP (RoHS-compliant), 9x9 mm^2



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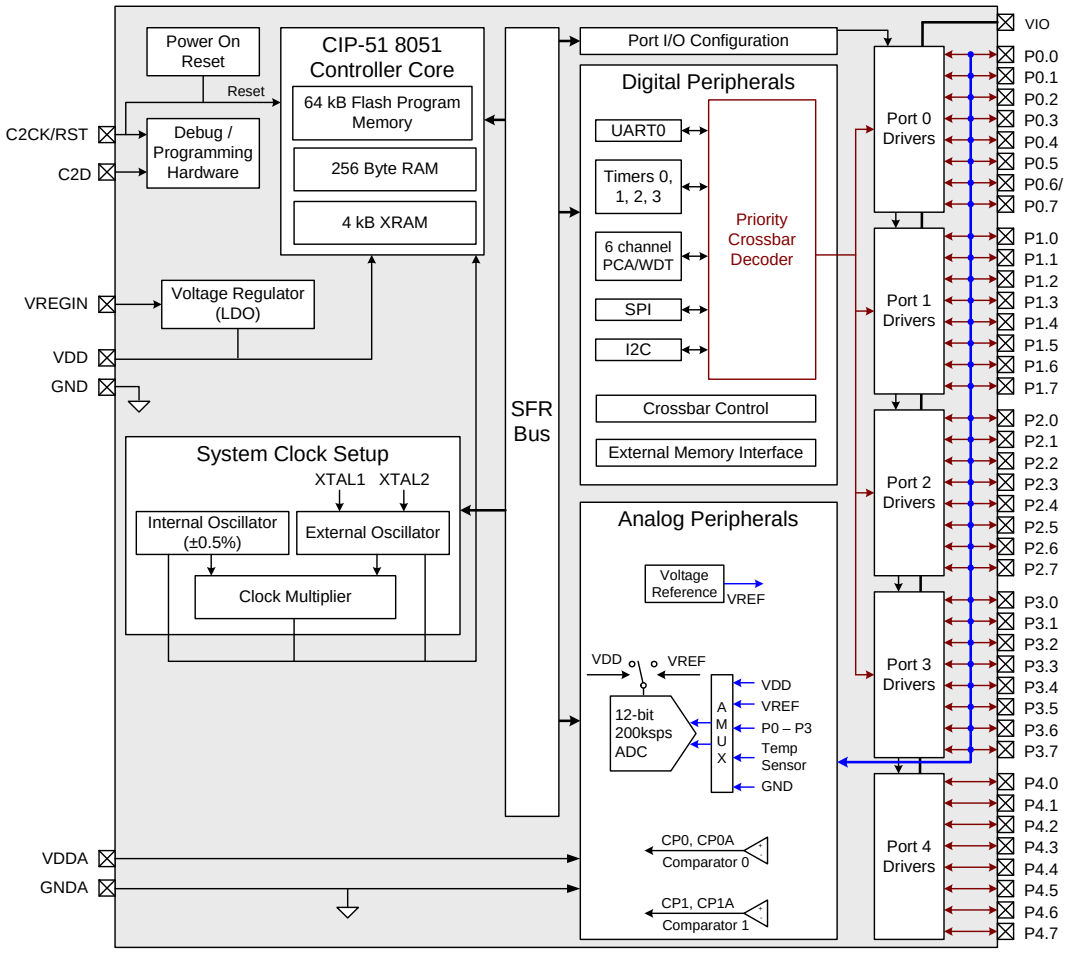

Analog Peripherals

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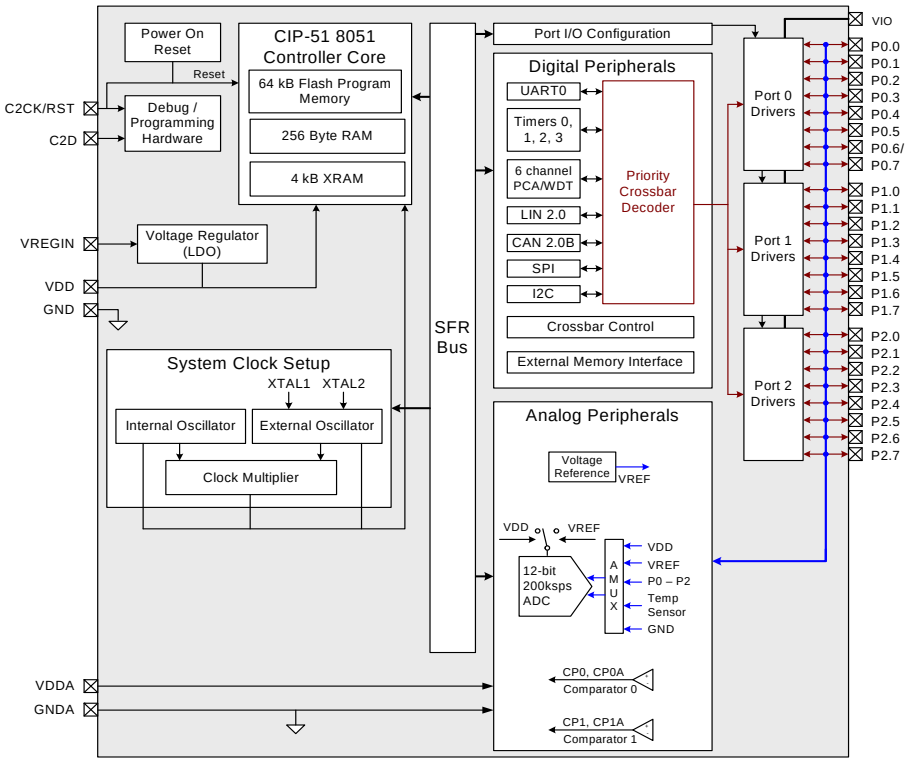

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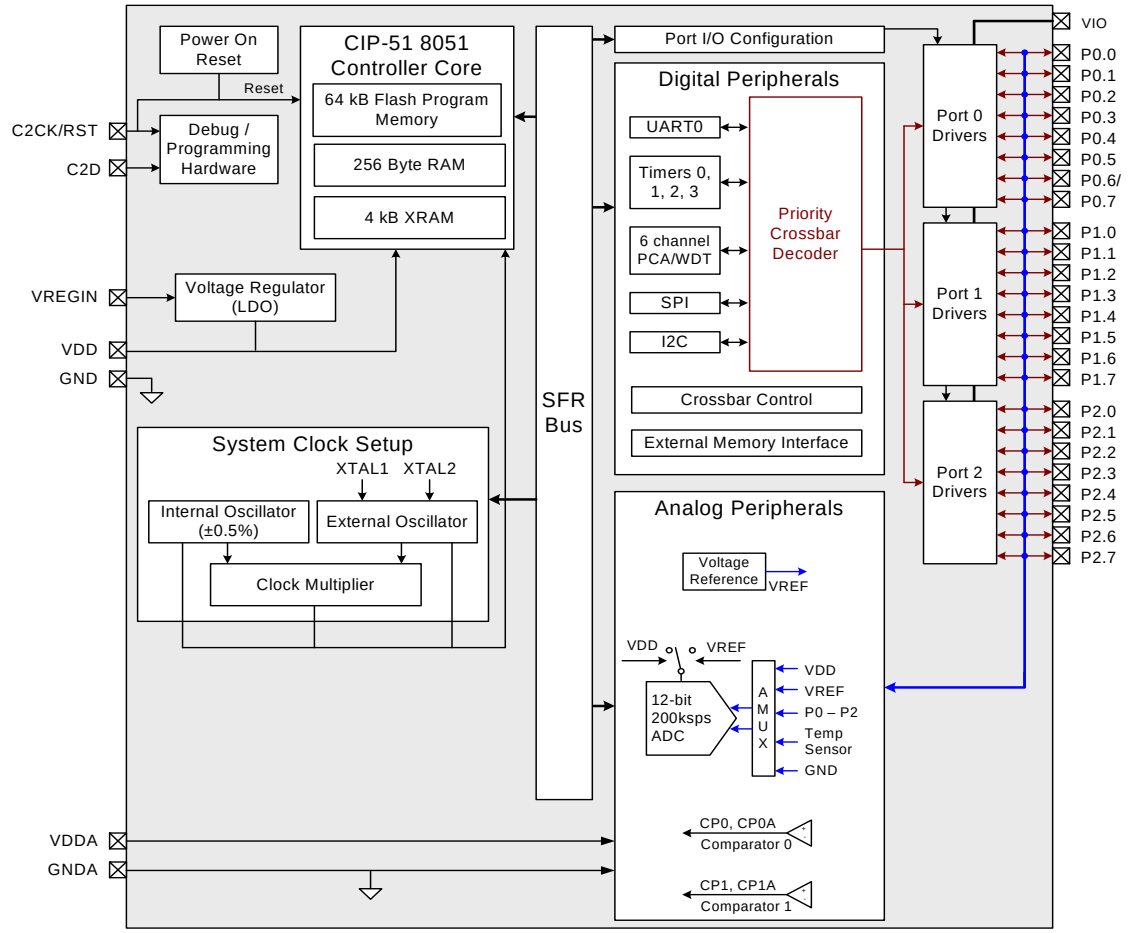
Clock Sources

- Internal programmable ±0.5% oscillator: up to 50 MHz
- External oscillator: Crystal, RC, C, or CMOS Clock

Ordering Part Numbers

- C8051F503-IM, 32-Pin QFN (RoHS-compliant), 5x5 mm^2
- C8051F503-IQ, 32-Pin QFP (RoHS-compliant), 9x9 mm^2



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Development Kit: C8051F500DK

High-Speed 8051 µC Core

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- Up to 50 MIPS throughput

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- 32 message objects

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- 4 general-purpose 16-bit counter/timers
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Clock Sources

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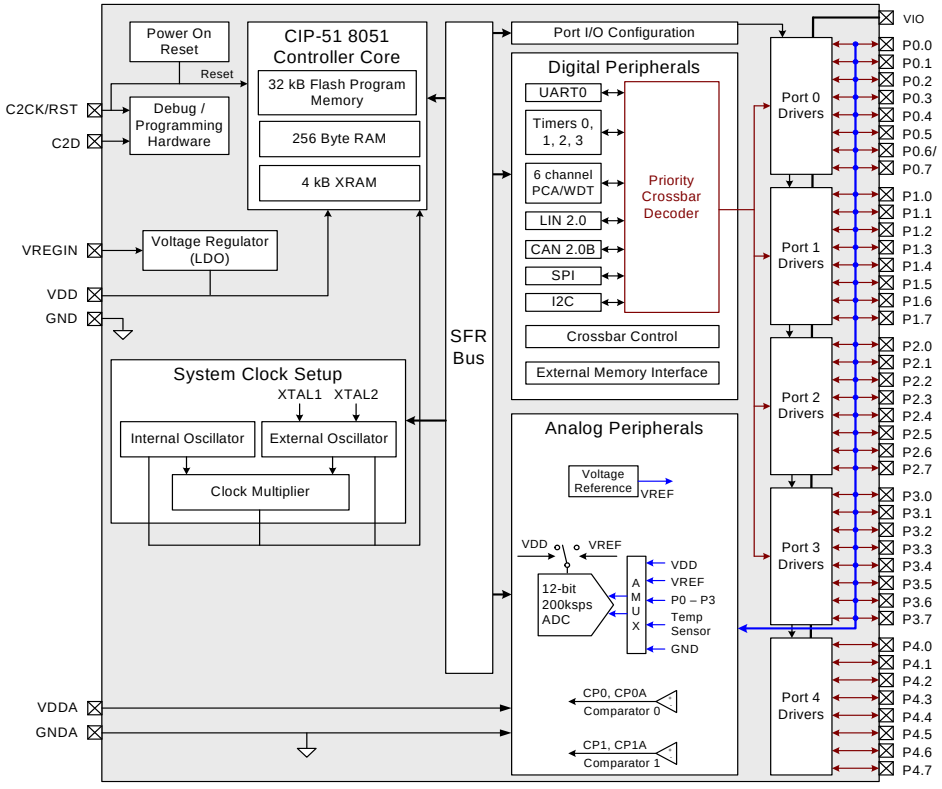
- External oscillator: Crystal, RC, C, or CMOS Clock

Ordering Part Numbers

- C8051F504-IM, 48-Pin QFN (RoHS-compliant), 7x7 mm^2
- C8051F504-IQ, 48-Pin QFP (RoHS-compliant), 9x9 mm^2



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Temperature Range: –40 to +125 °C
Operating Voltage: 1.8 to 5.25 V
Development Kit: C8051F500DK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput

Memory

- 32 kB Flash; in-system programmable; flexible security features
- 4352 bytes data RAM (256 + 4 kB)

Digital Peripherals

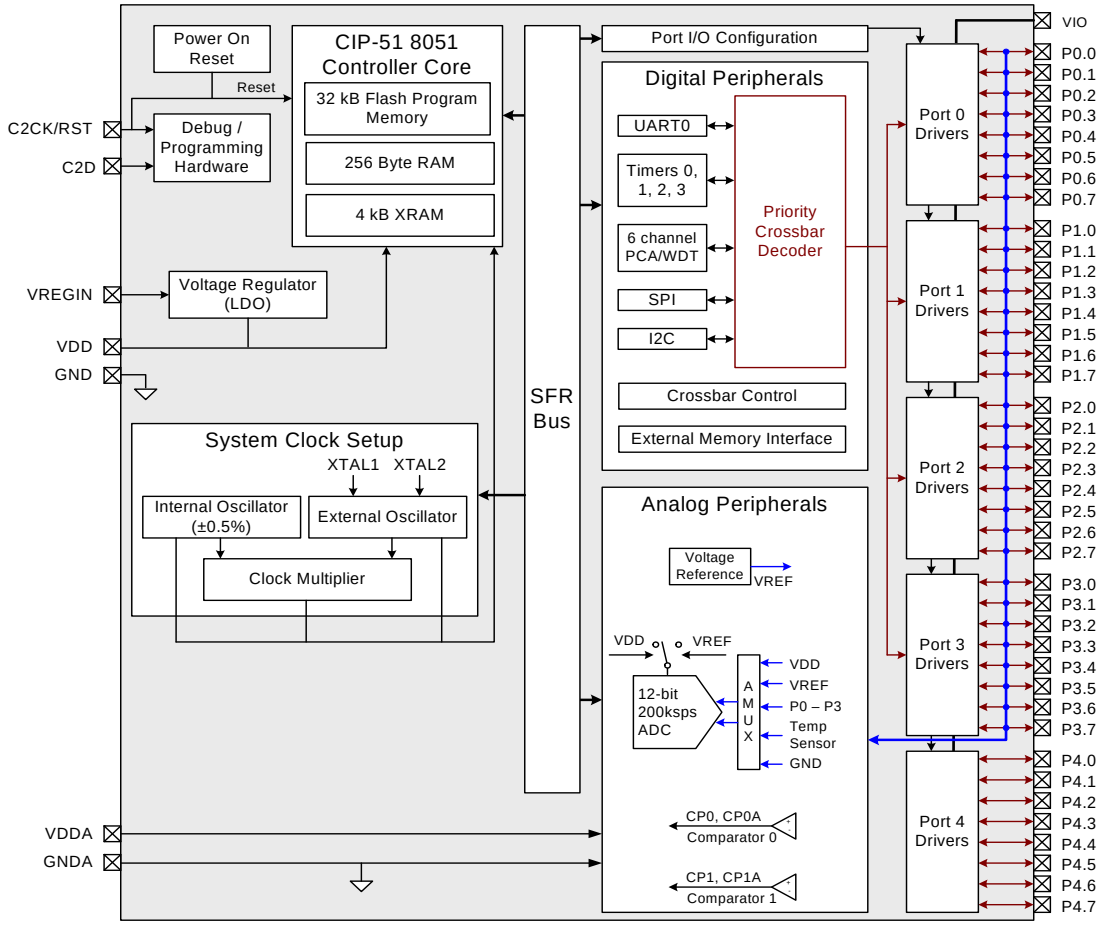
- Up to 40 digital I/O; all are 5 V push-pull
- Hardware I^2C, SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 4 general-purpose 16-bit counter/timers
- External Memory Interface (EMIF)

Clock Sources

- Internal programmable ±0.5% oscillator: up to 50 MHz
- External oscillator: Crystal, RC, C, or CMOS Clock

Ordering Part Numbers

- C8051F505-IM, 48-Pin QFN (RoHS-compliant), 7x7 mm^2
- C8051F505-IQ, 48-Pin QFP (RoHS-compliant), 9x9 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 24 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Two Comparators
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Multiple power saving sleep and shutdown modes

Temperature Range: –40 to +125 °C
Operating Voltage: 1.8 to 5.25 V
Development Kit: C8051F500DK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput

Memory

- 32 kB Flash; in-system programmable; flexible security features
- 4352 bytes data RAM (256 + 4 kB)

CAN 2.0B

- 32 message objects

LIN 2.1

- Master or slave operation using dedicated hardware

Digital Peripherals

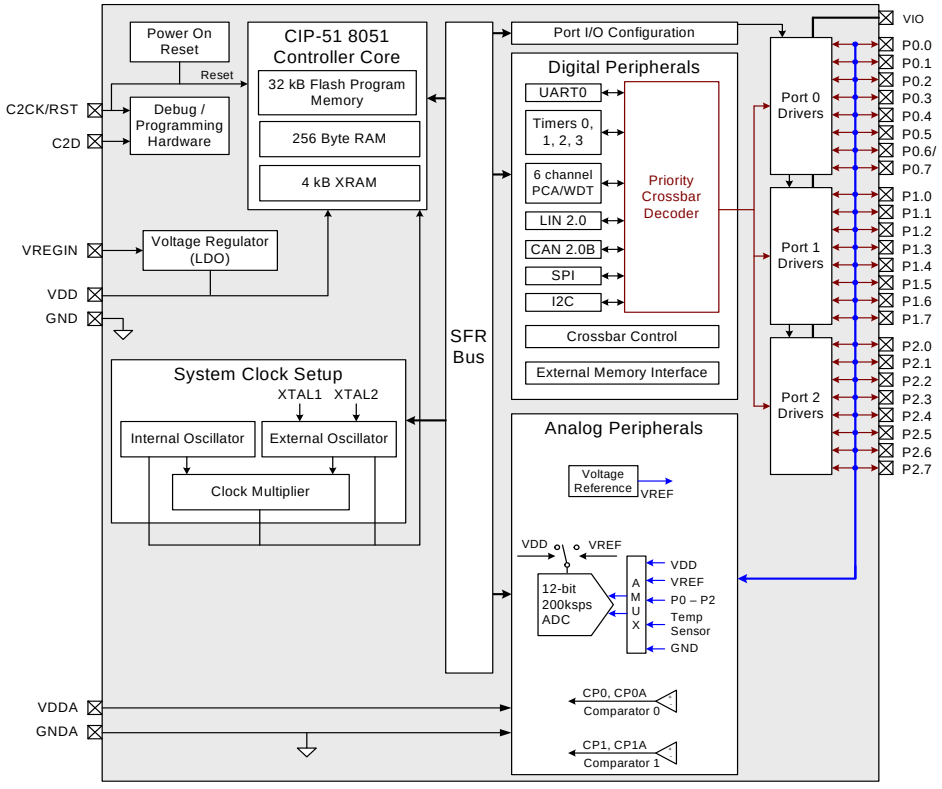
- Up to 24 digital I/O; all are 5 V push-pull
- Hardware I^2C, SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 4 general-purpose 16-bit counter/timers
- External Memory Interface (EMIF)

Clock Sources

- Internal programmable ±0.5% oscillator: up to 50 MHz
- External oscillator: Crystal, RC, C, or CMOS Clock

Ordering Part Numbers

- C8051F506-IM, 32-Pin QFN (RoHS-compliant), 5x5 mm^2
- C8051F506-IQ, 32-Pin QFP (RoHS-compliant), 9x9 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 24 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
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Two Comparators
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector

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- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Multiple power saving sleep and shutdown modes

Temperature Range: –40 to +125 °C
Operating Voltage: 1.8 to 5.25 V
Development Kit: C8051F500DK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput

Memory

- 32 kB Flash; in-system programmable; flexible security features
- 4352 bytes data RAM (256 + 4 kB)

Digital Peripherals

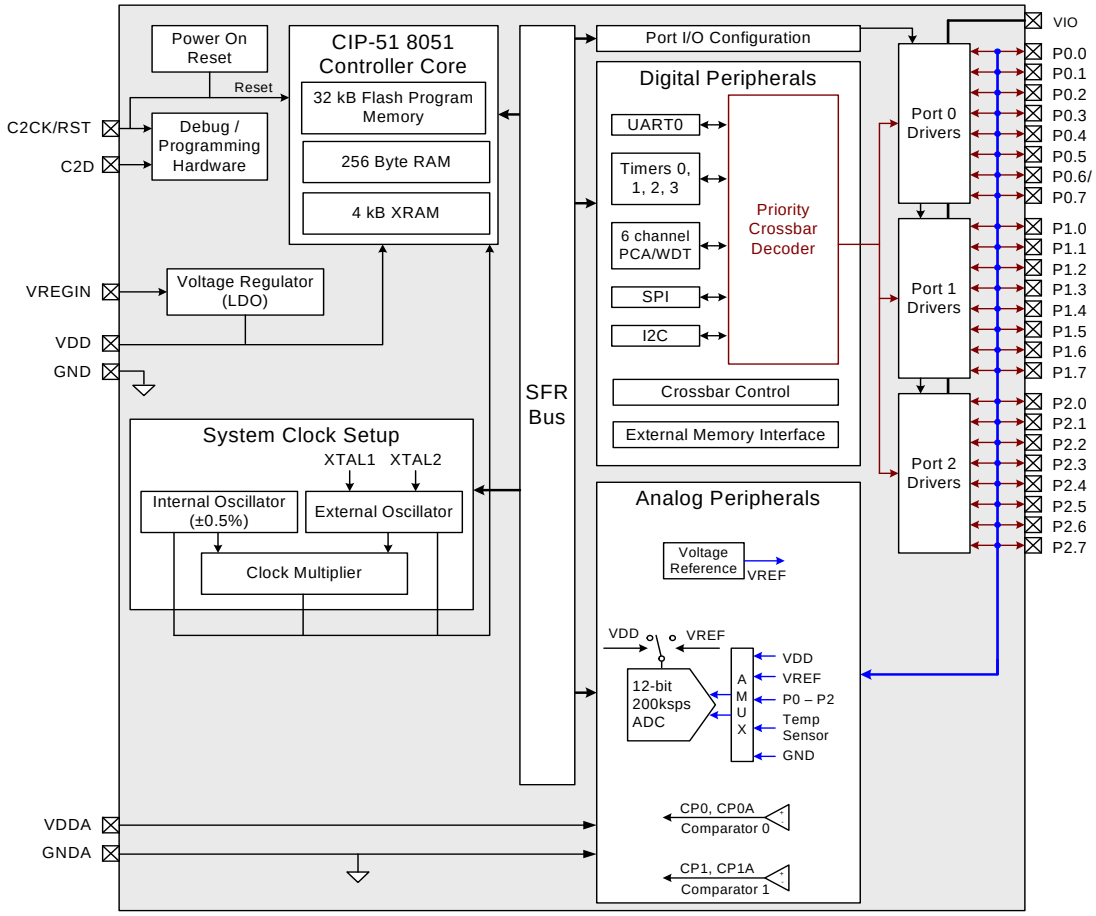
- Up to 24 digital I/O; all are 5 V push-pull
- Hardware I^2C, SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 4 general-purpose 16-bit counter/timers
- External Memory Interface (EMIF)

Clock Sources

- Internal programmable ±0.5% oscillator: up to 50 MHz
- External oscillator: Crystal, RC, C, or CMOS Clock

Ordering Part Numbers

- C8051F507-IM, 32-Pin QFN (RoHS-compliant), 5x5 mm^2
- C8051F507-IQ, 32-Pin QFP (RoHS-compliant), 9x9 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 6 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 8 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

LIN 2.1

- Master or slave operation using dedicated hardware (not software implementation with UART)

Digital Peripherals

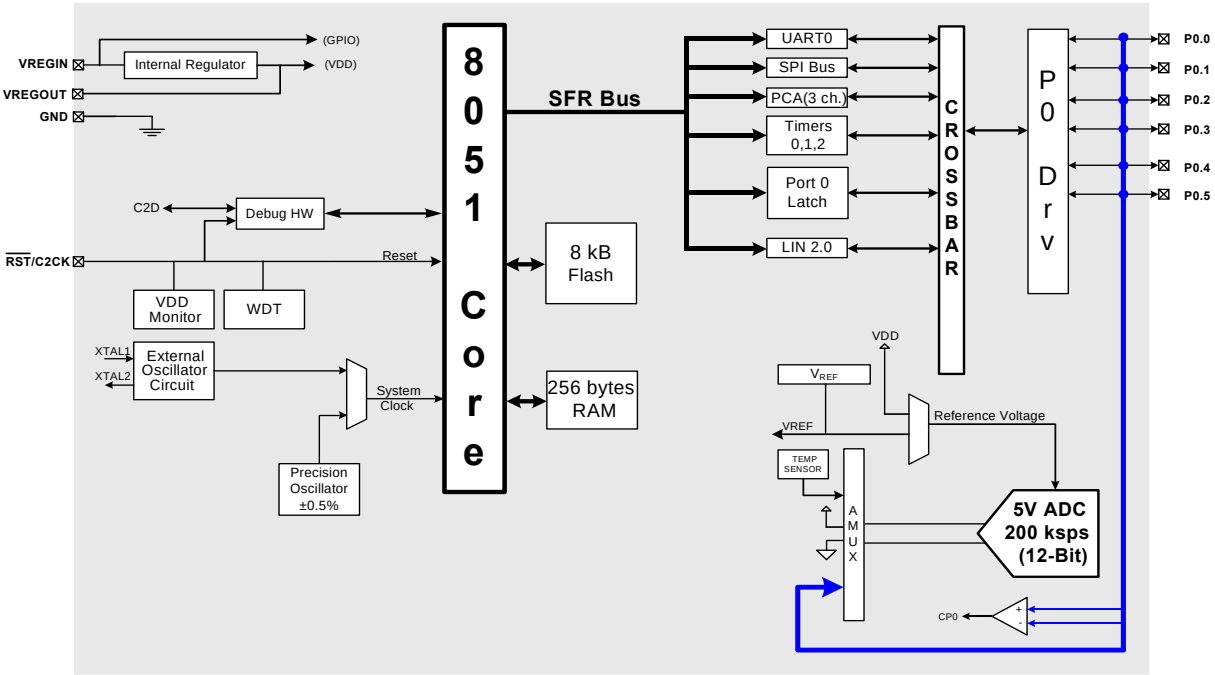
- Up to six digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Number

- C8051F520A-IM, 10-Pin QFN (RoHS-compliant), 3x3 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 6 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 8 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

Digital Peripherals

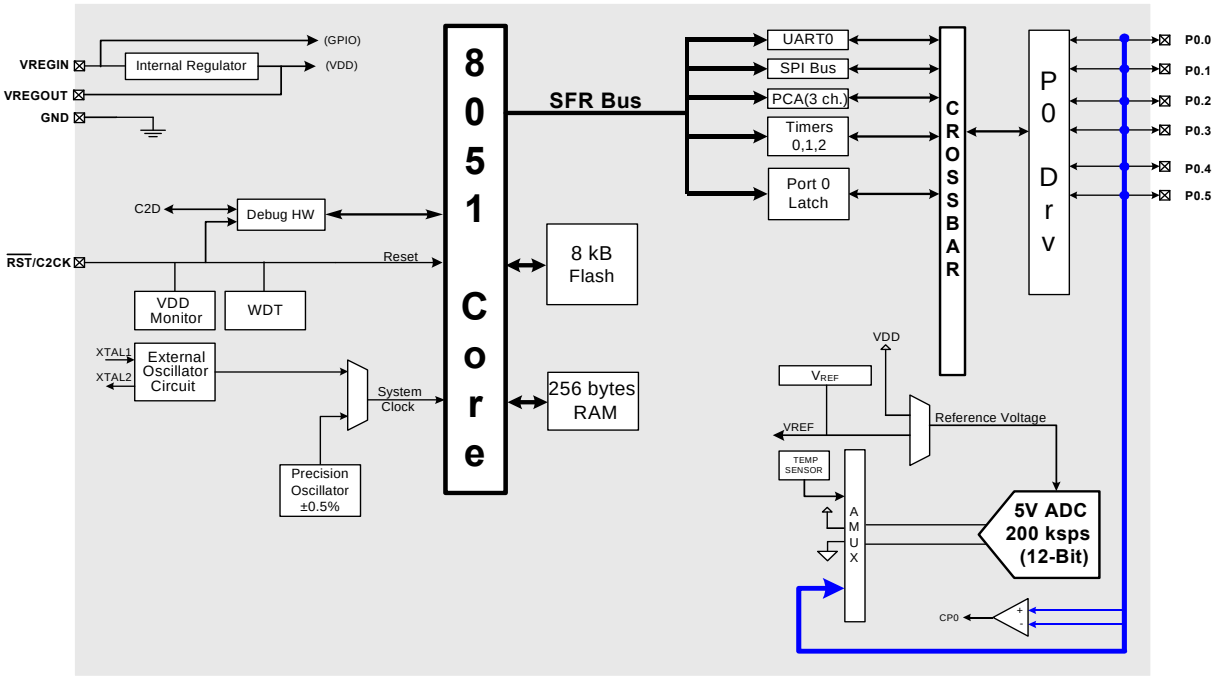
- Up to six digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Number

- C8051F521A-IM, 10-Pin QFN (RoHS-compliant), 3x3 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 6 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector
On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

LIN 2.1

- Master or slave operation using dedicated hardware (not software implementation with UART)

Digital Peripherals

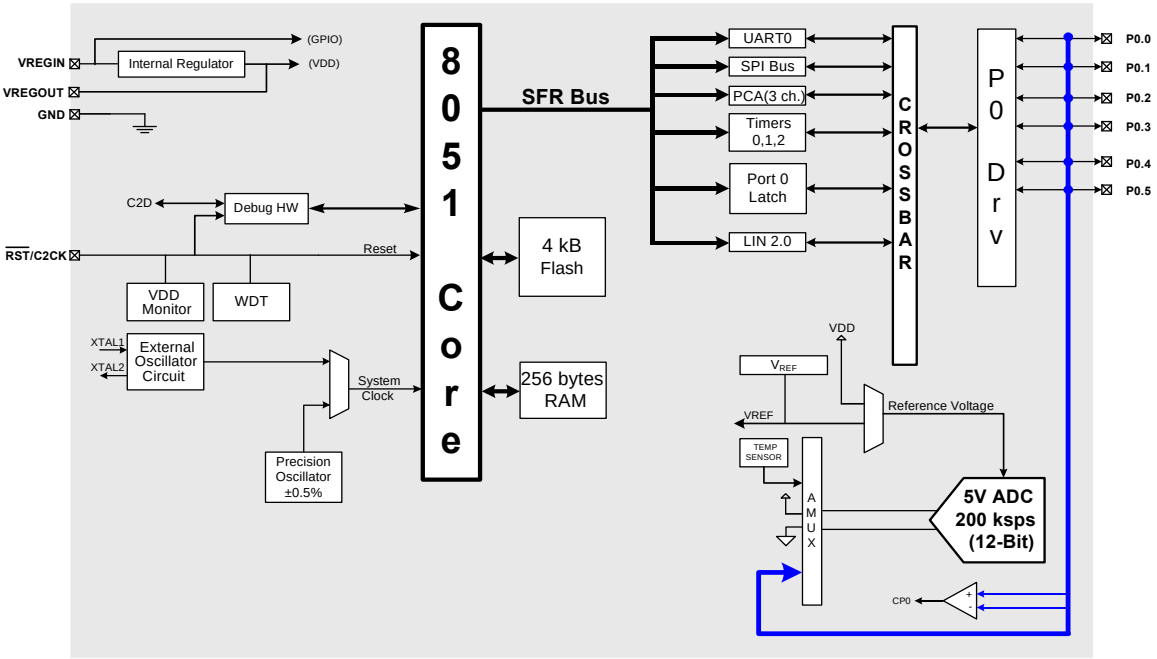
- Up to six digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Number

- C8051F523A-IM, 10-Pin QFN (RoHS-compliant), 3x3 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 6 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

Digital Peripherals

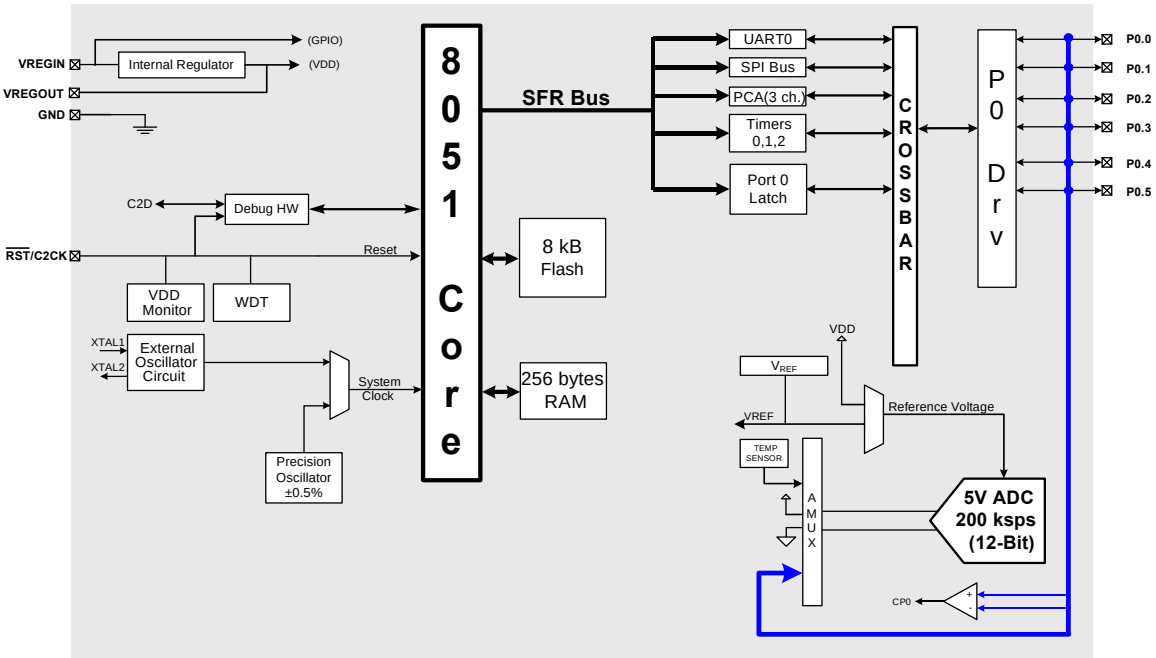
- Up to six digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Number

- C8051F524A-IM, 10-Pin QFN (RoHS-compliant), 3x3 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 6 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector
On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 2 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

LIN 2.1

- Master or slave operation using dedicated hardware (not software implementation with UART)

Digital Peripherals

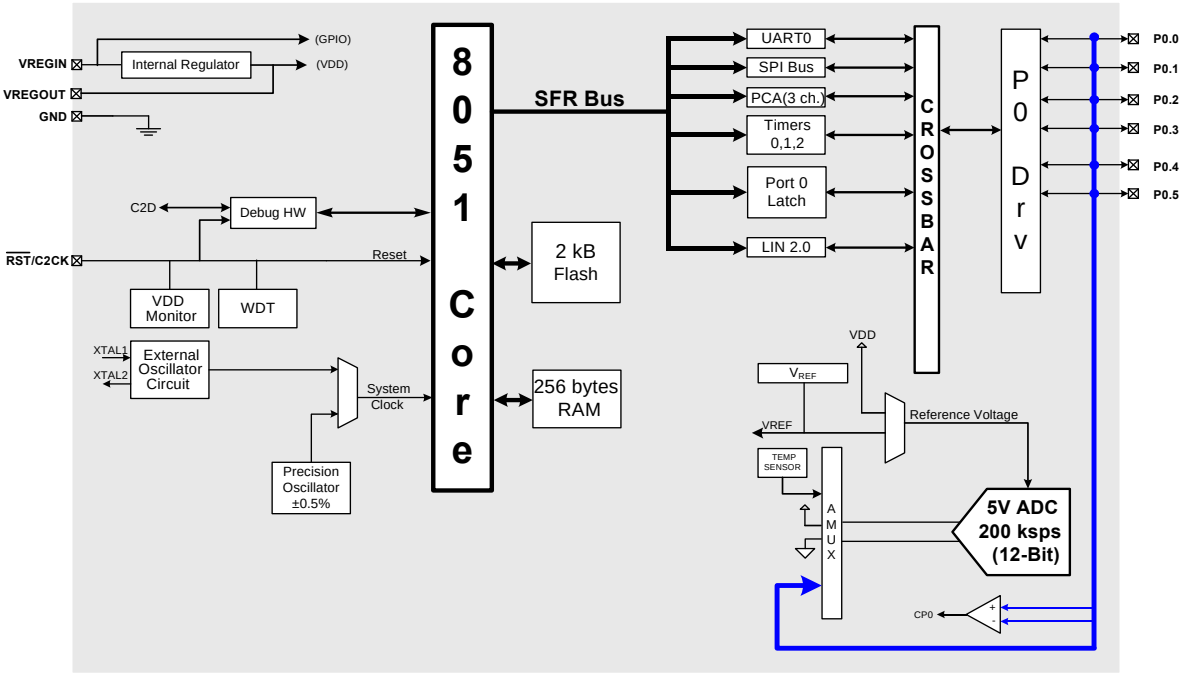
- Up to six digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Number

- C8051F526A-IM, 10-Pin QFN (RoHS-compliant), 3x3 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 6 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 2 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

Digital Peripherals

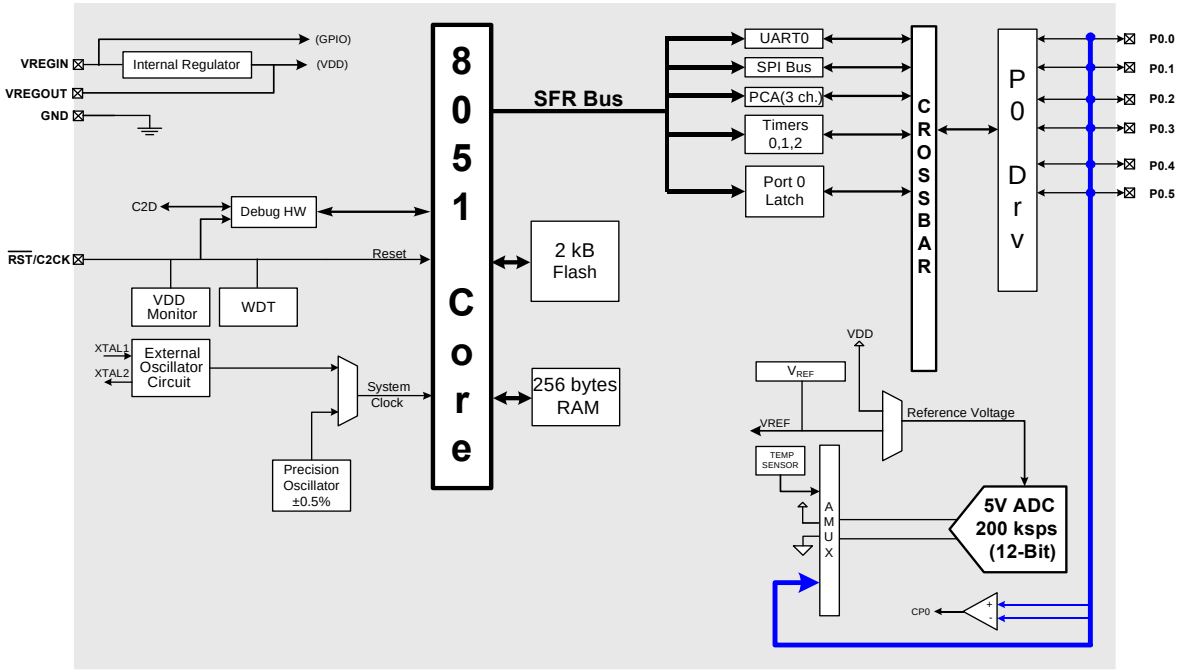
- Up to six digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Number

- C8051F527A-IM, 10-Pin QFN (RoHS-compliant), 3x3 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 16 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector
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Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 8 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

LIN 2.1

- Master or slave operation using dedicated hardware (not software implementation with UART)

Digital Peripherals

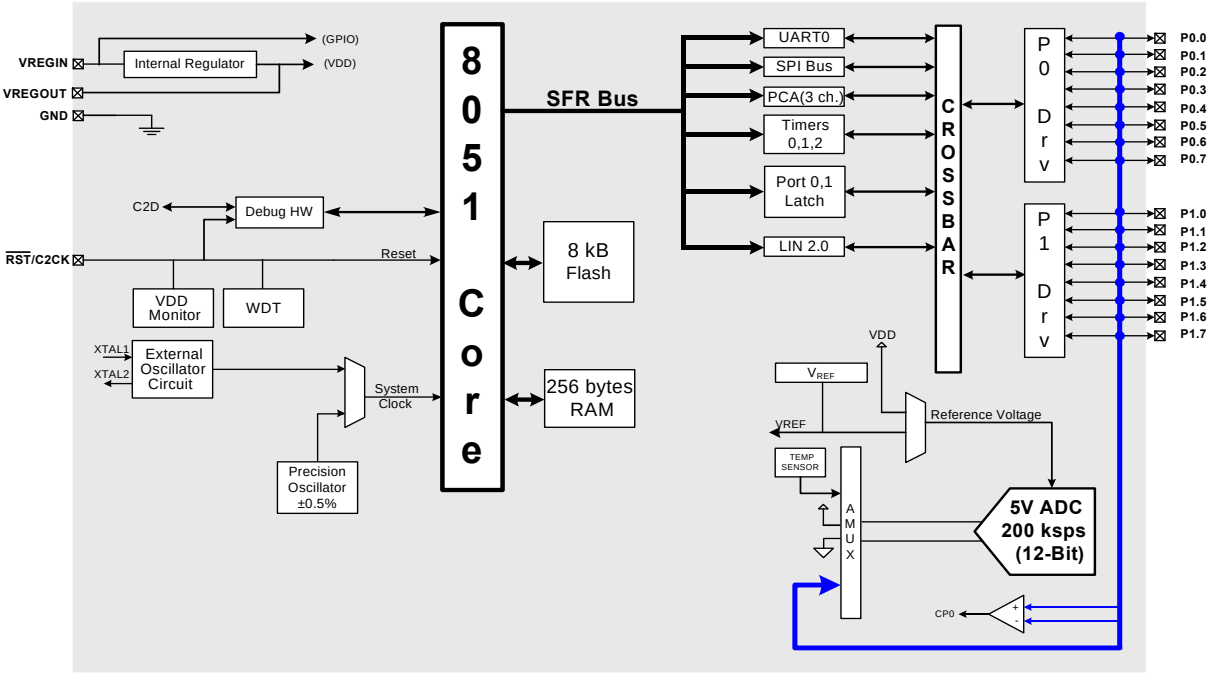
- Up to 16 digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Numbers

- C8051F530A-IT, 20-Pin TSSOP (RoHS-compliant), 6x6 mm^2
- C8051F530A-IM, 20-Pin QFN (RoHS-compliant), 4x4 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 16 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
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- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 8 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

Digital Peripherals

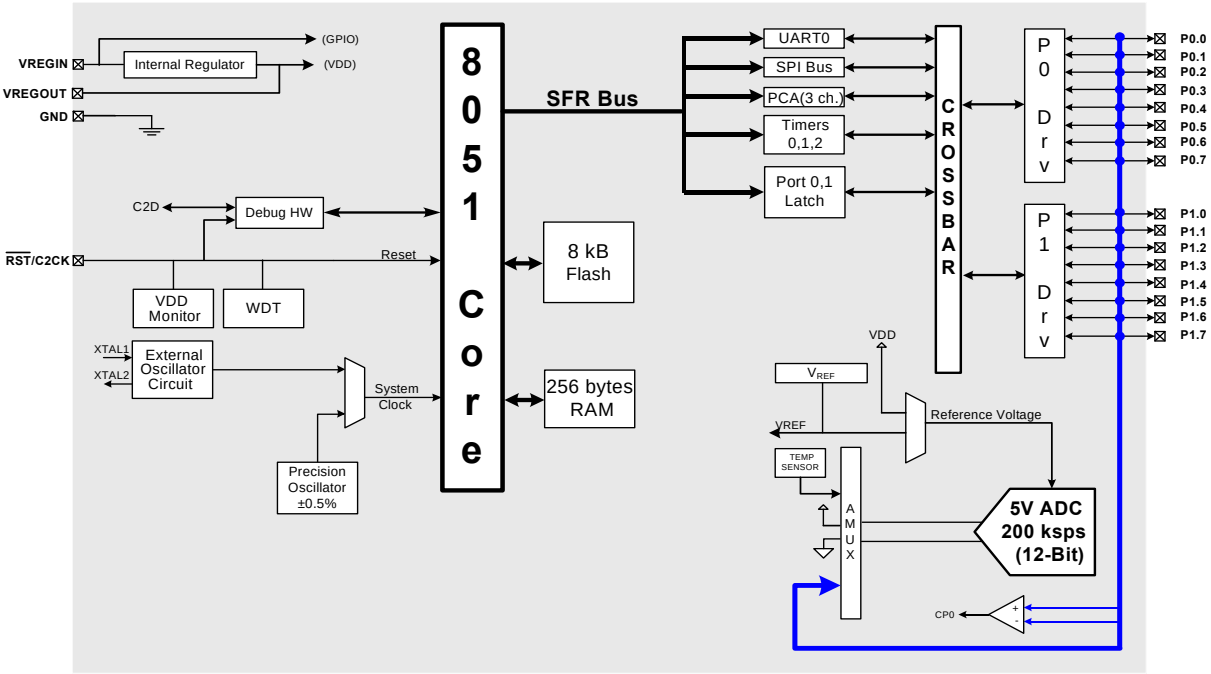
- Up to 16 digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Numbers

- C8051F531A-IT, 20-Pin TSSOP (RoHS-compliant), 6x6 mm^2
- C8051F531A-IM, 20-Pin QFN (RoHS-compliant), 4x4 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 16 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector
On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

LIN 2.1

- Master or slave operation using dedicated hardware (not software implementation with UART)

Digital Peripherals

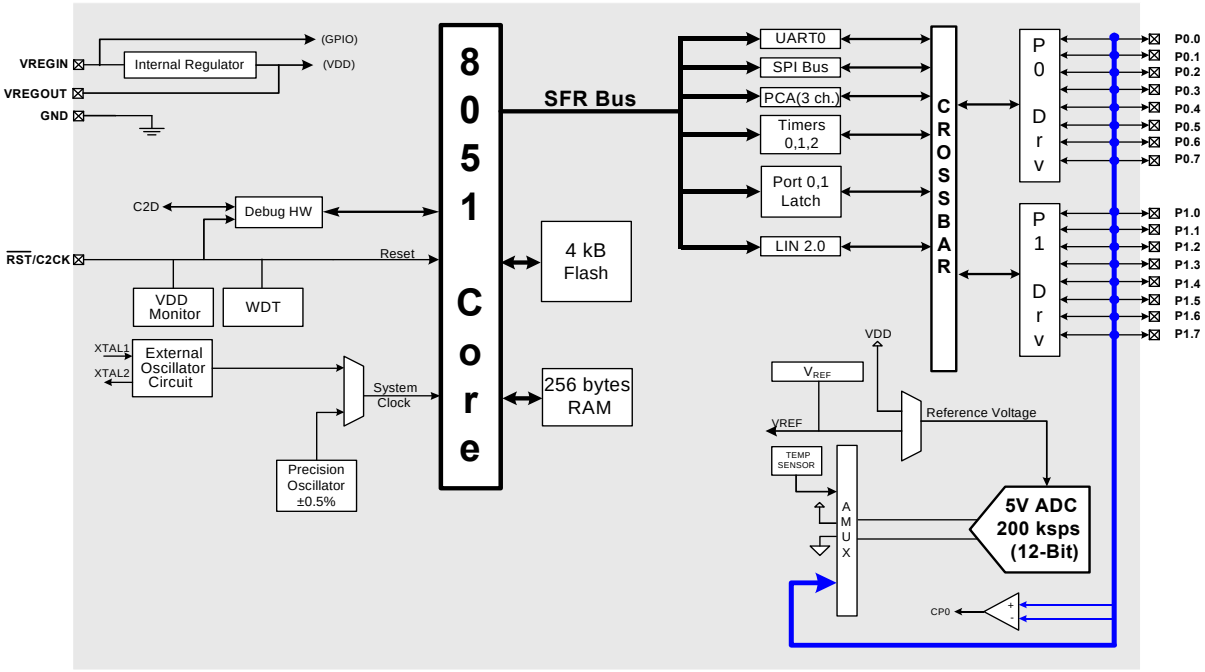
- Up to 16 digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Numbers

- C8051F533A-IT, 20-Pin TSSOP (RoHS-compliant), 6x6 mm^2
- C8051F533A-IM, 20-Pin QFN (RoHS-compliant), 4x4 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 16 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

Digital Peripherals

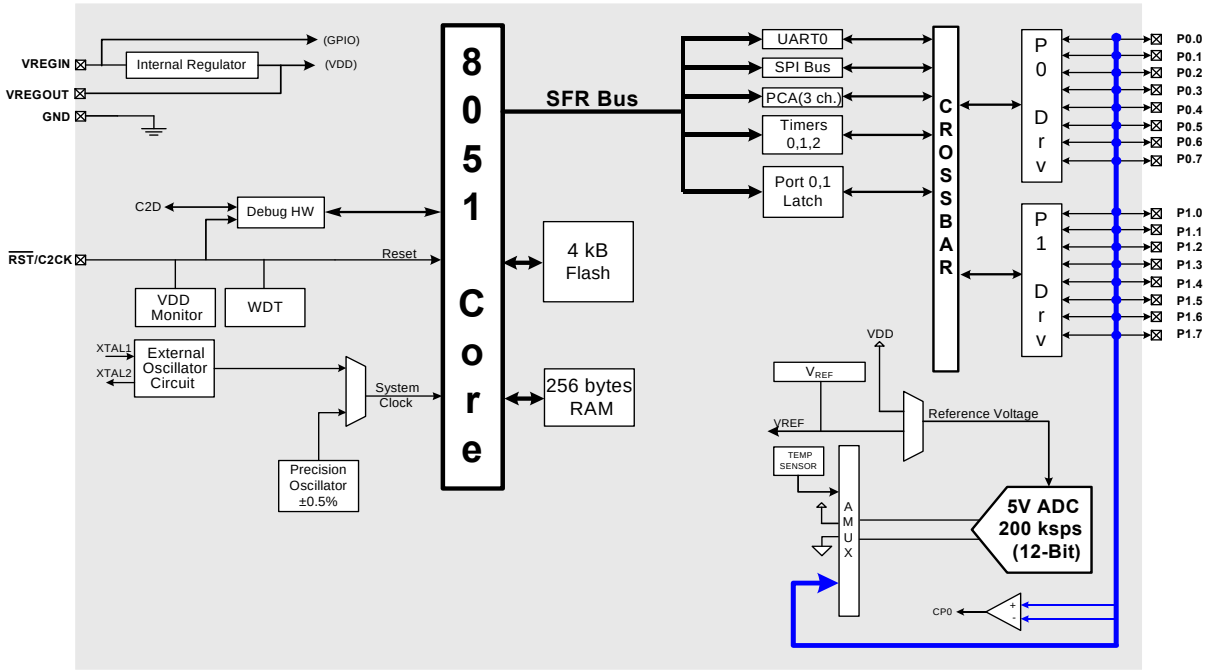
- Up to 16 digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Numbers

- C8051F534A-IT, 20-Pin TSSOP (RoHS-compliant), 6x6 mm^2
- C8051F534A-IM, 20-Pin QFN (RoHS-compliant), 4x4 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 16 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
V_{DD} Monitor/Brown-out Detector
On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watch-points
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +125 °C

Supply Voltage: 1.8 to 5.25 V

- Typical operating current:7 mA at 25 MHz at 5.0 V
- Multiple power saving sleep and shutdown modes

Development Kit: C8051F530ADK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 2 kB Flash; in-system programmable; flexible security features
- 256 bytes data RAM

LIN 2.1

- Master or slave operation using dedicated hardware (not software implementation with UART)

Digital Peripherals

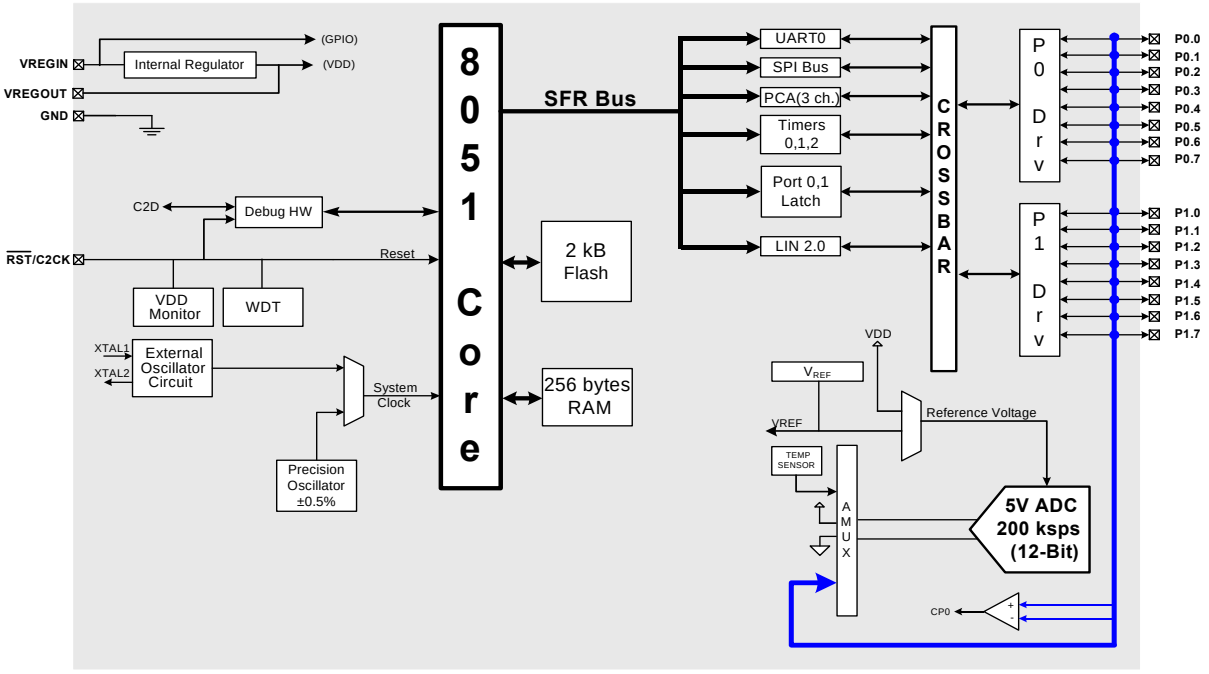
- Up to 16 digital I/O; all are 5 V push-pull
- Programmable 16-bit counter array with three capture/compare modules
- Three general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- High-precision internal programmable oscillator up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Ordering Part Numbers

- C8051F536A-IT, 20-Pin TSSOP (RoHS-compliant), 6x6 mm^2
- C8051F536A-IM, 20-Pin QFN (RoHS-compliant), 4x4 mm^2



Analog Peripherals

12-Bit ADC, 5 V input signal; up to 16 external inputs

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 200 ksps
- Data-dependent windowed interrupt generator
- Programmable gain maximizes input signal span

Built-in Temperature Sensor (±3 °C)
Programmable Comparator
Precision Internal Voltage Reference
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- 256 bytes data RAM

Digital Peripherals

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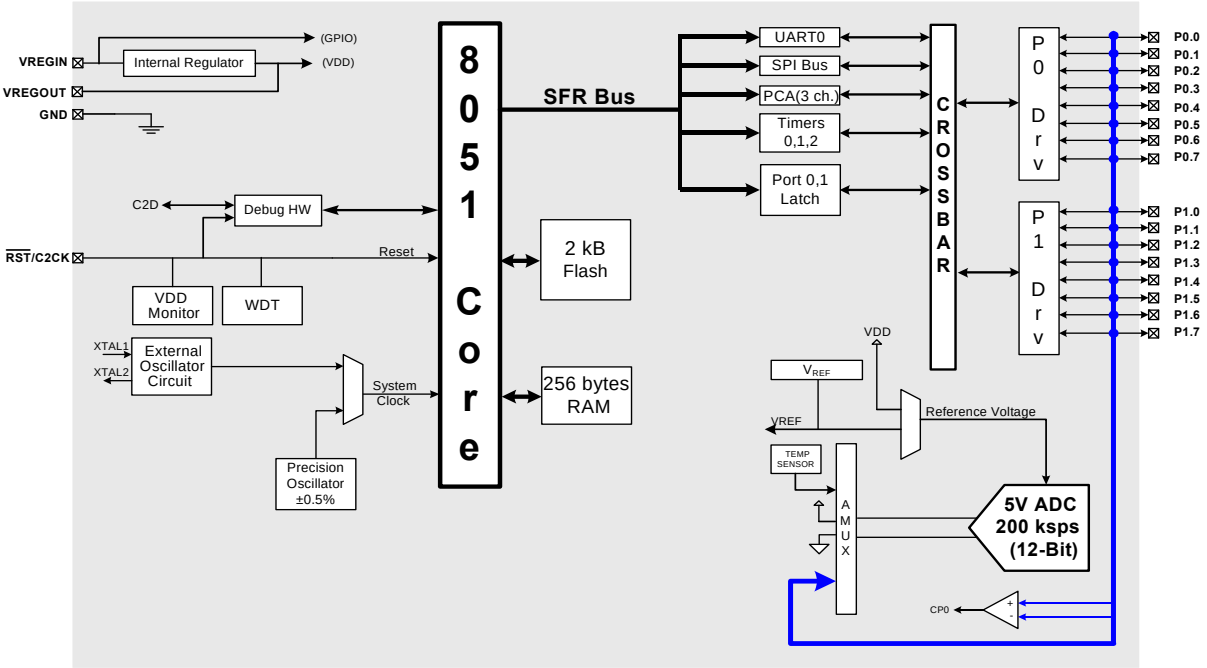
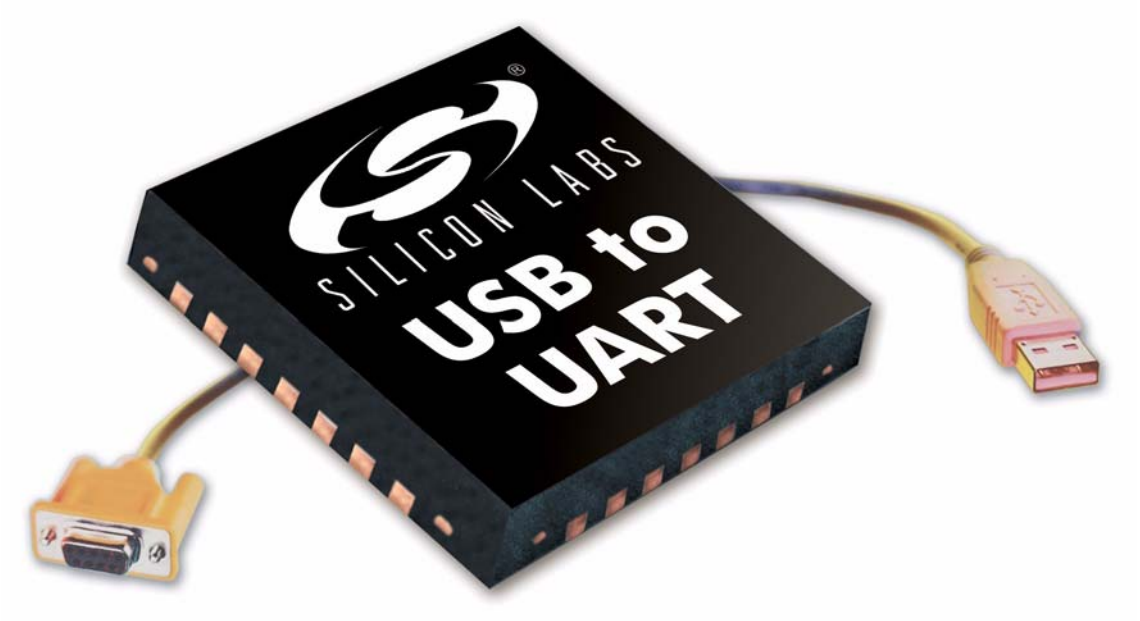




Interface

Description

- The CP2102 is a highly-integrated USB-to-UART bridge controller providing a simple solution for updating RS-232 designs to USB using a minimum of components and PCB space. Offering Baud rates aliasing and supporting additional data formats, the CP2102 is a pin-to-pin upgrade from CP2101. The CP2102 also includes a USB 2.0 full-speed function controller, USB transceiver, oscillator, EEPROM and asynchronous serial data bus (UART) with full modem control signals in a compact 5 x 5 mm QFN-28. No other external USB components are required.

Example Applications

- Upgrade of RS-232 legacy devices to USB
- Cellular phone USB interface cable
- PDA USB interface cable
- USB to RS-232 serial adapter

Virtual Com Port Drivers

- Works with existing COM port applications
- Royalty-free distribution license
- Windows 98SE/2000/XP
- MAC OS-9
- MAC OS-X
- Linux 2.40

Temperature Range: –40 to +85 °C

Features

USB Function Controller and Transceiver

- USB specification 2.0 compliant; full-speed (12 Mbps)
- Integrated 1024-byte EEPROM for custom Baud rates, vendor ID, etc.
- EEPROM security lock function
- User programmable custom Baud rates
- Integrated transceiver; no external resistors required
- Integrated clock; no external crystal required
- USB suspend states supported via SUSPEND pins

Asynchronous Serial Data Bus (UART)

- All handshaking and modem interface signals
- Data formats supported: 8, 7, 6, 5-bit; 1, 1.5, 2 Stop bits
- Parity: Odd, Even, Mark, Space, No Parity
- Baud rates: 300 bps to 1 Mbps
- 576-byte receive buffer; 640-byte transmit buffer
- Hardware and X-On/X-Off handshaking
- Event character support

Power-On Reset Circuit

Supply Voltage

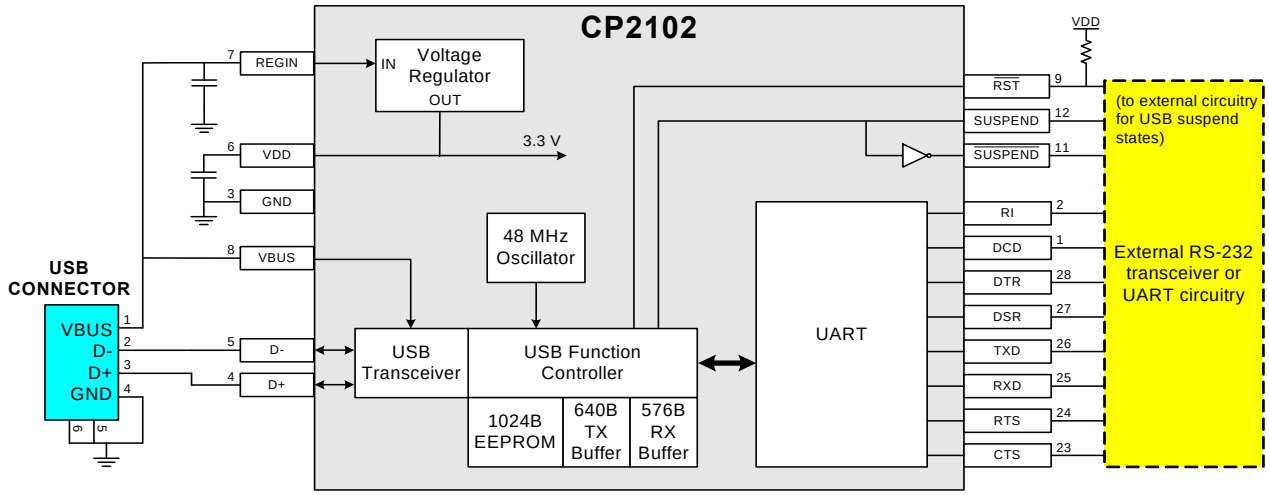
- Self-powered: 3.0–3.6 V
- USB bus powered: 4.0–5.25 V

Package

- 28-pin QFN (lead-free package)

Ordering Part Number

- CP2102-GM



Note: The CP2102 is both pin-compatible and software-compatible with the CP2101 and features enhanced functionality. Silicon Laboratories recommends the use of the CP2102 for new designs.

Description

The CP2103 is a highly-integrated USB-to-UART bridge controller providing a simple solution for updating RS-232 or RS-485 designs to USB using a minimum of components and PCB space. The CP2103 is a functional upgrade to CP2101/2 with new features such as configurable I/O levels (3.3 to 1.8 V) and four general purpose I/O signals for system status and control.

It includes the standard USB 2.0 full-speed function controller, USB transceiver, oscillator, EEPROM and asynchronous serial data bus (UART) with full modem control signals in a compact 5 x 5 mm MLP-28 package. No other external USB components are required.

Example Applications

- Upgrade of RS-232 legacy devices to USB
- Upgrade of RS-485 legacy devices to USB
- USB to RS-232 serial adapter

Virtual Com Port Drivers

- Works with existing COM port applications
- Royalty-free distribution license
- Windows 98SE/2000/XP
- MAC OS-9
- MAC OS-X
- Linux 2.40

USBXpress™ Direct Driver Support

Temperature Range: –40 to +85 °C

Features

USB Function Controller and Transceiver

- USB specification 2.0 compliant; full-speed (12 Mbps)
- Integrated 1024-byte EEPROM for custom Baud rates, vendor ID, etc.
- Integrated transceiver; no external resistors required
- Integrated clock; no external crystal required
- USB suspend states supported via SUSPEND pins

Asynchronous Serial Data Bus (UART)

- All handshaking and modem interface signals
- Data formats supported: 8, 7, 6, 5-bit; 1, 1.5, 2 Stop bits
- Parity: Odd, Even, Mark, Space, No Parity
- Baud rates: 300 bps to 1 Mbps
- 576-byte receive buffer; 640-byte transmit buffer
- Event character support; line break event support
- Four GPIO signals for status and control
- Configurable I/O (3.3 to 1.8 V V_{OH}) using V_{IO} pin
- RS-485 mode with bus transceiver control

Power-On Reset Circuit

Supply Voltage

- Self-powered: 3.0–3.6 V

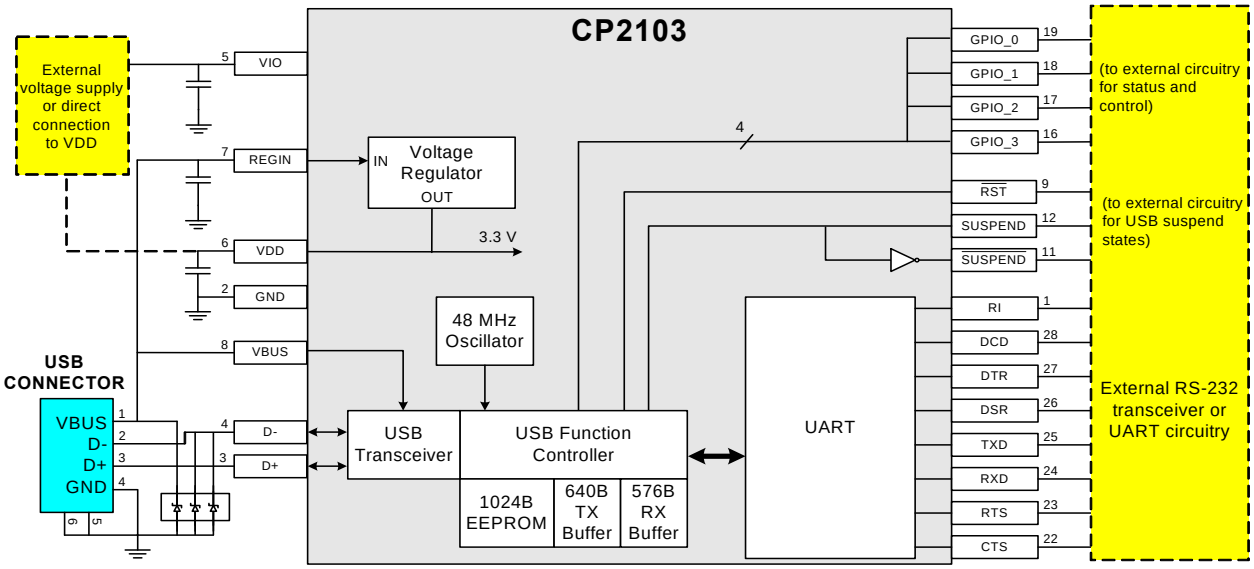
USB bus powered: 4.0–5.25 V

Package

- 28-pin QFN (lead-free package)

Ordering Part Numbers

- CP2103-GM



Description

The CP2200/1 is a single-chip Ethernet controller containing an integrated IEEE 802.3 Ethernet Media Access Controller (MAC), a 10 BASE-T Physical Layer (PHY), and 8 kB of Non-Volatile Flash Memory available in a 28-pin QFN (5x5 mm) or 48-pin TQFP package.

The CP2200/1 can add Ethernet connectivity to any microcontroller or host processor with 11 or more Port I/O pins. The 8-bit parallel interface bus supports both Intel and Motorola bus formats in multiplexed and non-multiplexed mode. The 28-pin QFN device supports multiplexed addressing only. Mode select pins are used to configure the bus interface mode.

The on-chip Flash memory may be used to store user constants, web server content, or can be used as general purpose non-volatile memory. The Flash is factory preprogrammed with a unique 48-bit MAC address stored in the last six memory locations. Having a unique MAC address stored in the CP2200/1 often removes the necessary serialization step from the product manufacturing process of most embedded systems.

Firmware Features

Software Support

- Royalty-free TCP/IP stack with device drivers
- TCP/IP Configuration Wizard
- Hardware diagnostic software and example code

Example Applications

- Remote sensing and monitoring
- Inventory management
- VoIP phone adapters
- Point-of-sale devices
- Network clocks
- Embedded web server
- Remote Ethernet-to-UART bridge

Temperature Range: –40 to +85 ºC

Hardware Features

Ethernet Controller

- Integrated IEEE 802.3 MAC and 10 BASE-T PHY
- Fully compatible with 100/1000 BASE-T networks
- Full/Half duplex with auto-negotiation
- Automatic polarity detection and correction
- Automatic retransmission on collision
- Automatic padding and CRC generation
- Supports broadcast and multi-cast MAC addressing

Parallel Host Interface (30 Mbps Transfer Rate)

- 8-bit multiplexed or non-multiplexed mode
- Only 11 I/O pins required in multiplexed mode
- Intel or Motorola Bus Format
- Interrupt on received packets and Wake-on-LAN

8 kB Flash Memory

- 8192 bytes of non-volatile user data storage
- Factory pre-programmed unique 48-bit MAC address
- No external EEPROM required

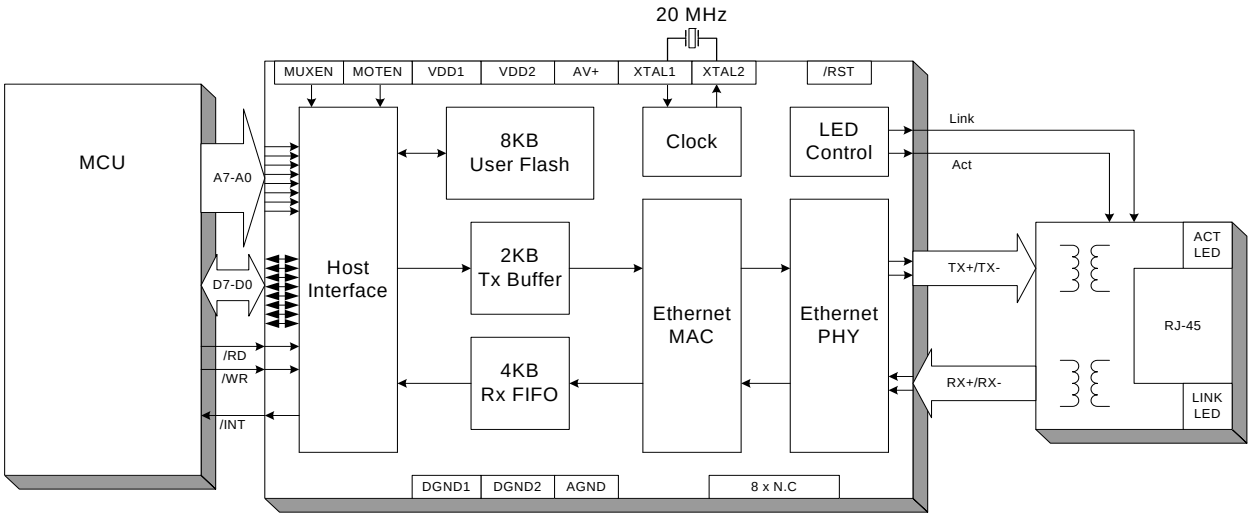
Other Features

- LED output drivers (Link/Activity)
- Dedicated 2 kB RAM transmit buffer and 4 kB RAM receive FIFO buffer
- Power-on Reset
- 5 V tolerant I/O

Supply Voltage: 3.1 to 3.6 V

Package Options

- Lead free 48-pin TQFP (9 x 9 mm footprint)
- Lead free 28-pin QFN (5 x 5 mm footprint)



Low-Voltage/Low-Power MCUs

Supply Voltage: 0.9 to 3.6 V

- One-cell mode supports 0.9–1.8 V operation
- Two-cell mode supports 1.8–3.6 V operation
- Built-in dc-dc converter with 1.8 –3.3 V output (65 mW max) for use in one-cell mode; can supply external devices
- Typical sleep mode current < 0.1 µA; retains state and RAM-contents over full supply range; fast wakeup
- 2 built-in brown-out detectors cover sleep and active modes

10-Bit Analog to Digital Converter

- Up to 300 ksps
- Up to 23 external inputs
- External pin or internal VREF (no external capacitor required)
- Built-in temperature sensor
- External conversion start input option
- Autonomous Burst Mode with 16-bit automatic averaging accumulator

Two Comparators

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)
- Up to 23 Capacitive Touch Sense inputs

Memory

- 4352 bytes internal data RAM (256 + 4K)
- 32 kB bytes Flash; In-system programmable in 1024-byte sectors; Full read/write/erase functionality over the entire supply range
- External memory interface (multiplexed address/data)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)

High-Speed 8051 µC Core

- Pipe-lined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- 25 MIPS peak throughput with 25 MHz clock
- Expanded interrupt handler

Digital Peripherals

- 24 port I/O; All 5 V tolerant with programmable drive strength
- Hardware enhanced UART, SPI and SMBus™ serial ports available concurrently
- Low power 32-bit smaRTClock (0.5 uA) operates down to 0.9V
- Four general purpose 16-bit counter/timers
- 16-bit programmable counter array (PCA) with six capture/compare modules and watchdog timer:
  - 8, 9, 10, 11, or 16-bit PWM
  - Rising/falling edge capture
  - Frequency output
  - Software timer

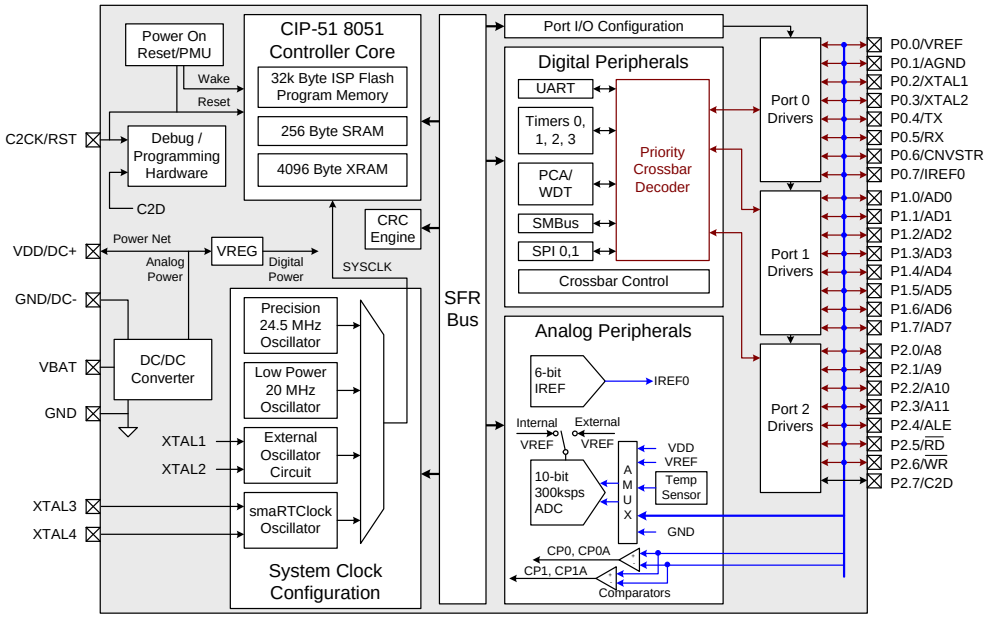
Clock Sources

- Precision internal oscillators: 24.5 MHz with ±2% accuracy supports UART operation; spread-spectrum mode for reduced EMI
- Low power internal oscillator: 20 MHz
- External oscillator: Crystal, RC, C, CMOS clock
- smaRTClock oscillator: 32.768 kHz crystal or self-oscillate
- Can switch between clock sources on-the-fly; useful in power saving modes

Ultra-Small Package Options

- 32-pin QFN (5x5 mm)
- 32-pin LQFP (7x7 mm)

Temperature Range: –40 to +85 °C



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10-Bit Analog to Digital Converter

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Ultra-Small Package

- 24-pin QFN (4x4 mm)

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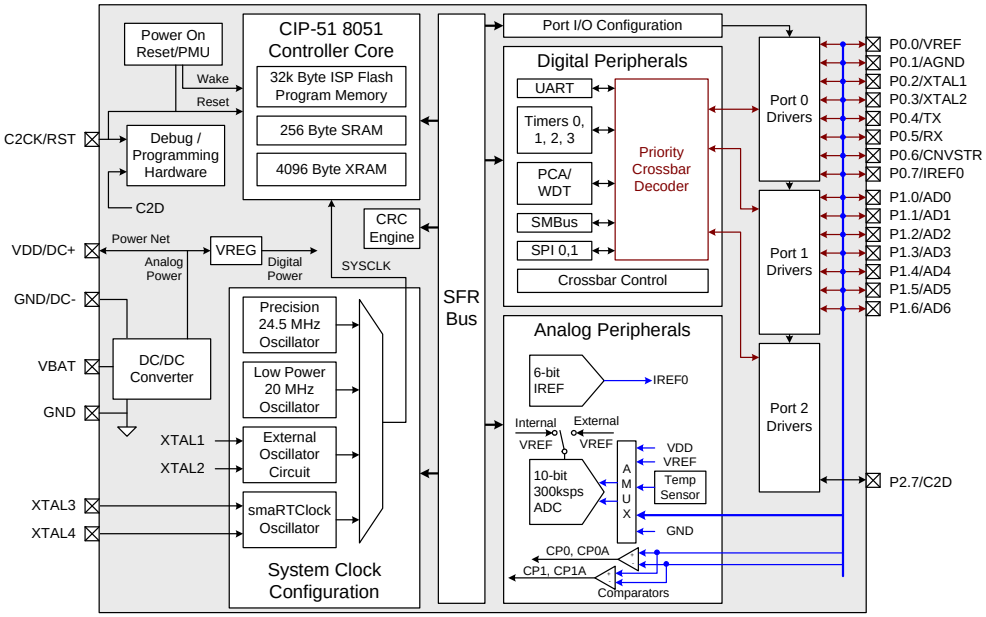

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Memory

- 4352 bytes internal data RAM (256 + 4K)
- 64 kB bytes Flash; In-system programmable in 1024-byte sectors; Full read/write/erase functionality over the entire supply range
- External memory interface (multiplexed address/data)

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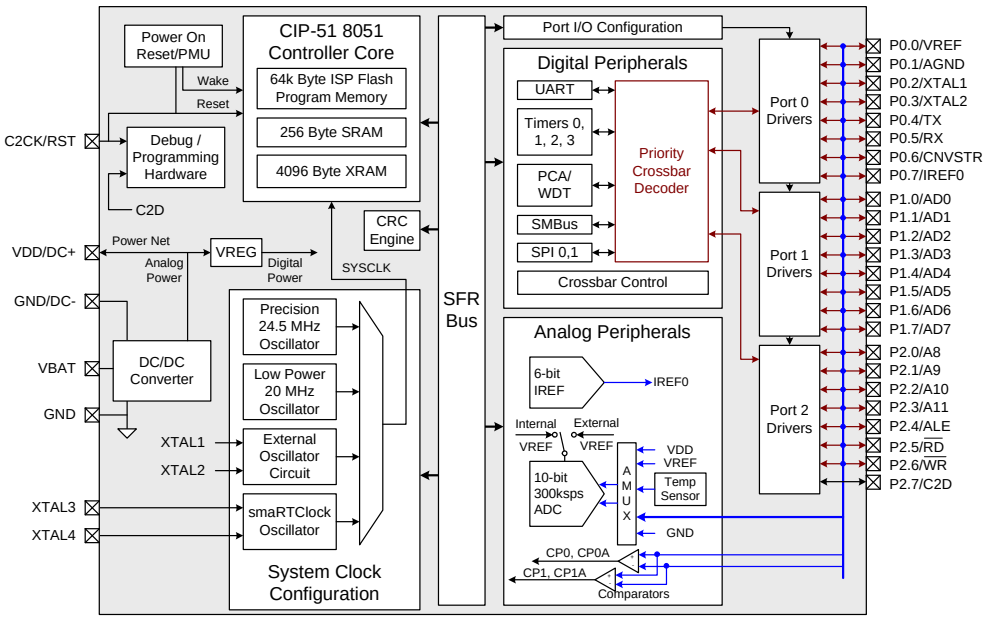

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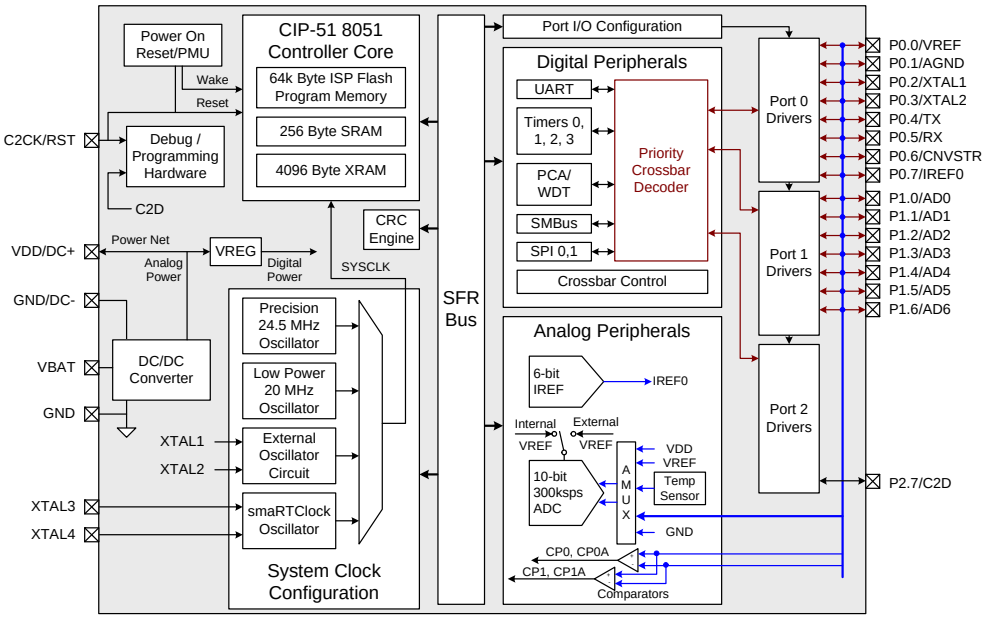

OTP EPROM-Based MCUs

Analog Peripherals

10-Bit Analog to Digital Converter

- Up to 500 ksps
- Up to 8 external inputs
- V_{REF} from external pin, V_{DD}, or internal regulator
- Built-in temperature sensor
- External conversion start input option

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 256 bytes internal data RAM
- 8 kB one time programmable code memory

On-Chip Debug

- C8051F300 can be used as in-system code development platform; complete development kit available
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipe-lined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
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Digital Peripherals

- 8 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART and SMBus™ serial ports
- Three general purpose 16-bit counter/timers
- 16-Bit programmable counter array (PCA) with three capture/compare modules
  - 8 or 16-bit PWM
  - Rising / falling edge capture
  - Frequency output
  - Software timer

Clock Sources

- Internal oscillator: 24.5 MHz with ±2% accuracy supports UART operation
- External oscillator: CMOS clock or external capacitor
- Can switch between clock sources on-the-fly; useful in power saving modes

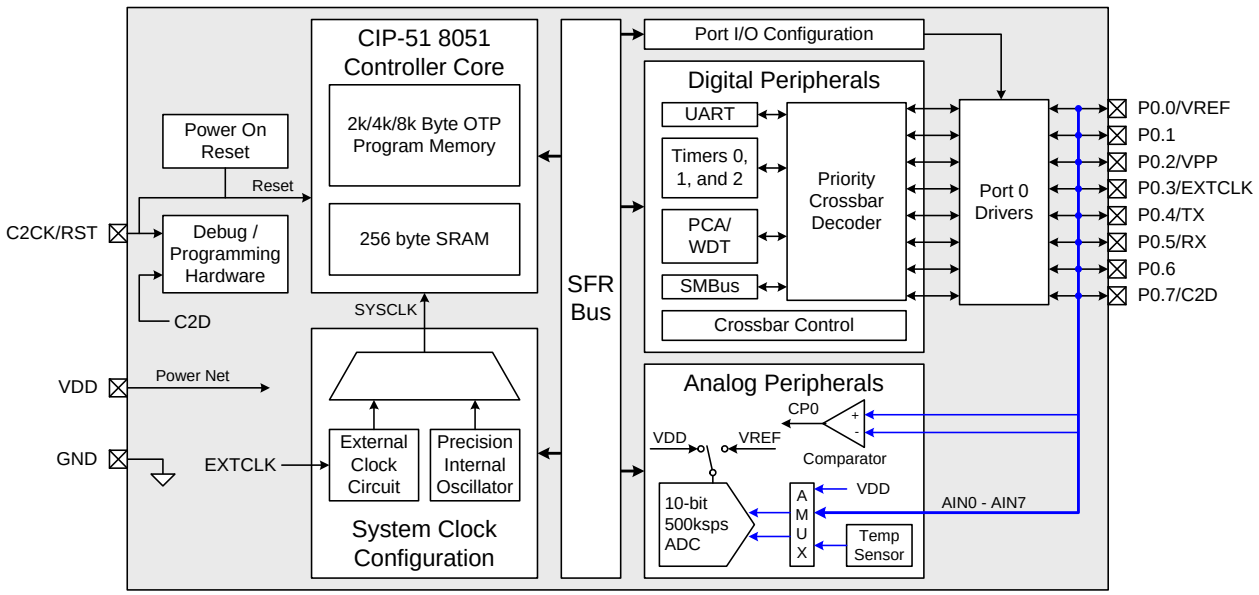
Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- Typical operating current: TBD mA @ TBD MHz:
  TBD µA @ TBD kHz
- Typical stop mode current (regulator off): TBD µA

Built-in brown-out detector

Package

- 11-pin QFN or 14-pin SOIC
- QFN size = 3x3 mm



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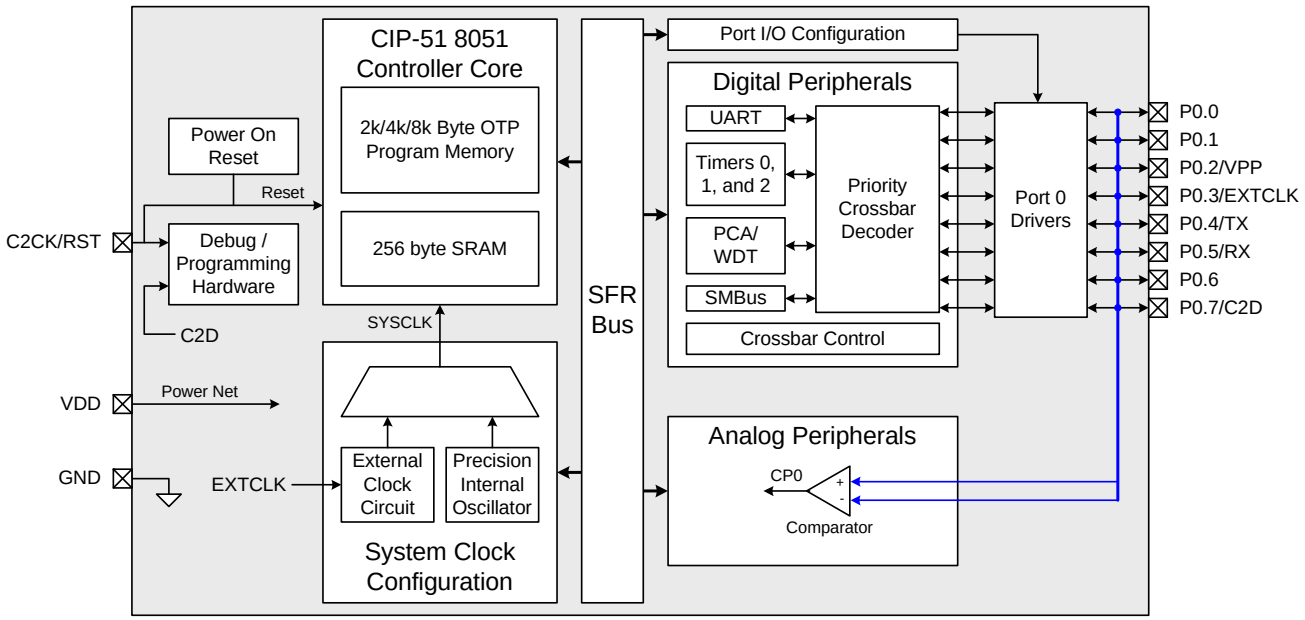


Analog Peripherals

10-Bit Analog to Digital Converter

- Up to 500 ksps
- Up to 8 external inputs
- V_{REF} from external pin, V_{DD}, or internal regulator
- Built-in temperature sensor
- External conversion start input option

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 256 bytes internal data RAM
- 4 kB one time programmable code memory

On-Chip Debug

- C8051F300 can be used as in-system code development platform; complete development kit available
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipe-lined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- 25 MIPS peak throughput with 25 MHz clock
- Expanded interrupt handler

Digital Peripherals

- 8 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART and SMBus™ serial ports
- Three general purpose 16-bit counter/timers
- 16-Bit programmable counter array (PCA) with three capture/compare modules
  - 8 or 16-bit PWM
  - Rising / falling edge capture
  - Frequency output
  - Software timer

Clock Sources

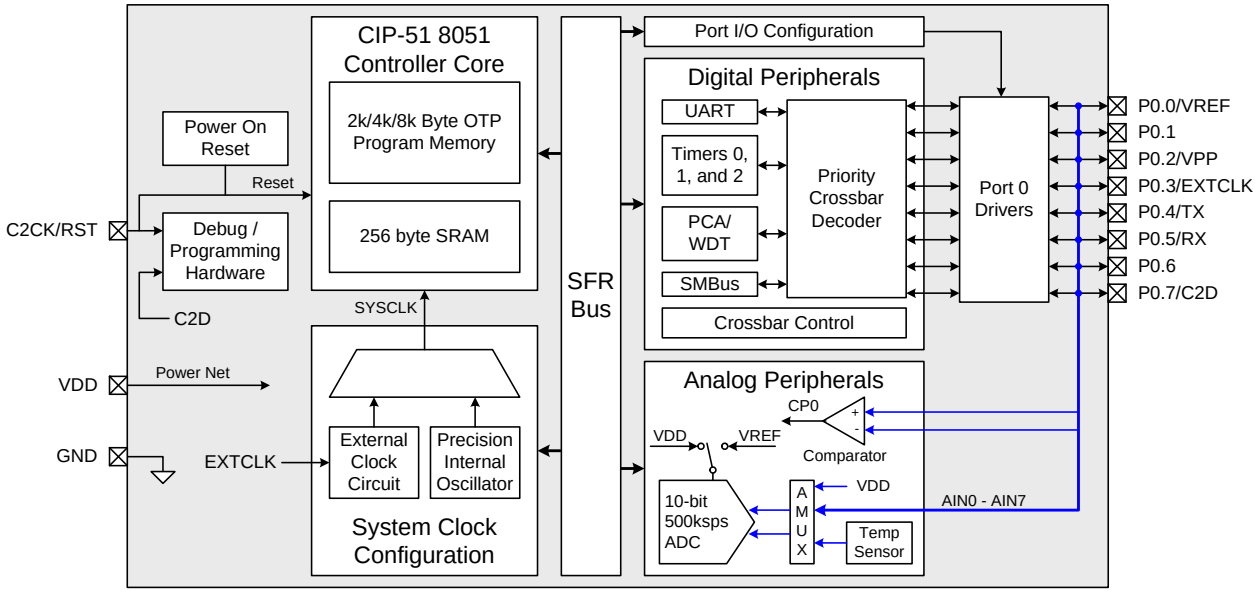
- Internal oscillator: 24.5 MHz with ±2% accuracy supports UART operation
- External oscillator: CMOS clock or external capacitor
- Can switch between clock sources on-the-fly; useful in power saving modes

Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- Typical operating current: TBD mA @ TBD MHz:
  TBD µA @ TBD kHz
- Typical stop mode current (regulator off): TBD µA
- Built-in brown-out detector

Package

- 11-pin QFN or 14-pin SOIC
- QFN size = 3x3 mm



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 256 bytes internal data RAM
- 4 kB one time programmable code memory

On-Chip Debug

- C8051F300 can be used as in-system code development platform; complete development kit available
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

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- 25 MIPS peak throughput with 25 MHz clock
- Expanded interrupt handler

Digital Peripherals

- 8 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART and SMBus™ serial ports
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  - Software timer

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Package

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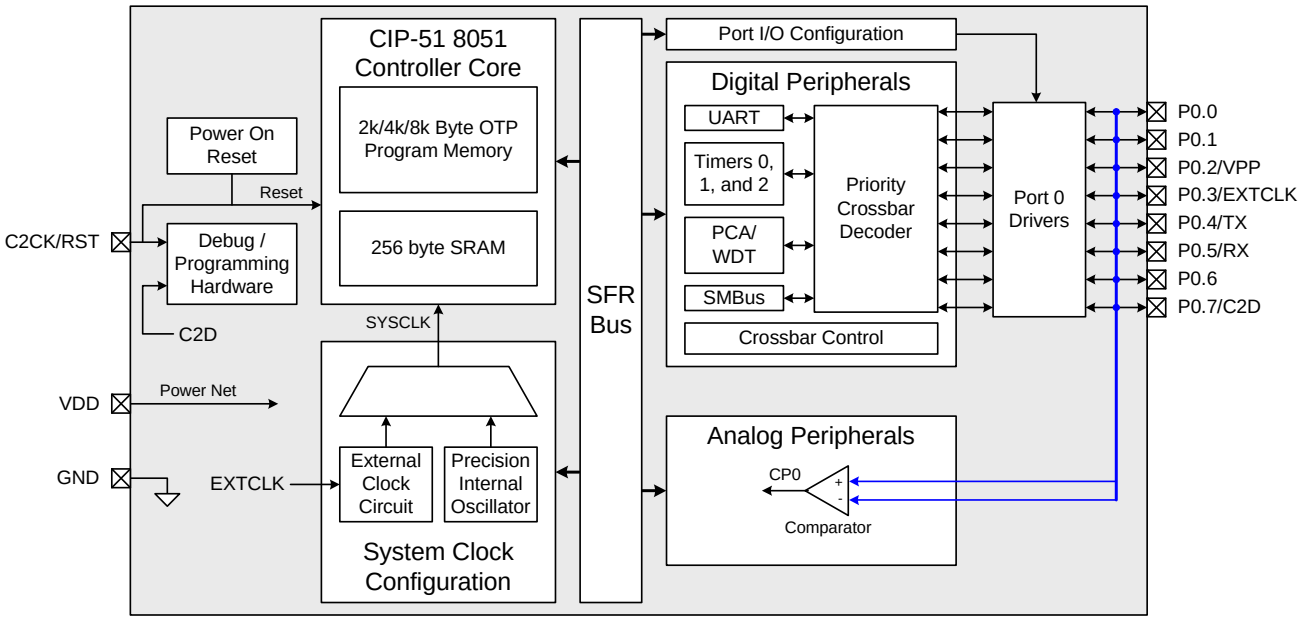


Analog Peripherals

10-Bit Analog to Digital Converter

- Up to 500 ksps
- Up to 8 external inputs
- V_{REF} from external pin, V_{DD}, or internal regulator
- Built-in temperature sensor
- External conversion start input option

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 256 bytes internal data RAM
- 2 kB one time programmable code memory

On-Chip Debug

- C8051F300 can be used as in-system code development platform; complete development kit available
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipe-lined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- 25 MIPS peak throughput with 25 MHz clock
- Expanded interrupt handler

Digital Peripherals

- 8 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART and SMBus™ serial ports
- Three general purpose 16-bit counter/timers
- 16-Bit programmable counter array (PCA) with three capture/compare modules
  - 8 or 16-bit PWM
  - Rising / falling edge capture
  - Frequency output
  - Software timer

Clock Sources

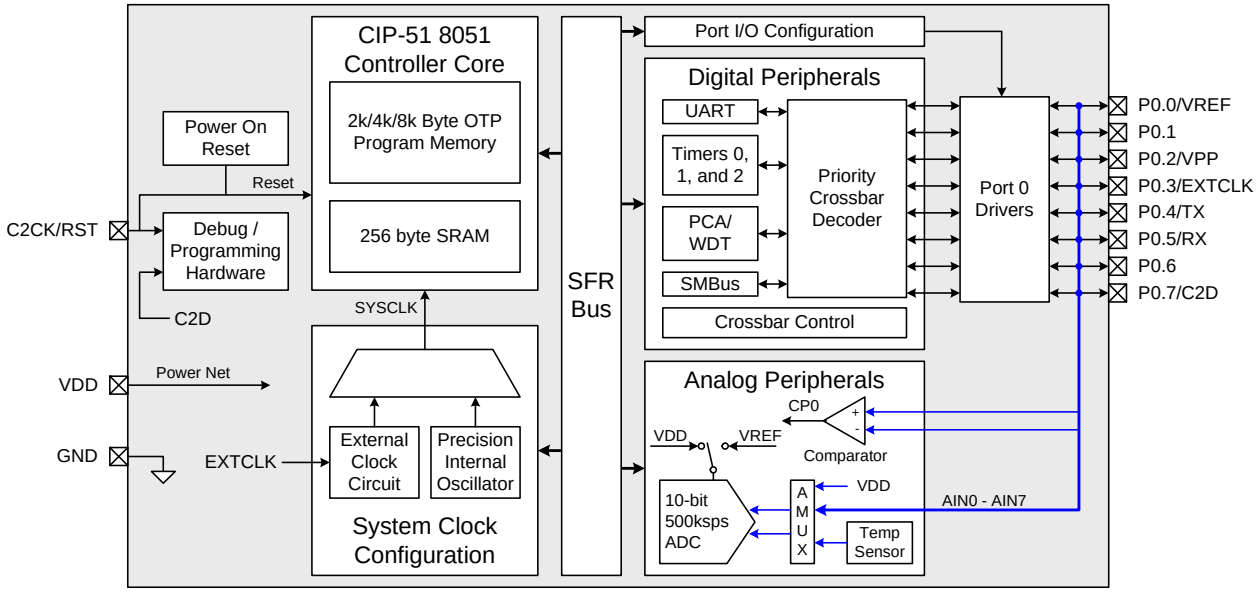
- Internal oscillator: 24.5 MHz with ±2% accuracy supports UART operation
- External oscillator: CMOS clock or external capacitor
- Can switch between clock sources on-the-fly; useful in power saving modes

Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- Typical operating current: TBD mA @ TBD MHz:
  TBD µA @ TBD kHz
- Typical stop mode current (regulator off): TBD µA
- Built-in brown-out detector

Package

- 11-pin QFN or 14-pin SOIC
- QFN size = 3x3 mm



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 256 bytes internal data RAM
- 2 kB one time programmable code memory

On-Chip Debug

- C8051F300 can be used as in-system code development platform; complete development kit available
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipe-lined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- 25 MIPS peak throughput with 25 MHz clock
- Expanded interrupt handler

Digital Peripherals

- 8 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART and SMBus™ serial ports
- Three general purpose 16-bit counter/timers
- 16-Bit programmable counter array (PCA) with three capture/compare modules
  - 8 or 16-bit PWM
  - Rising / falling edge capture
  - Frequency output
  - Software timer

Clock Sources

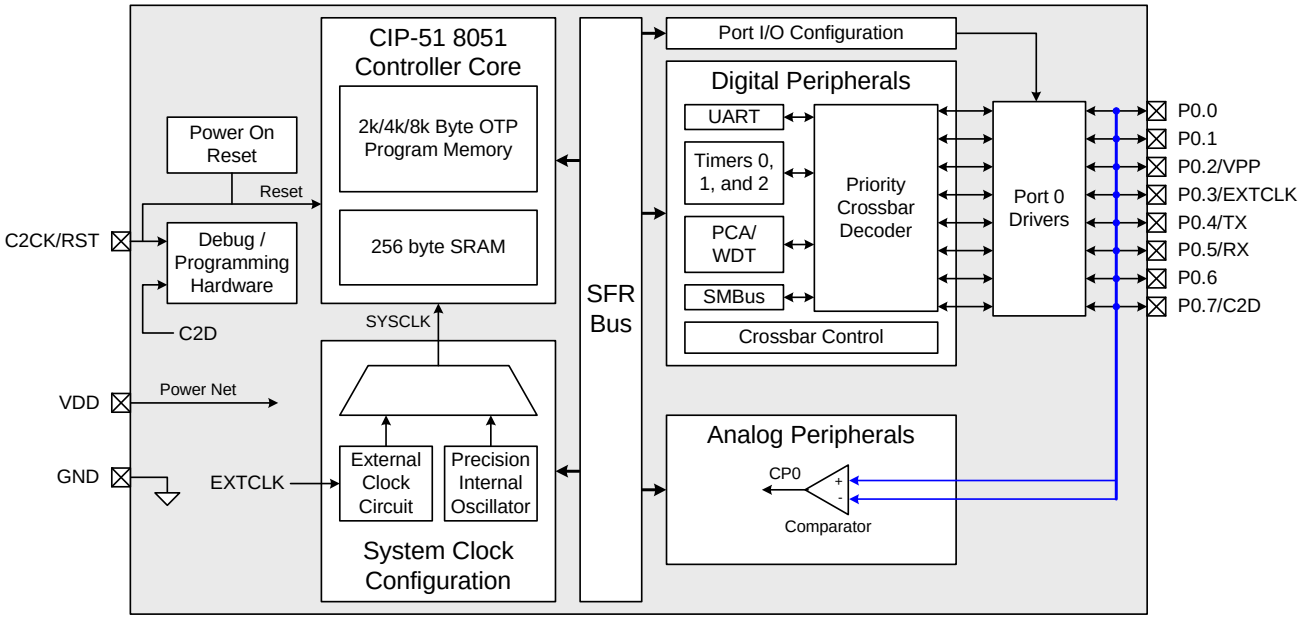
- Internal oscillator: 24.5 MHz with ±2% accuracy supports UART operation
- External oscillator: CMOS clock or external capacitor
- Can switch between clock sources on-the-fly; useful in power saving modes

Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- Typical operating current: TBD mA @ TBD MHz:
  TBD µA @ TBD kHz
- Typical stop mode current (regulator off): TBD µA
- Built-in brown-out detector

Package

- 11-pin QFN or 14-pin SOIC
- QFN size = 3x3 mm



Analog Peripherals

10-Bit Analog to Digital Converter (C8051T610/1/2/3/6 only)

- Up to 500 ksps
- 21 external inputs
- V_{REF} from external pin, V_{DD}, or internal regulator
- Built-in temperature sensor
- External conversion start input option

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 1280 bytes internal data RAM
- 16 kB byte-programmable EPROM code memory

On-Chip Debug

- C8051F310 can be used as in-system code development platform; complete development kit available
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug

Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- On-chip voltage supply monitor

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipe-lined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- 25 MIPS peak throughput with 25 MHz clock
- Expanded interrupt handler

Digital Peripherals

- 29 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART, SPI™, and SMBus™ serial ports
- Four general purpose 16-bit counter/timers
- 16-Bit programmable counter array (PCA) with five capture/compare modules
  - PWM
  - Rising/falling edge capture
  - Frequency output
  - Software timer

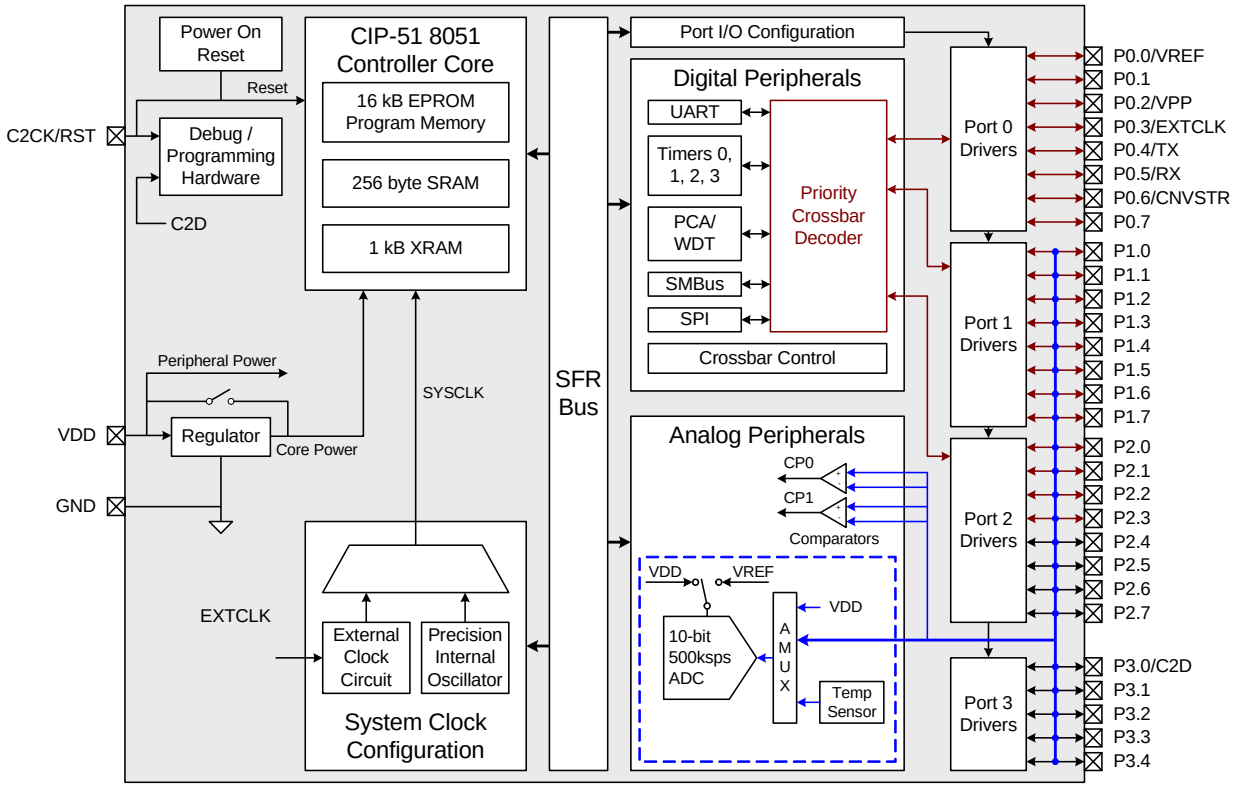
Clock Sources

- Internal oscillator: 24.5 MHz with ±2% accuracy supports UART operation
- External oscillator: CMOS clock or external capacitor
- Can switch between clock sources on-the-fly; useful in power saving modes

Package

- 32-pin LQFP

Development Kit: C8051T610DK



Analog Peripherals

10-Bit Analog to Digital Converter

- Up to 500 ksps
- 17 external inputs
- V_{REF} from external pin, V_{DD}, or internal regulator
- Built-in temperature sensor
- External conversion start input option

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 1280 bytes internal data RAM
- 16 kB byte-programmable EPROM code memory

On-Chip Debug

- C8051F310 can be used as in-system code development platform; complete development kit available
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Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- On-chip voltage supply monitor

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipe-lined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
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Digital Peripherals

- 25 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART, SPI™, and SMBus™ serial ports
- Four general purpose 16-bit counter/timers
- 16-Bit programmable counter array (PCA) with five capture/compare modules
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  - Software timer

Clock Sources

- Internal oscillator: 24.5 MHz with ±2% accuracy supports UART operation
- External oscillator: CMOS clock or external capacitor
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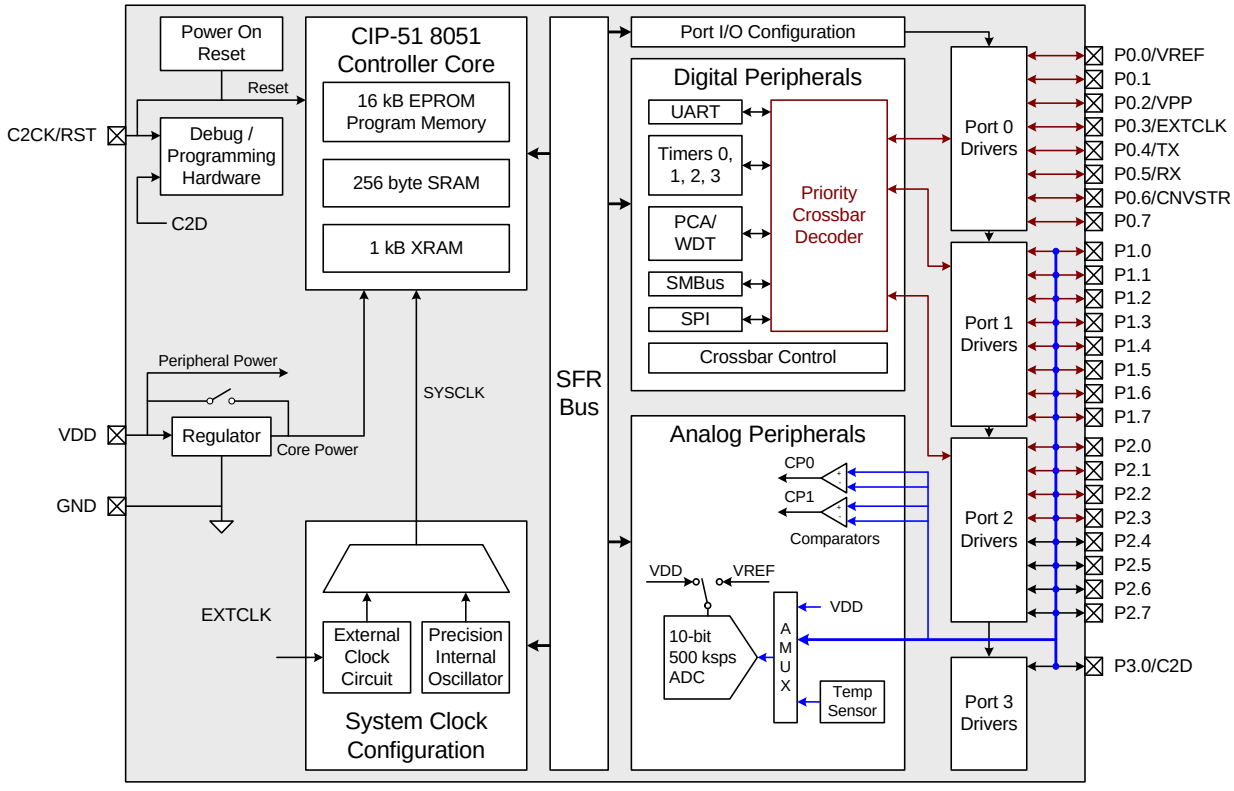
Package

- 28-pin QFN

Development Kit: C8051T610DK



Analog Peripherals

10-Bit Analog to Digital Converter

- Up to 500 ksps
- 21 external inputs
- V_{REF} from external pin, V_{DD}, or internal regulator
- Built-in temperature sensor
- External conversion start input option

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 1280 bytes internal data RAM
- 8kB byte-programmable EPROM code memory

On-Chip Debug

- C8051F310 can be used as in-system code development platform; complete development kit available
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug

Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- On-chip voltage supply monitor

Temperature Range: –40 to +85 °C

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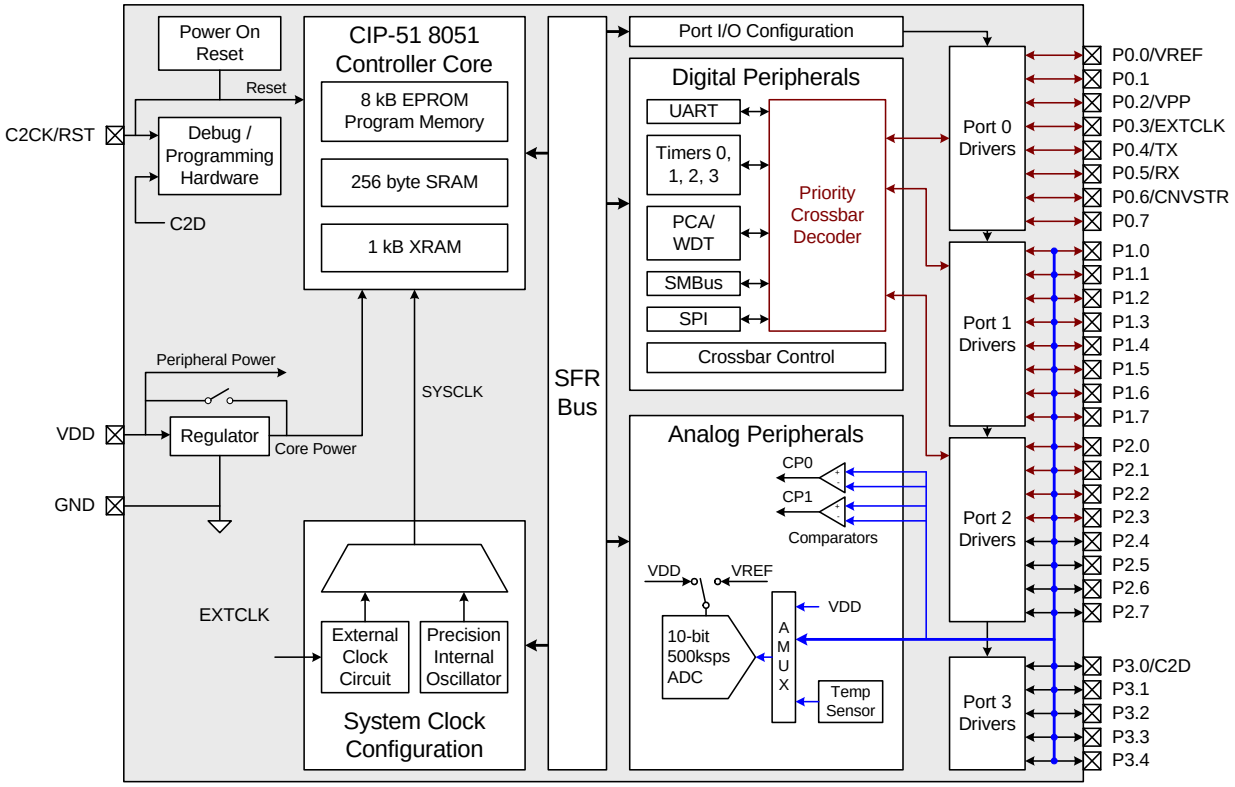
Package

- 32-pin LQFP

Development Kit: C8051T610DK



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Clock Sources

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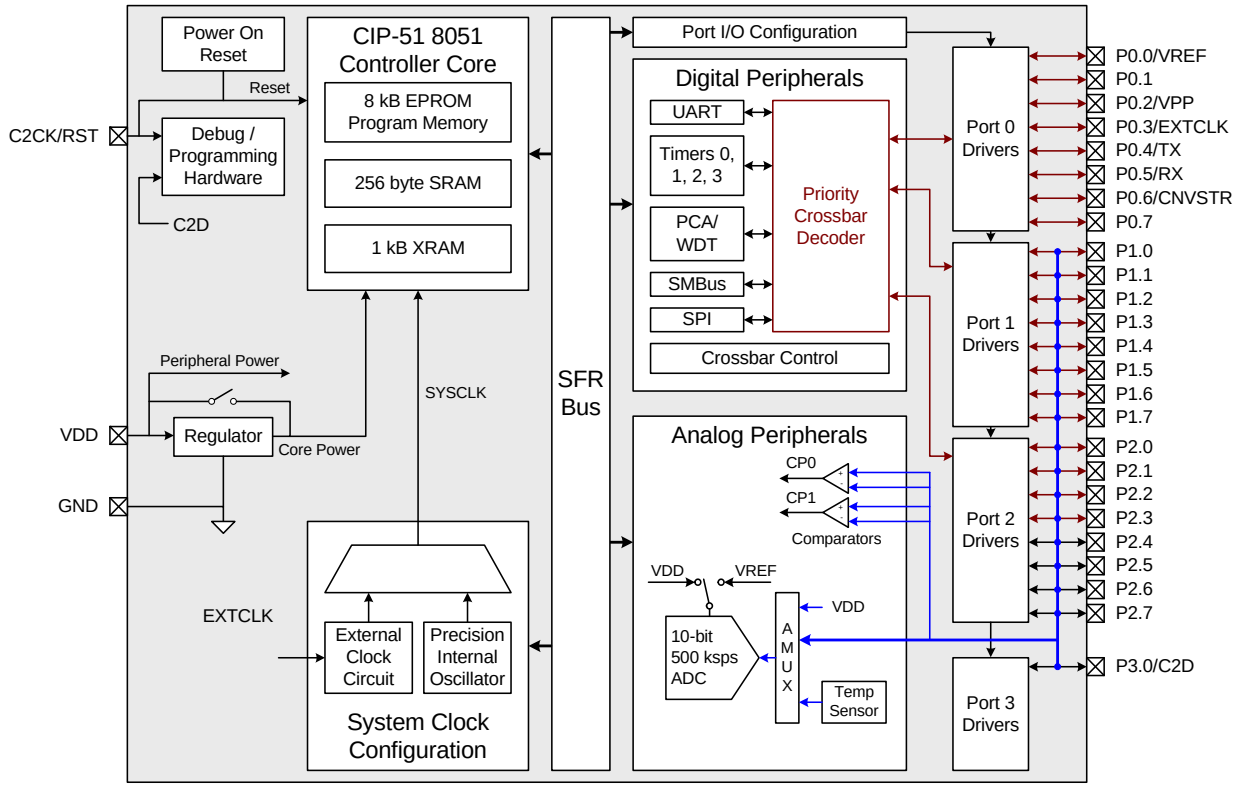
Package

- 28-pin QFN

Development Kit: C8051T610DK



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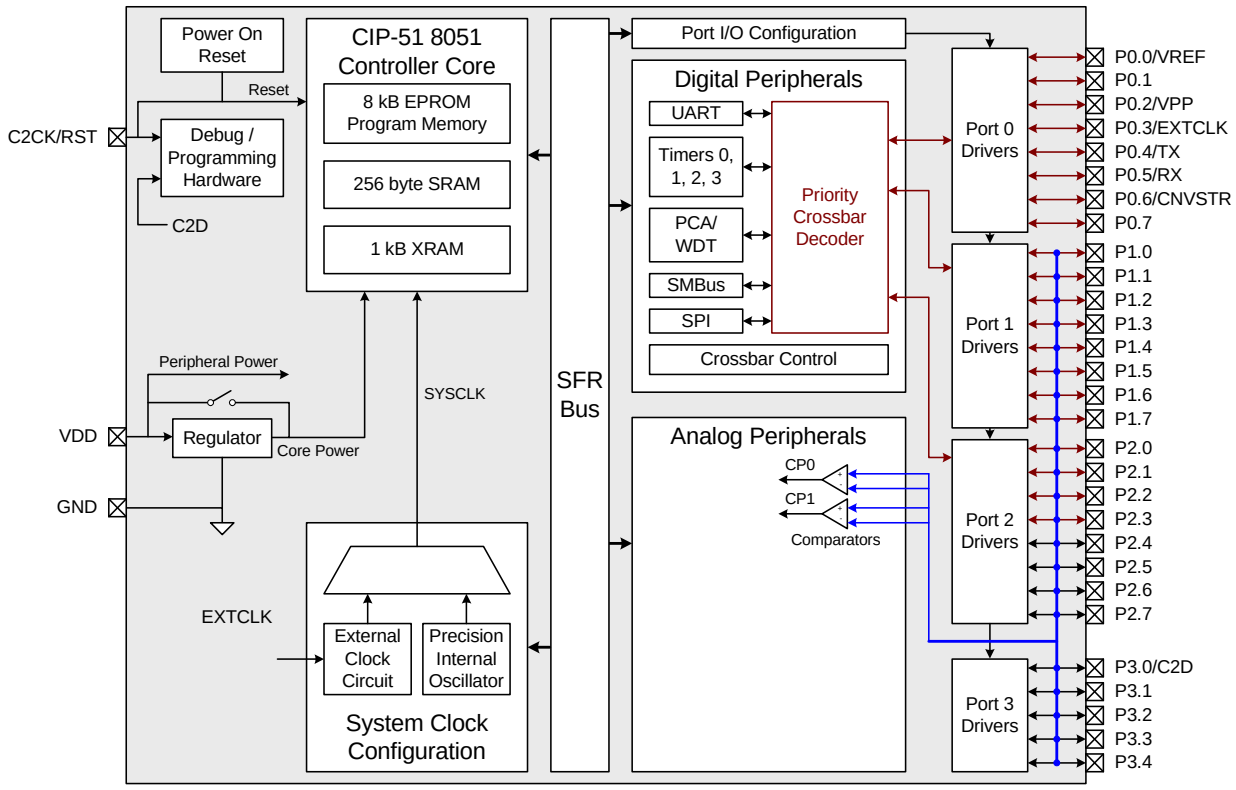
Development Kit: C8051T610DK



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- Expanded interrupt handler

Digital Peripherals

- 25 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART, SPI™, and SMBus™ serial ports
- Four general purpose 16-bit counter/timers
- 16-Bit programmable counter array (PCA) with five capture/compare modules
  - PWM
  - Rising / falling edge capture
  - Frequency output
  - Software timer

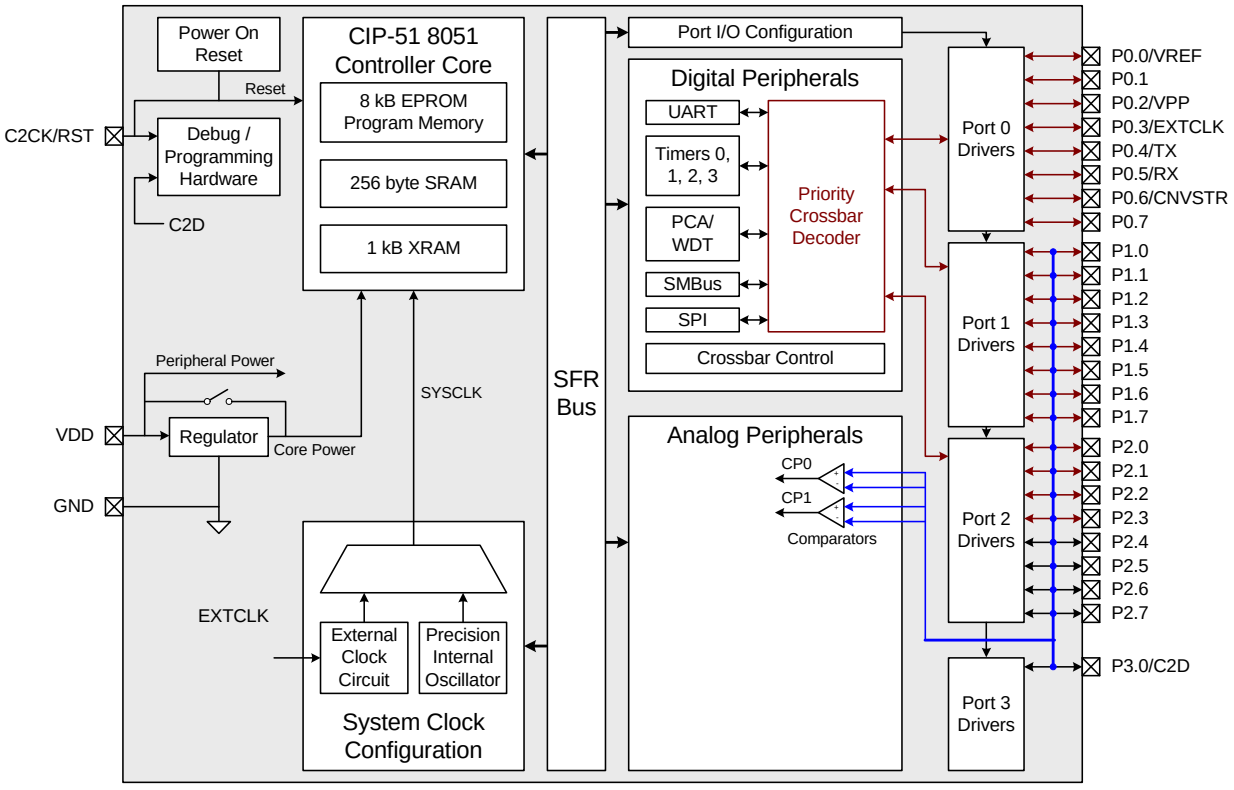
Clock Sources

- Internal oscillator: 24.5 MHz with ±2% accuracy supports UART operation
- External oscillator: CMOS clock or external capacitor
- Can switch between clock sources on-the-fly; useful in power saving modes

Package

- 28-pin QFN

Development Kit: C8051T610DK



Analog Peripherals

10-Bit Analog to Digital Converter

- Up to 500 ksps
- 13 external inputs
- V_{REF} from external pin, V_{DD}, or internal regulator
- Built-in temperature sensor
- External conversion start input option

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 1280 bytes internal data RAM
- 16 kB byte-programmable EPROM code memory

On-Chip Debug

- C8051F310 can be used as in-system code development platform; complete development kit available
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug

Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- On-chip voltage supply monitor

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipe-lined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- 25 MIPS peak throughput with 25 MHz clock
- Expanded interrupt handler

Digital Peripherals

- 21 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART, SPI™, and SMBus™ serial ports
- Four general purpose 16-bit counter/timers
- 16-Bit programmable counter array (PCA) with five capture/compare modules
  - PWM
  - Rising / falling edge capture
  - Frequency output
  - Software timer

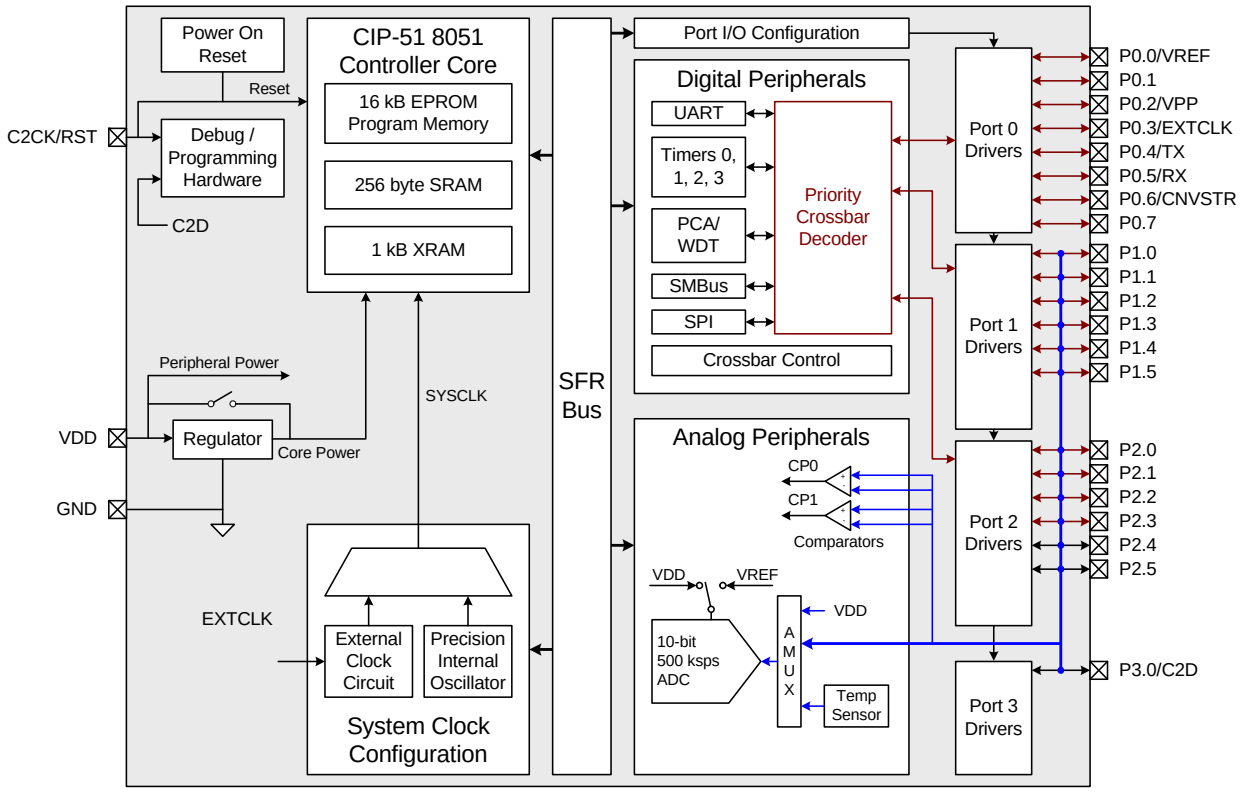
Clock Sources

- Internal oscillator: 24.5 MHz with ±2% accuracy supports UART operation
- External oscillator: CMOS clock or external capacitor
- Can switch between clock sources on-the-fly; useful in power saving modes

Package

- 24-pin QFN

Development Kit: C8051T610DK



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 1280 bytes internal data RAM
- 16 kB byte-programmable EPROM code memory

On-Chip Debug

- C8051F310 can be used as in-system code development platform; complete development kit available
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug

Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- On-chip voltage supply monitor

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

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Digital Peripherals

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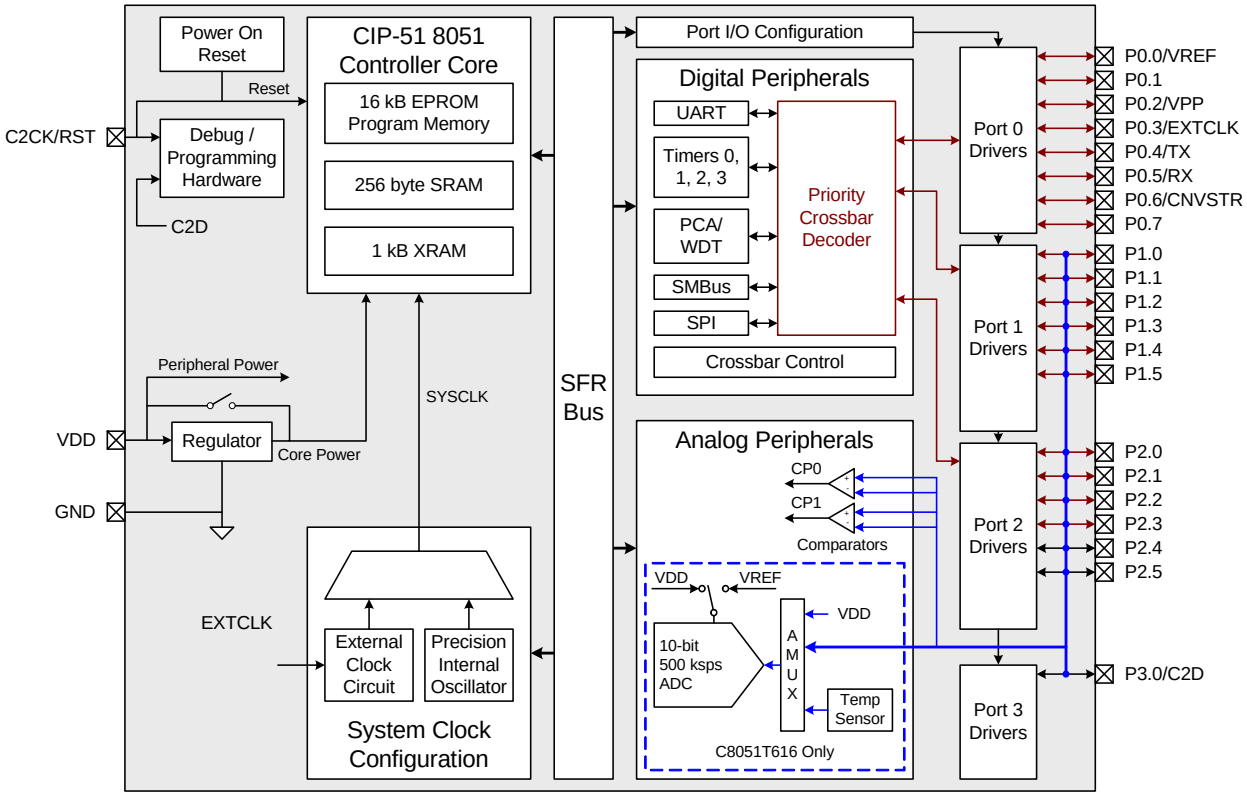
Clock Sources

- Internal oscillator: 24.5 MHz with ±2% accuracy supports UART operation
- External oscillator: CMOS clock or external capacitor
- Can switch between clock sources on-the-fly; useful in power saving modes

Package

- 24-pin QFN

Development Kit: C8051T610DK



Analog Peripherals

- 10-Bit ADC
- Up to 500 ksps
- Up to 16 external single-ended inputs
- VREF from external pin, VDD, or internal regulator
- Built-in temperature sensor
- External conversion start input

10-bit DAC (Current Mode)

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 768 bytes data RAM
- 8 kB EPROM OTP code memory (byte programmable)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- C8051F336 can be used as in-system code development platform; complete development kit available

Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- On-chip voltage supply monitor

Temperature Range: –40 to +85 °C

Development Kit: C8051T630DK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Digital Peripherals

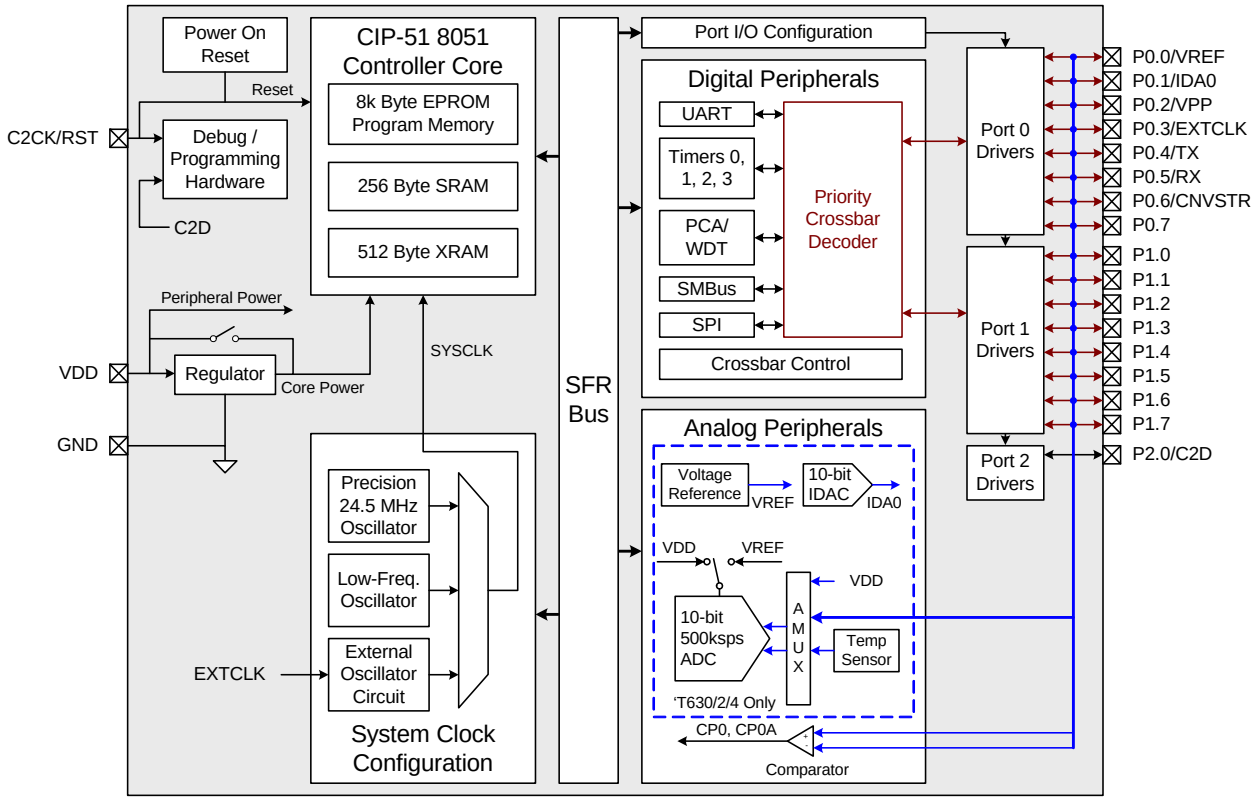
- 17 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART, SPI™, and SMBus™ serial ports
- Four general purpose 16-bit counter/timers
- Timer with Real-time clock capability
- 16-Bit programmable counter array (PCA) with five capture/compare modules
  - PWM
  - Rising/falling edge capture
  - Frequency output
- Software timer

-Clock Sources

- Two internal oscillators:
  - -24.5 MHz with ±2% accuracy supports crystal-less UART operation
  - -Low-power suspend mode with fast wake time
  - -80 kHz low frequency, low-power
- External oscillator: RC, C, or Clock
- Can switch between clock sources on-the-fly

Package

- 20-pin QFN
- Pin Compatibile with C8051F33x Family of Devices



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 768 bytes data RAM
- 8 kB EPROM OTP code memory (byte programmable)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- C8051F336 can be used as in-system code development platform; complete development kit available

Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- On-chip voltage supply monitor

Temperature Range: –40 to +85 °C
Development Kit: C8051T630DK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Digital Peripherals

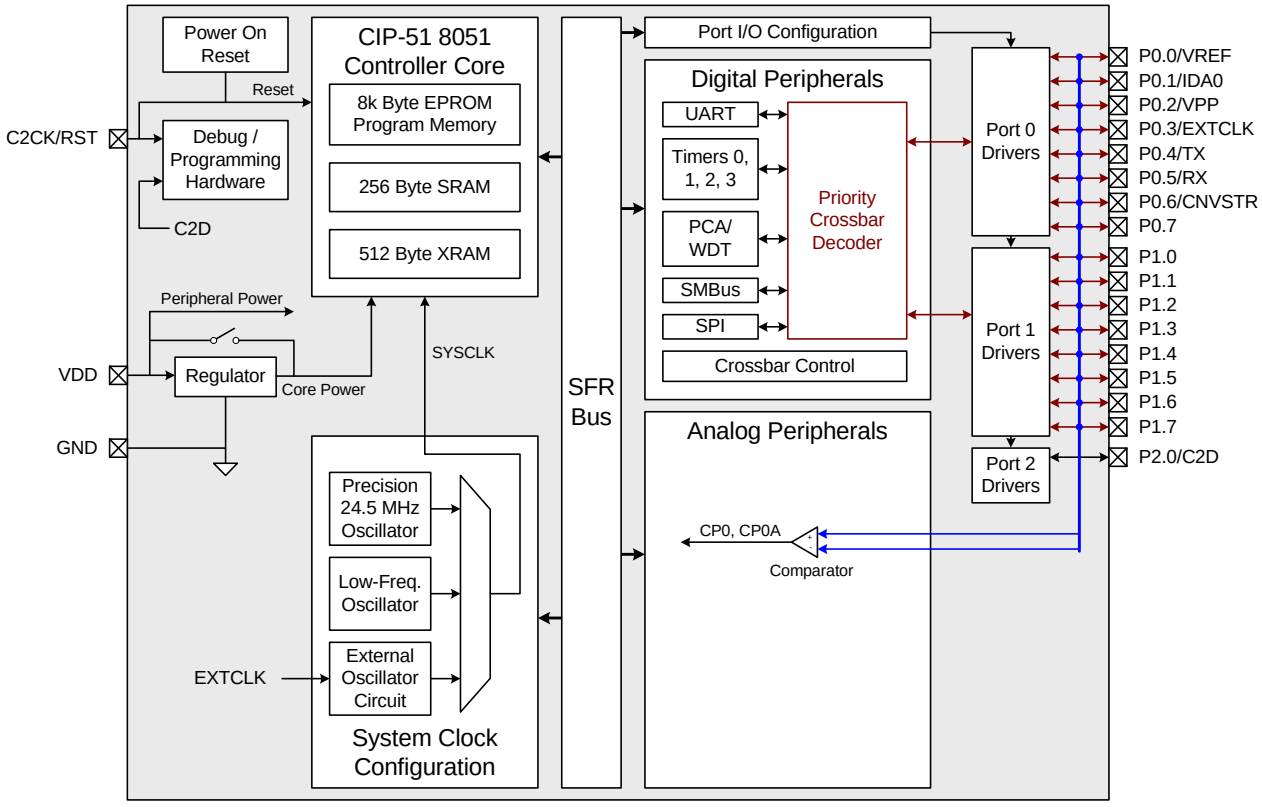
- 29/25/21 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART, SPI™, and SMBus™ serial ports
- Four general purpose 16-bit counter/timers
- Timer with Real-time clock capability
- 16-Bit programmable counter array (PCA) with five capture/compare modules
  - PWM
  - Rising / falling edge capture
  - Frequency output
- Software timer

-Clock Sources

- Two internal oscillators:
  - -24.5 MHz with ±2% accuracy supports crystal-less UART operation
  - -Low-power suspend mode with fast wake time
  - -80 kHz low frequency, low-power
- External oscillator: RC, C, or Clock
- Can switch between clock sources on-the-fly

Package

- 20-pin QFN and 24-pin QFN
- Pin Compatibile with C8051F33x Family of Devices



Analog Peripherals

- 10-Bit ADC
- Up to 500 ksps
- Up to 16 external single-ended inputs
- VREF from external pin, VDD, or internal regulator
- Built-in temperature sensor
- External conversion start input

10-bit DAC (Current Mode)

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 768 bytes data RAM
- 4 kB EPROM OTP memory (byte programmable)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- C8051F336 can be used as in-system code development platform; complete development kit available

Supply Voltage 1.8 to 3.6 V

- On-chip LDO regulator for core supply
- On-chip voltage supply monitor

Temperature Range: –40 to +85 °C

Development Kit: C8051T630DK

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Digital Peripherals

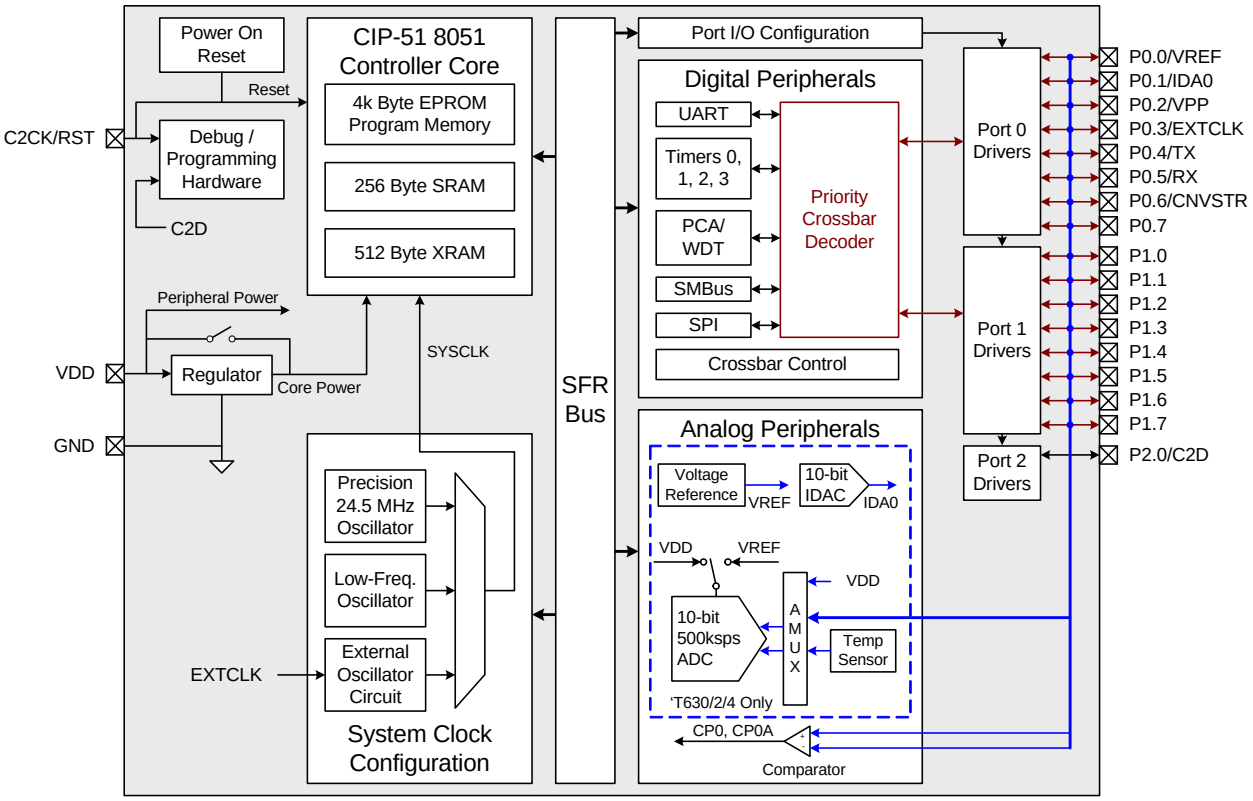
- 17 port I/O; All 5 V tolerant with high sink current
- Hardware enhanced UART, SPI™, and SMBus™ serial ports
- Four general purpose 16-bit counter/timers
- Timer with Real-time clock capability
- 16-Bit programmable counter array (PCA) with five capture/compare modules
  - PWM
  - Rising / falling edge capture
  - Frequency output
- Software timer

-Clock Sources

- Two internal oscillators:
  - -24.5 MHz with ±2% accuracy supports crystal-less UART operation
  - -Low-power suspend mode with fast wake time
  - -80 kHz low frequency, low-power
- External oscillator: RC, C, or Clock
- Can switch between clock sources on-the-fly

Package

- 20-pin QFN
- Pin Compatibile with C8051F33x Family of Devices



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 768 bytes data RAM
- 4 kB EPROM OTP code memory (byte programmable)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- C8051F336 can be used as in-system code development platform; complete development kit available

Supply Voltage 1.8 to 3.6 V

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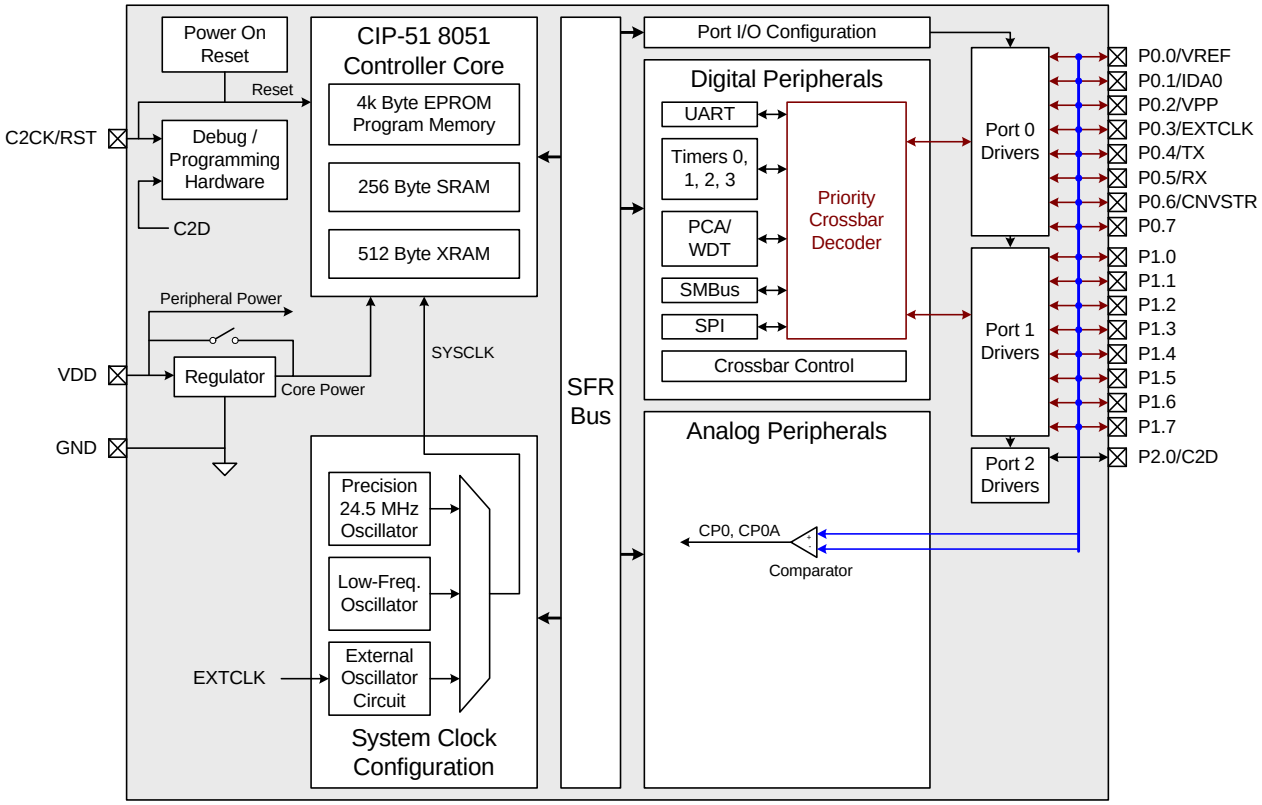

Analog Peripherals

- 10-Bit ADC
- Up to 500 ksps
- Up to 16 external single-ended inputs
- VREF from external pin, VDD, or internal regulator
- Built-in temperature sensor
- External conversion start input

10-bit DAC (Current Mode)

Comparator

- Programmable hysteresis and response time
- Configurable as interrupt or reset source
- Low current (< 0.5 µA)

Memory

- 768 bytes data RAM
- 2 kB EPROM OTP memory (byte programmable)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- C8051F336 can be used as in-system code development platform; complete development kit available

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- On-chip voltage supply monitor

Temperature Range: –40 to +85 °C

Development Kit: C8051T630DK

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Package

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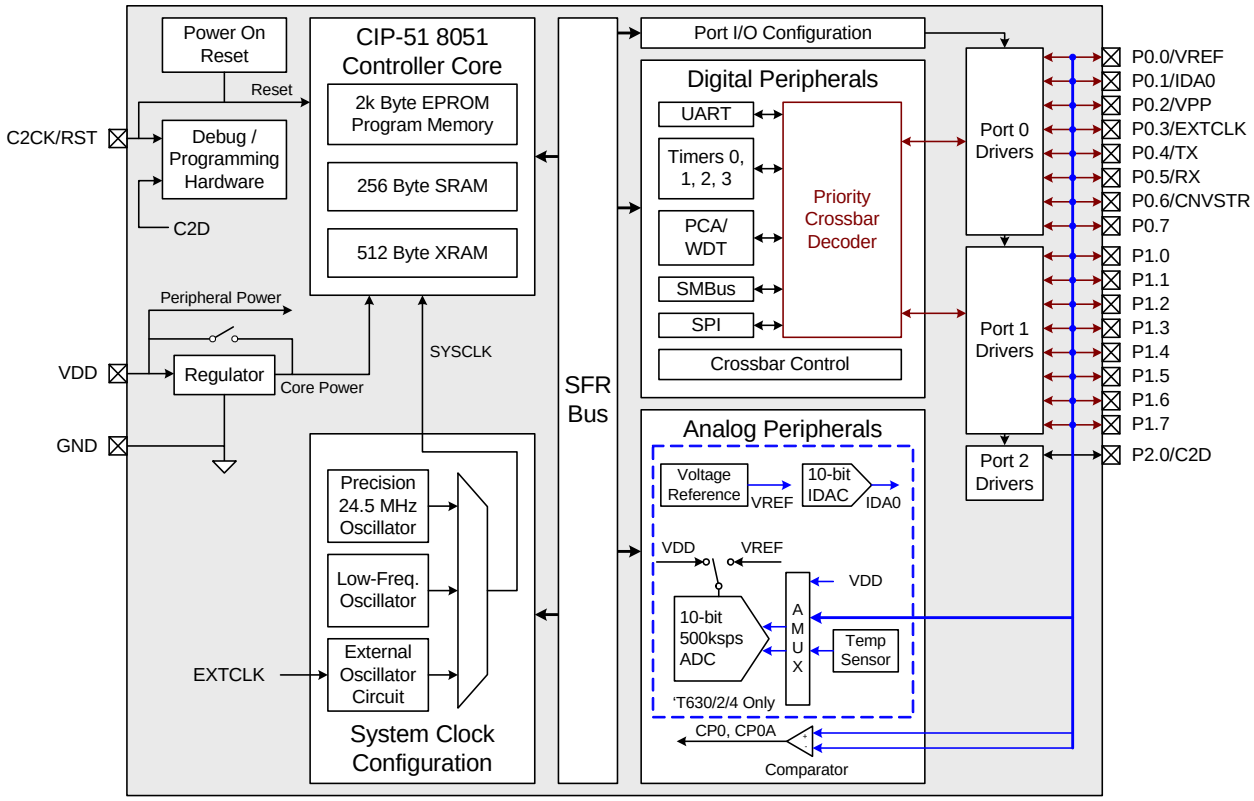

Analog Peripherals

Comparator

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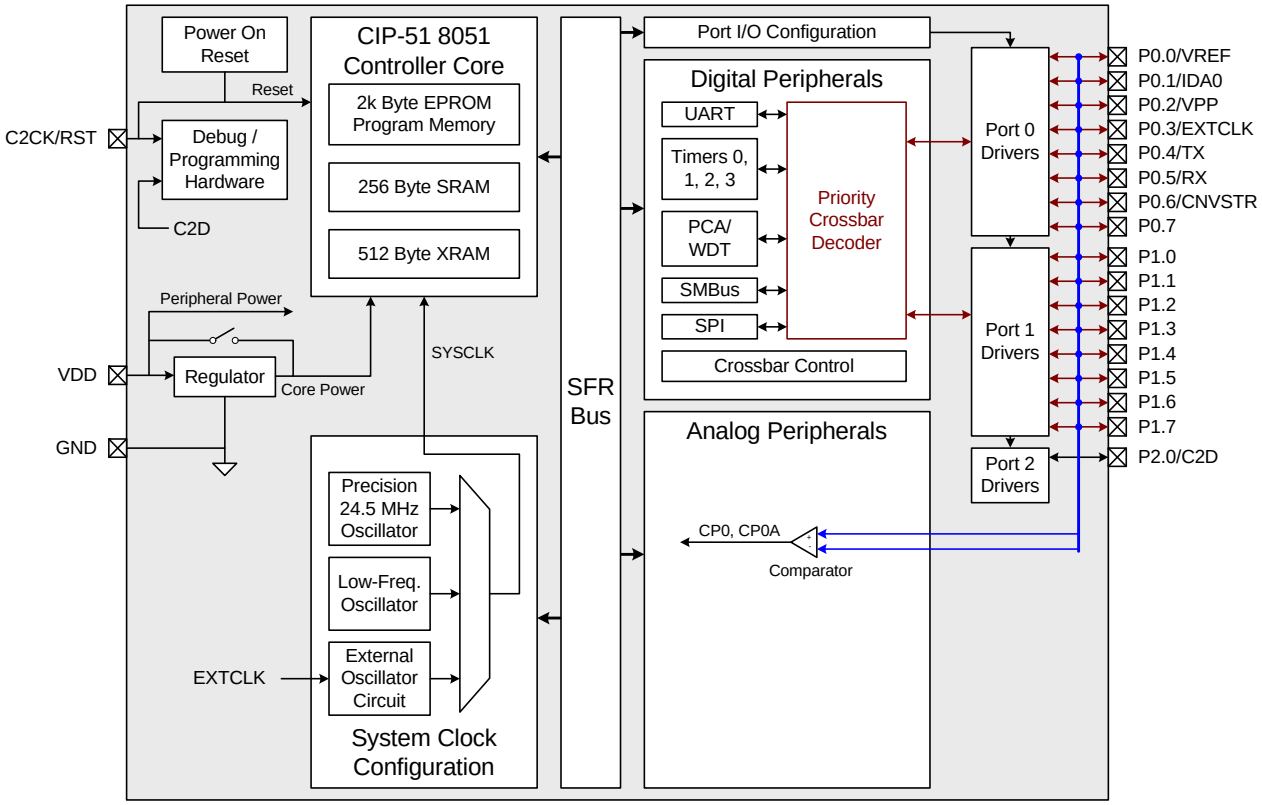


Precision Mixed-Signal MCUs

Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-bit DACs

- Voltage output
- 10 µsec settling time

Two Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 20 MIPS throughput with 20 MHz system clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 256 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

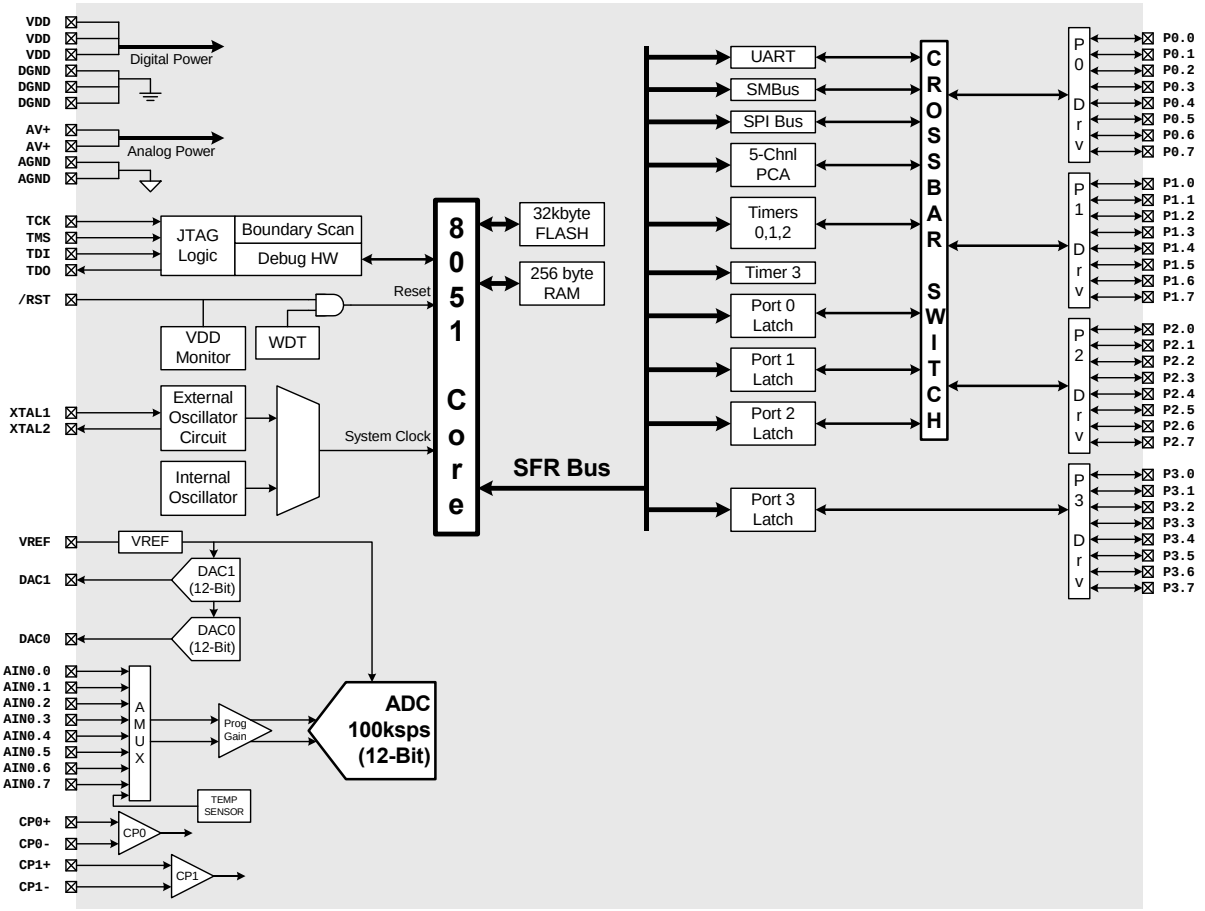
- Typical operating current: 10 mA at 20 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F000-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Voltage output
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- Expanded interrupt handler; up to 21 interrupt sources

Memory

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- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 16 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
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- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

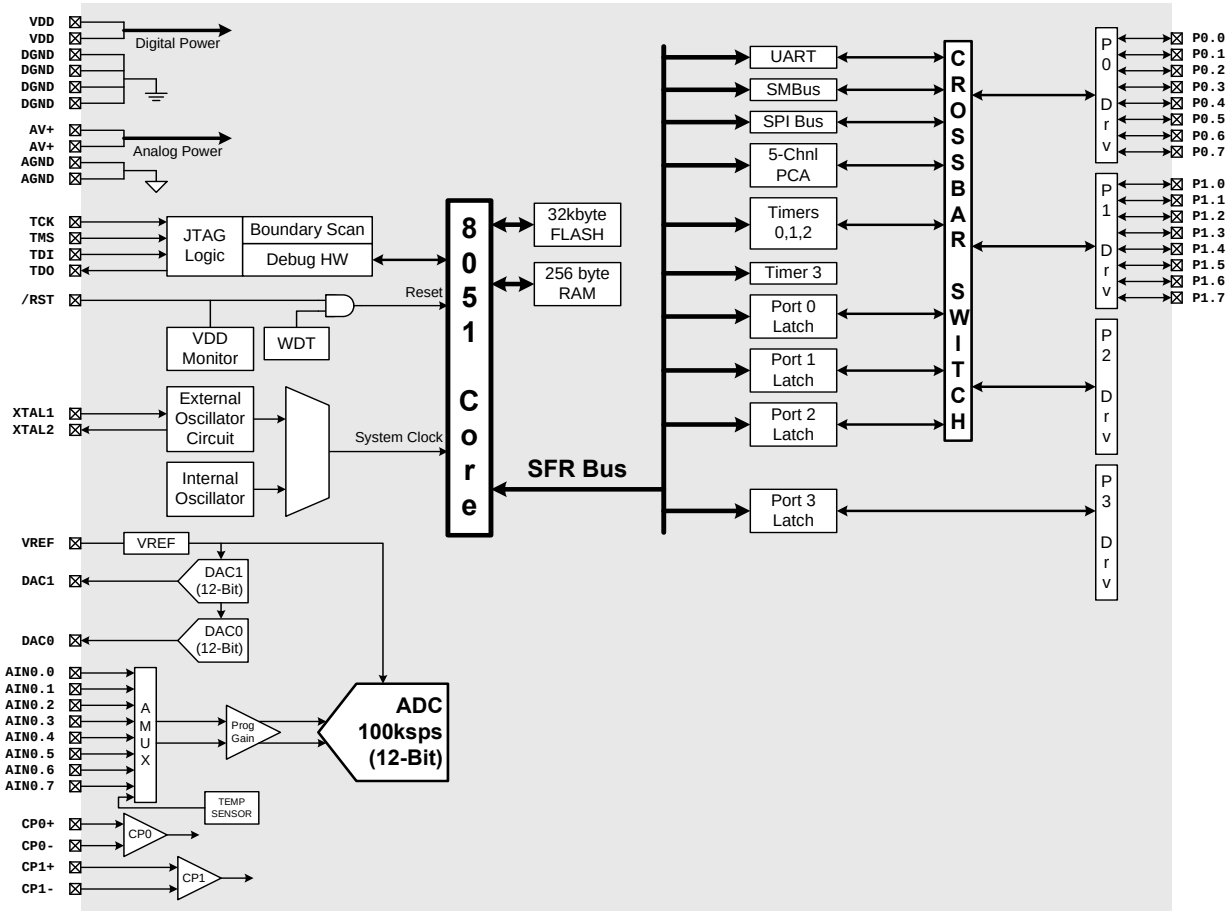
- Typical operating current: 10 mA at 20 MHz
- Multiple power saving sleep and shutdown modes

Package

- 48-pin TQFP (lead-free package)

Ordering Part Number

- C8051F001-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 4 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Voltage output
- 10 µsec settling time

Comparator

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug

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Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of Instructions in 1 or 2 system clocks
- Up to 20 MIPS throughput with 20 MHz clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 256 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

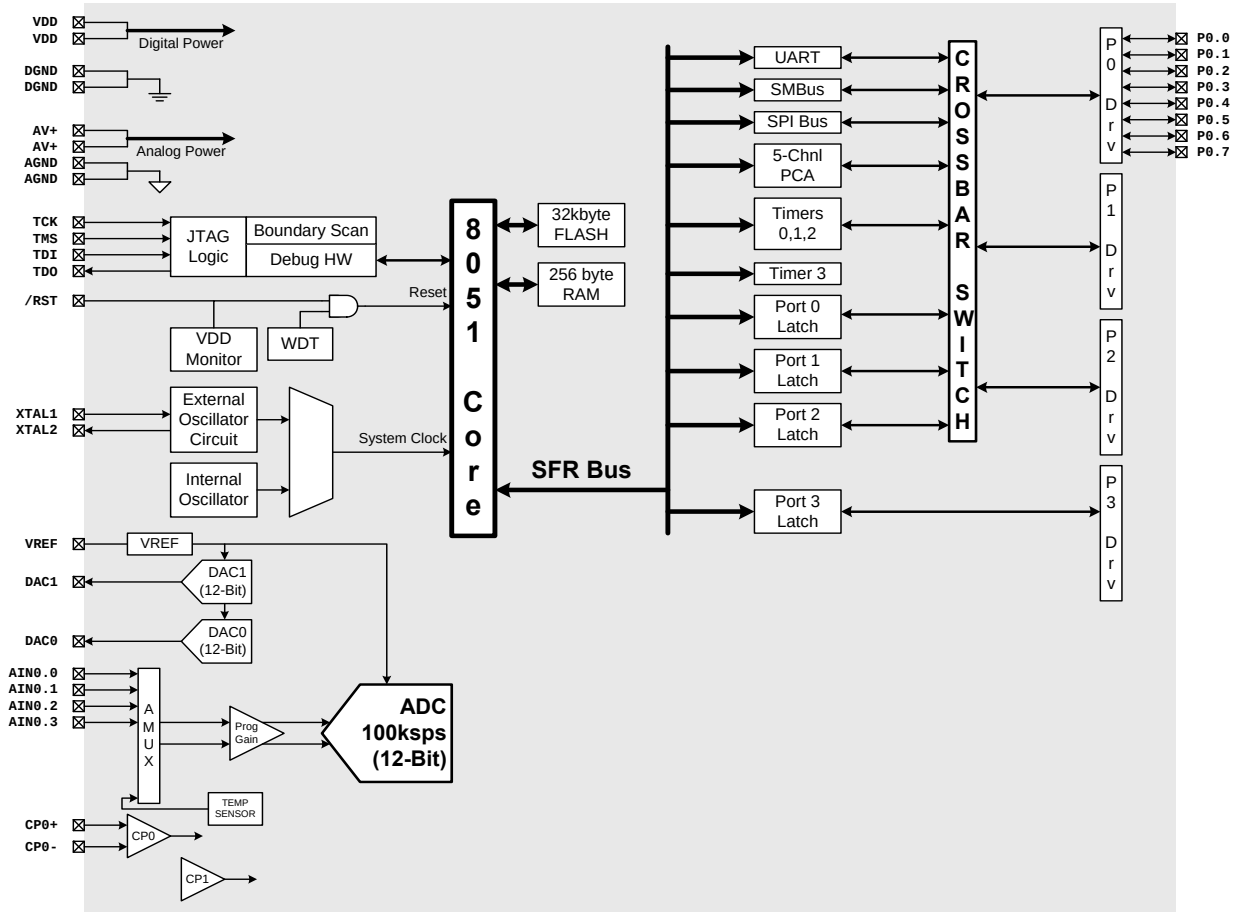
- Typical operating current: 10 mA at 20 MHz
- Multiple power saving sleep and shutdown modes

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F002-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Voltage output
- 10 µsec settling time

Two Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of Instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 2304 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

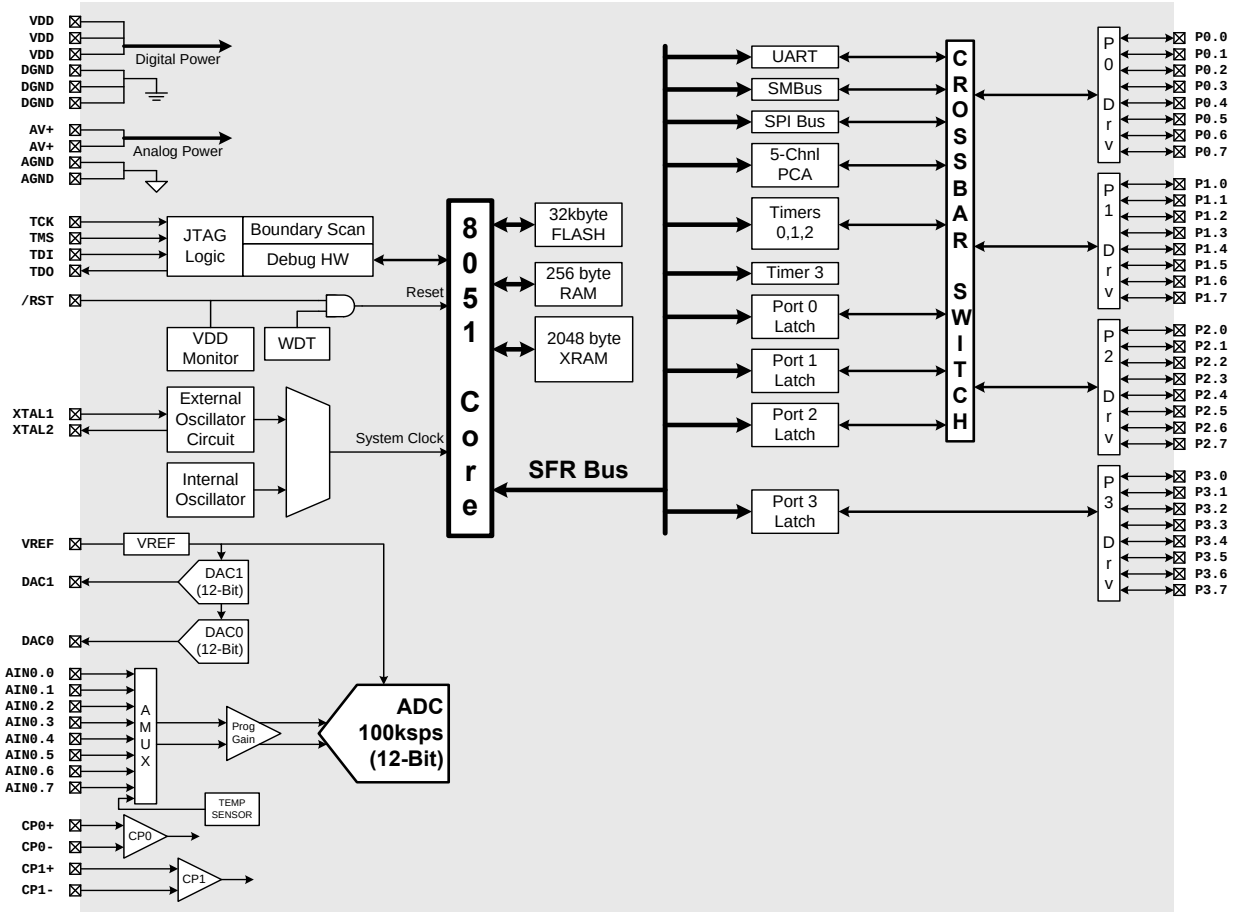
- Typical operating current: 12.5 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F005-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Voltage output
- 10 µsec settling time

Two Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of Instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 2304 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 16 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

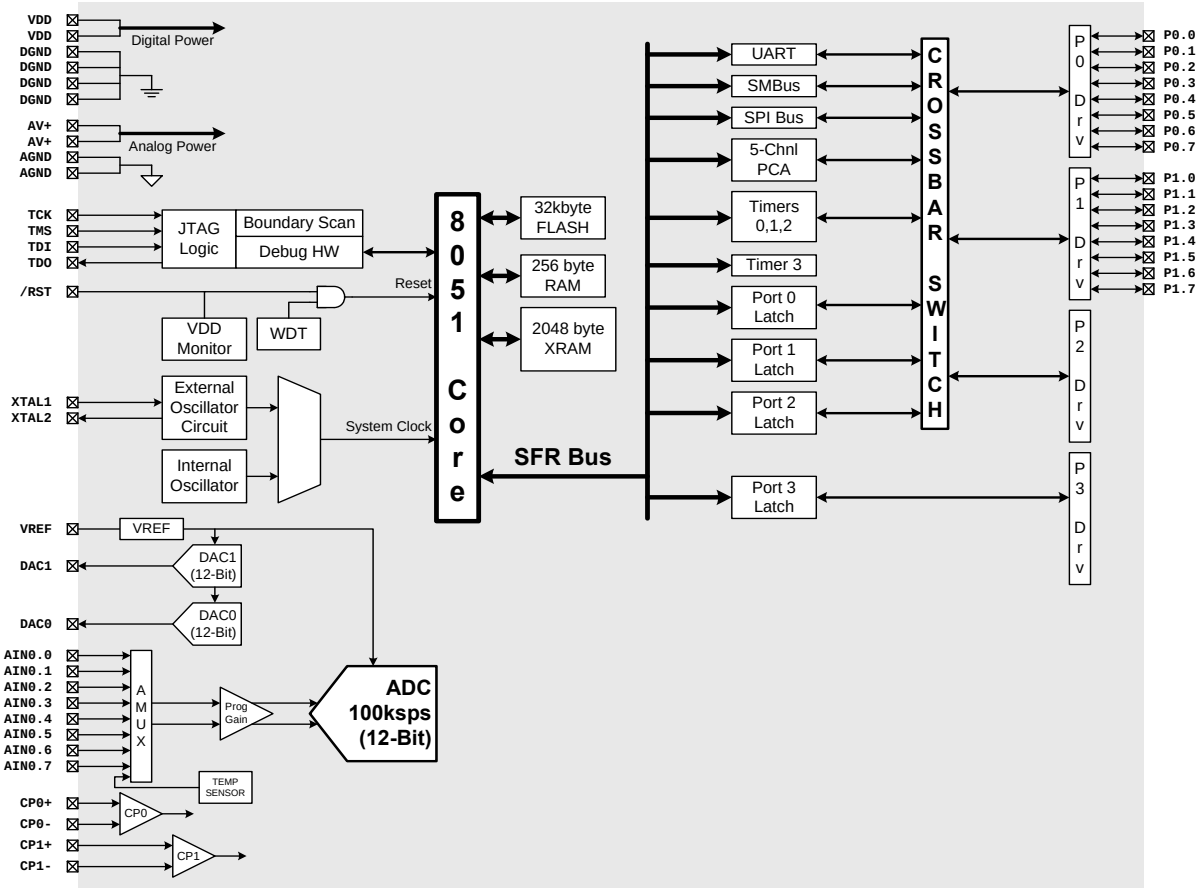
- Typical operating current: 12.5 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 48-pin TQFP (lead-free package)

Ordering Part Number

- C8051F006-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 4 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Voltage output
- 10 µsec settling time

Comparator

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug

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- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of Instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 2304 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

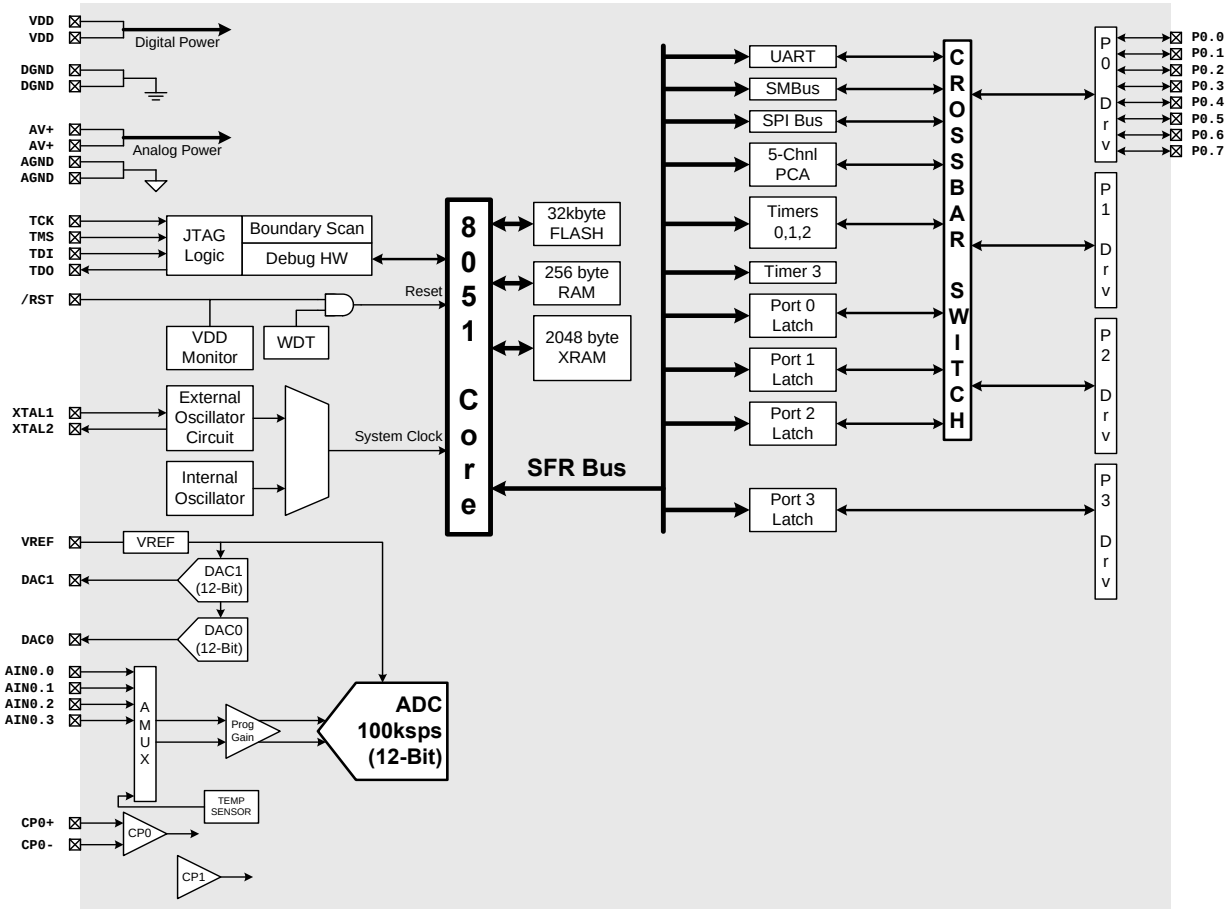
- Typical operating current: 12.5 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F007-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Voltage output
- 10 µsec settling time

Two Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug

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Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of Instructions in 1 or 2 system clocks
- Up to 20 MIPS throughput with 20 MHz clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 256 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

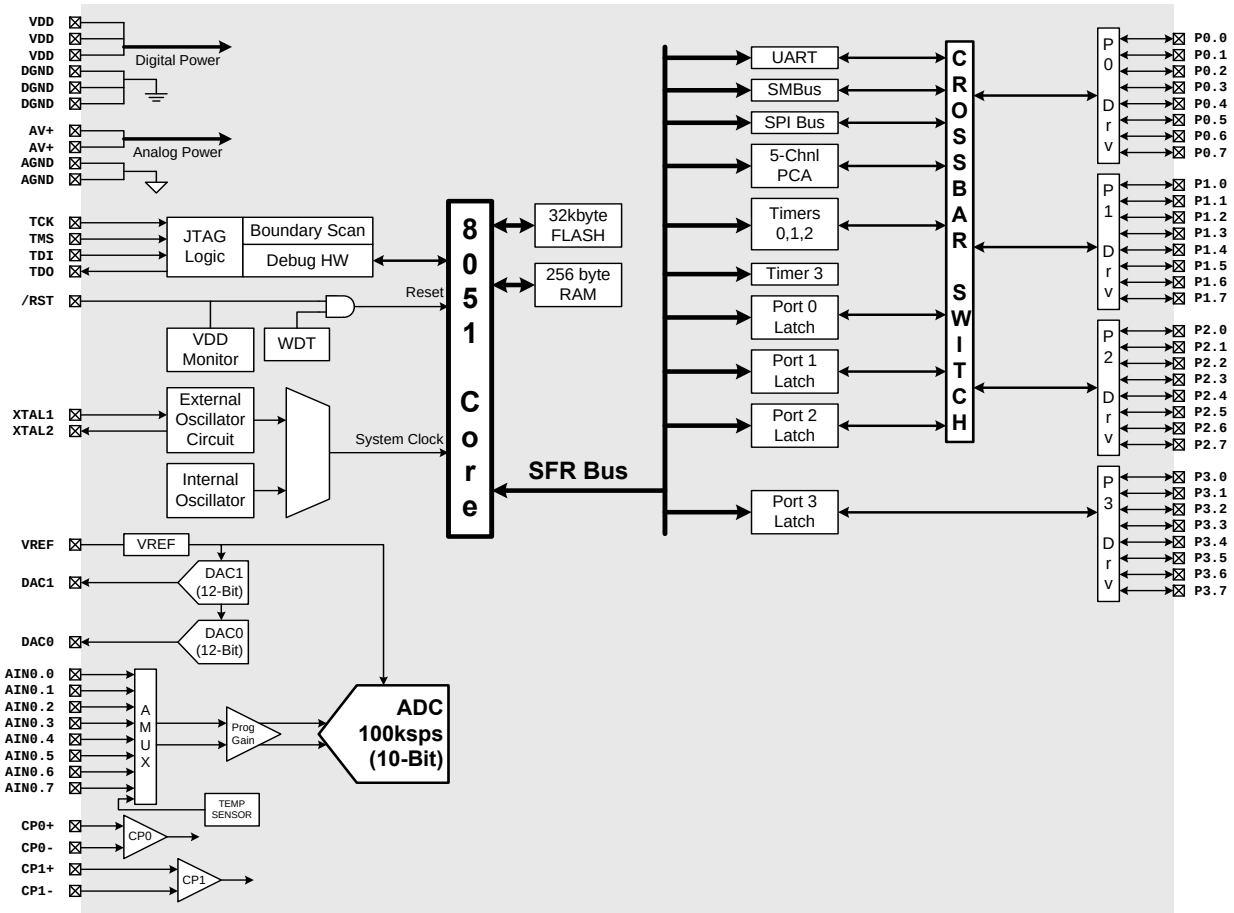
- Typical operating current: 10 mA at 20 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F010-GQ



Analog Peripherals

10-Bit ADC

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- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Voltage output
- 10 µsec settling time

Two Comparators

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- Configurable to generate interrupts or reset

Internal Voltage Reference

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Temperature Range: –40 to +85 °C

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Memory

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- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 16 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

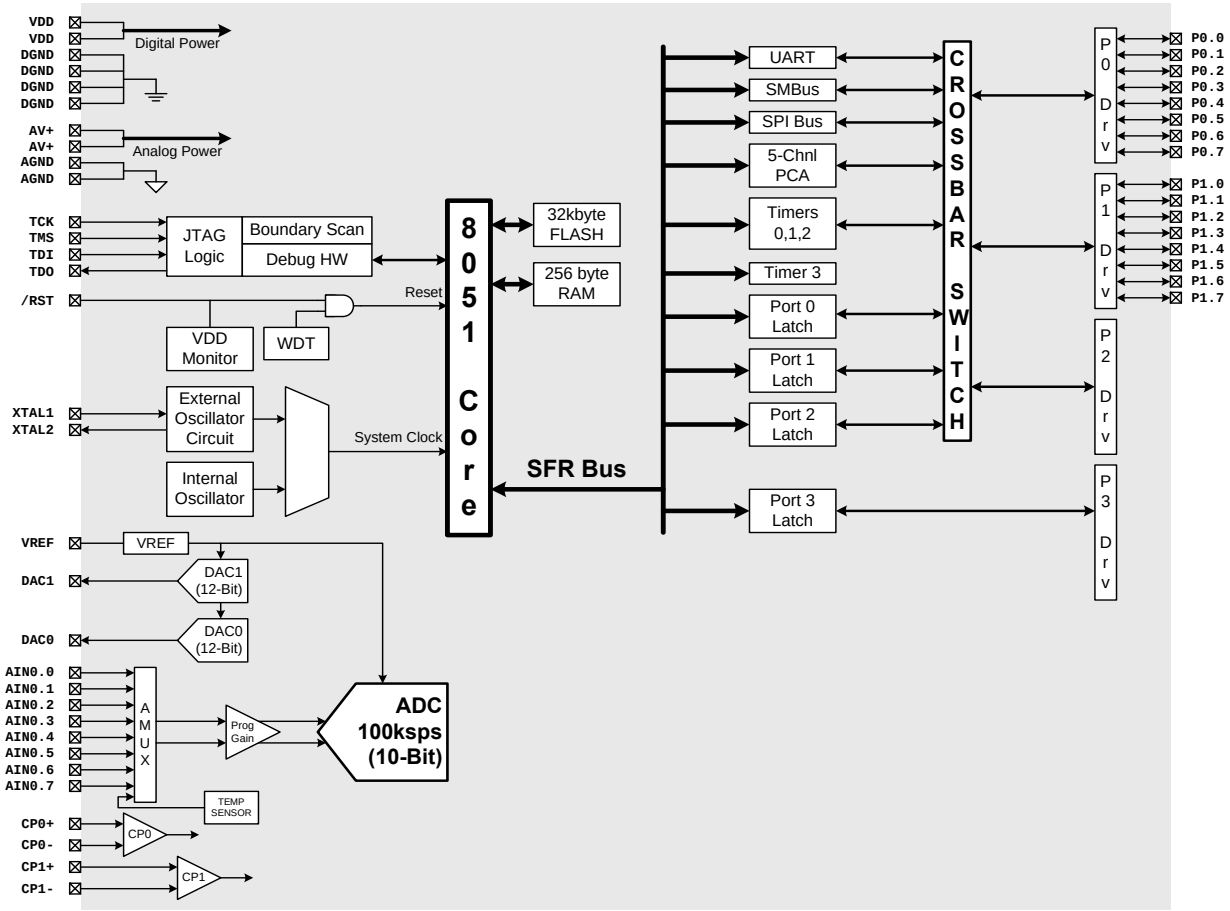
- Typical operating current: 10 mA at 20 MHz
- Multiple power saving sleep and shutdown modes

Package

- 48-pin TQFP (lead-free package)

Ordering Part Number

- C8051F011-GQ



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- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
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- Built-in temperature sensor (±3 °C)

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Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of Instructions in 1 or 2 system clocks
- Up to 20 MIPS throughput with 20 MHz clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 256 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

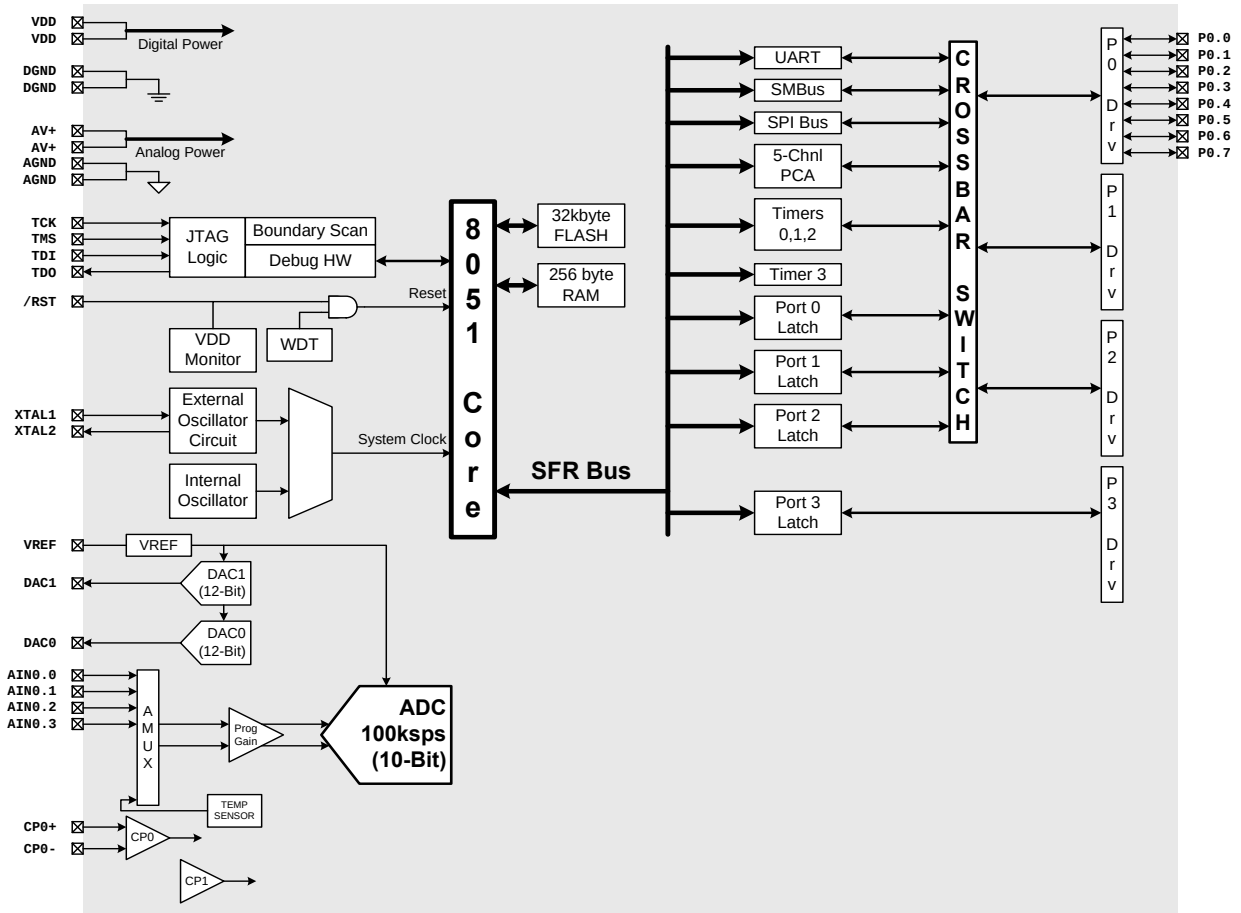
- Typical operating current: 10 mA at 20 MHz
- Multiple power saving sleep and shutdown modes

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F012-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Voltage output
- 10 µsec settling time

Two Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of Instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 2304 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

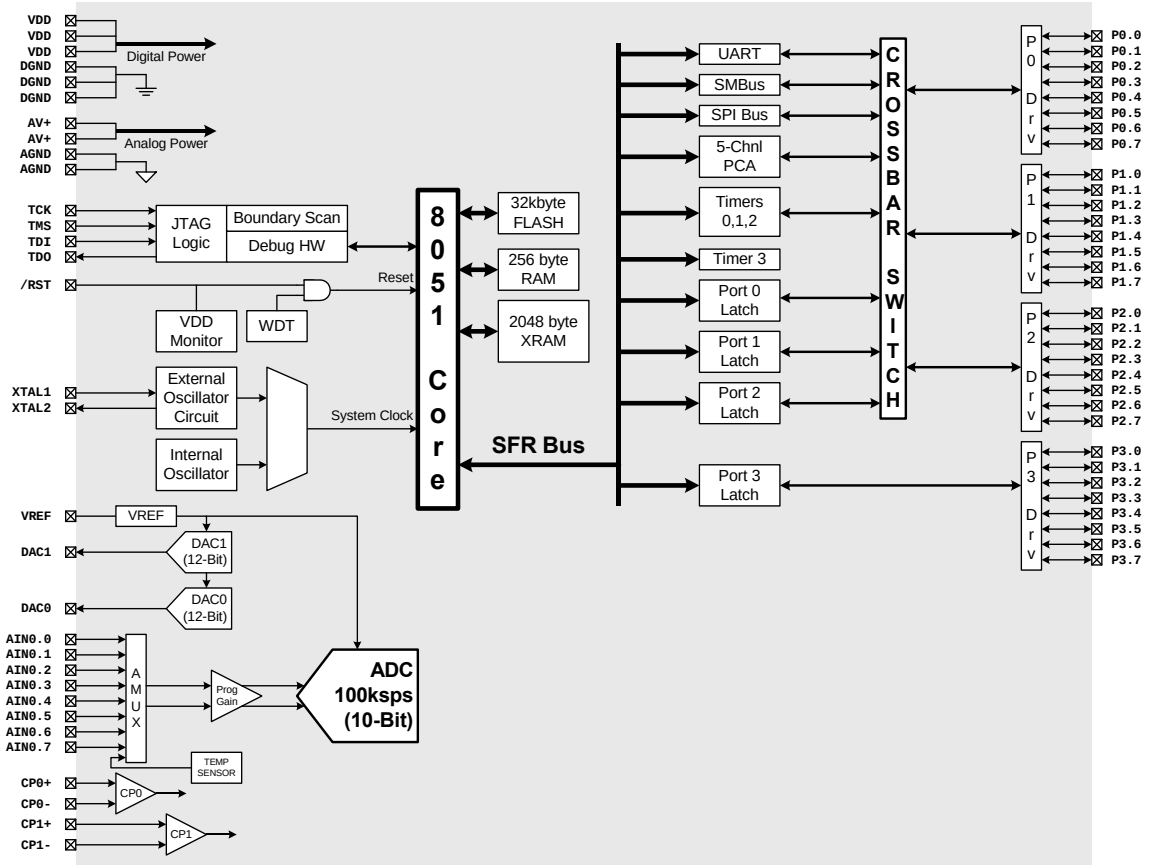
- Typical operating current: 12.5 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F015-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Voltage output
- 10 µsec settling time

Two Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of Instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 2304 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 16 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly
- Fully compliant with IEEE 1149.1 specification

Supply Voltage: 2.7 to 3.6 V

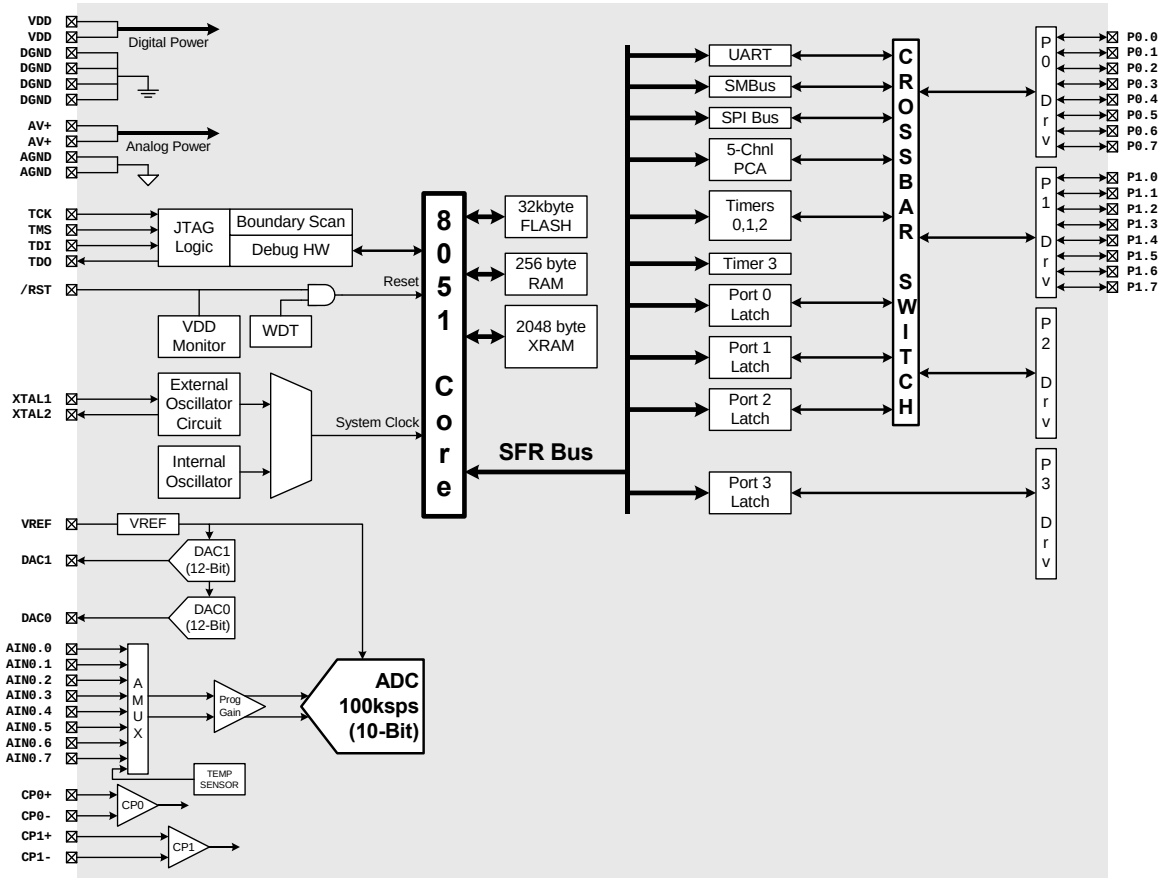
- Typical operating current: 12.5 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 48-pin TQFP (lead-free package)

Ordering Part Number

- C8051F016-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 4 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Voltage output
- 10 µsec settling time

Comparator

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of Instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 2304 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

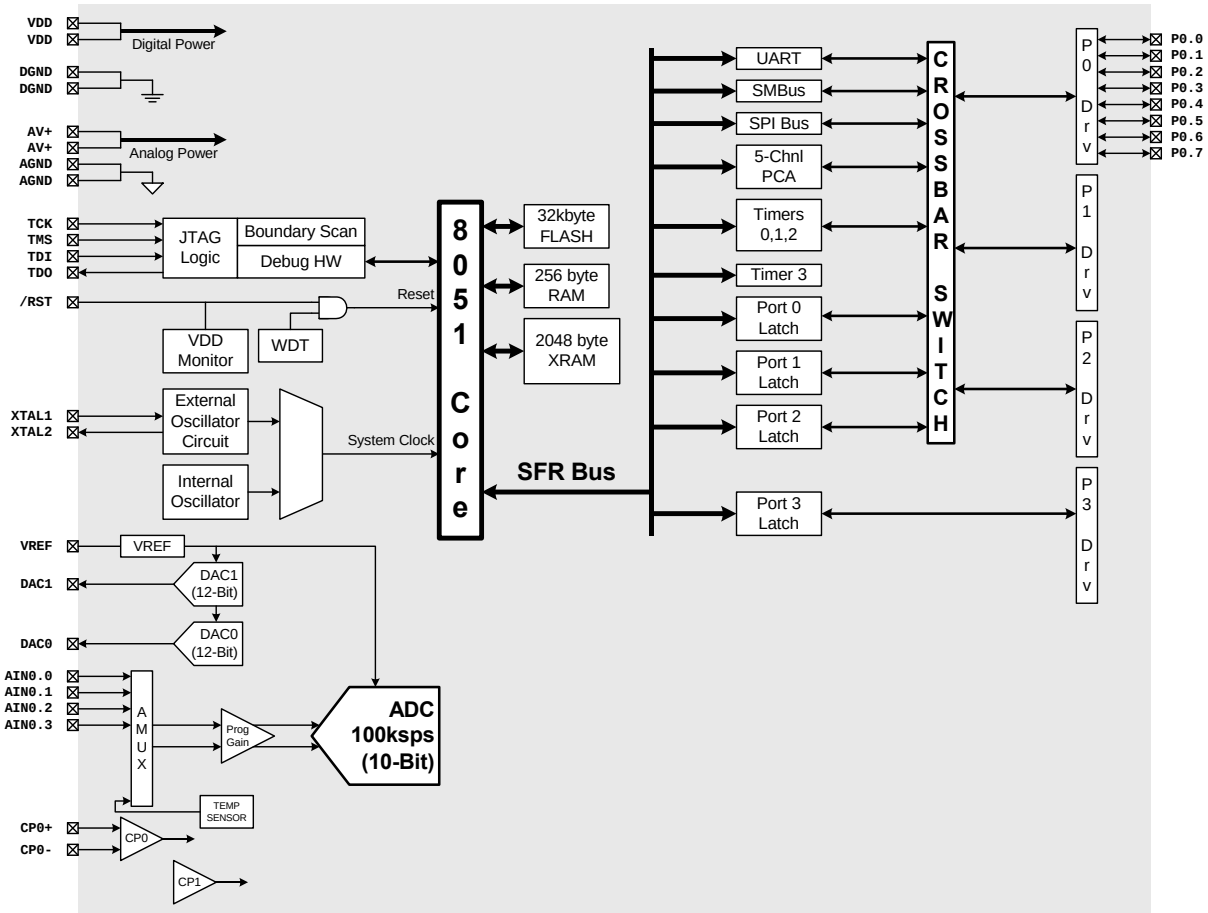
- Typical operating current: 12.5 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F017-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 1280 bytes data RAM
- 16 kB Flash; in system programmamble in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.8 to 3.6 V

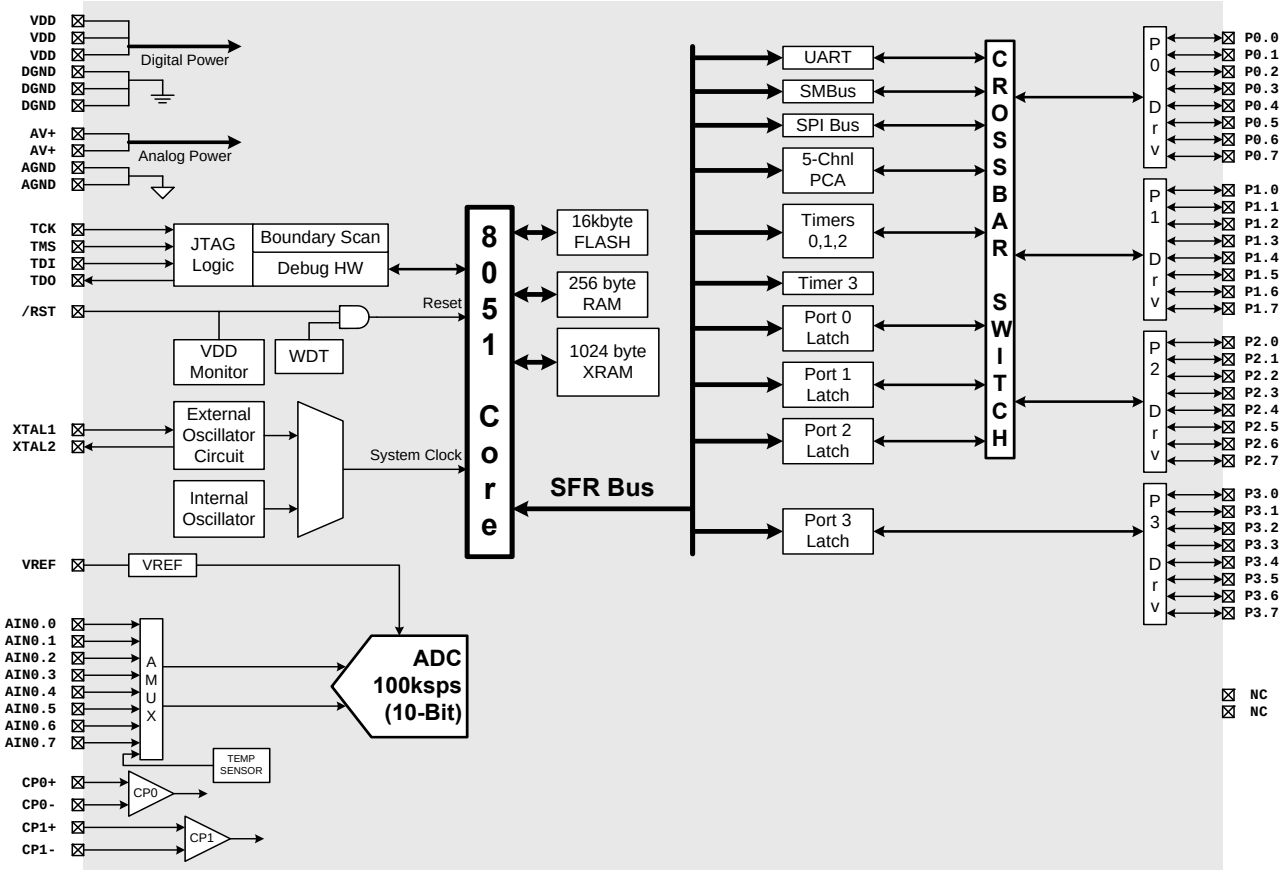
- Typical operating current: 12.5 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F018-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 1280 bytes data RAM
- 16 kB Flash; in system programmamble in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 16 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.8 to 3.6 V

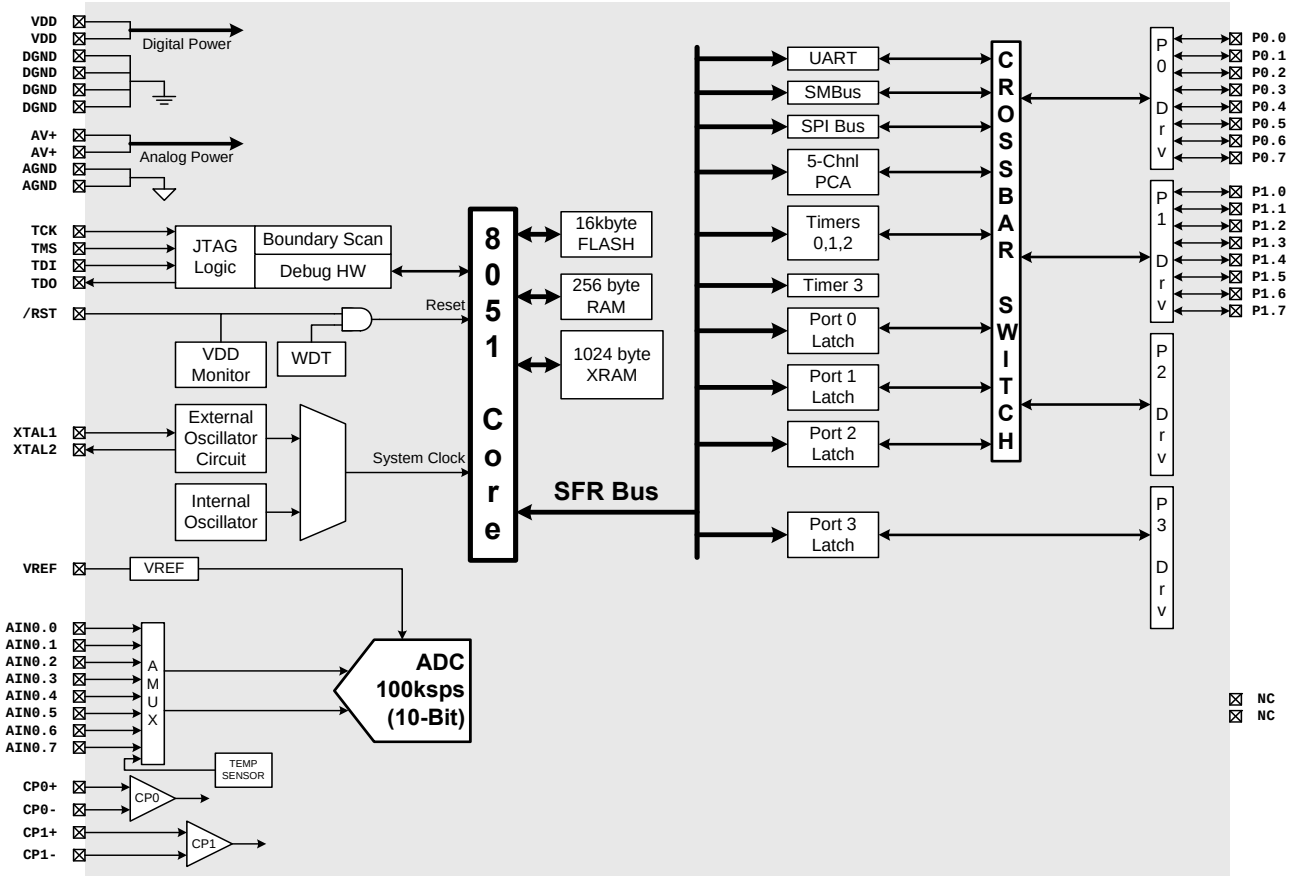
- Typical operating current: 12.5 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 48-pin TQFP (lead-free package)

Ordering Part Number

- C8051F019-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- 22 vectored interrupt sources

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with 5 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using Timer 3 or PCA

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

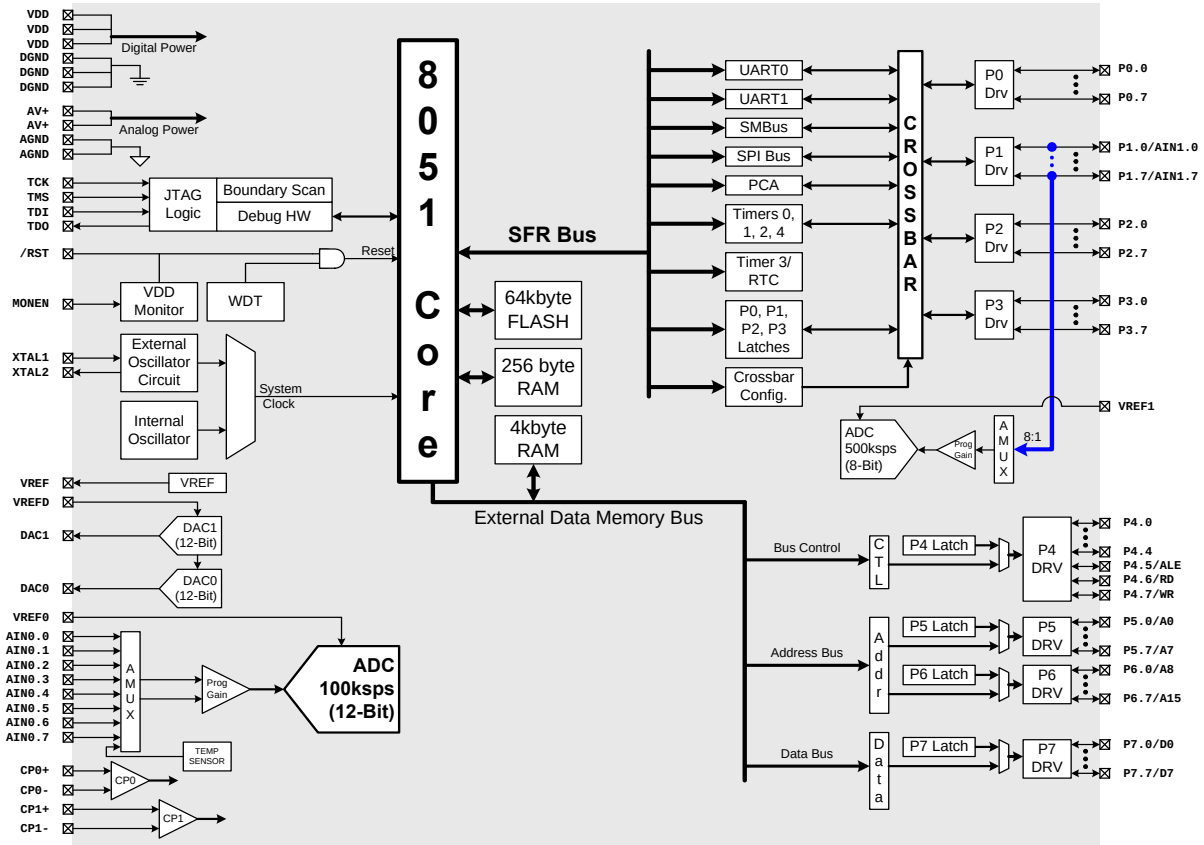
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F020-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- 22 vectored interrupt sources

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with 5 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using Timer 3 or PCA

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

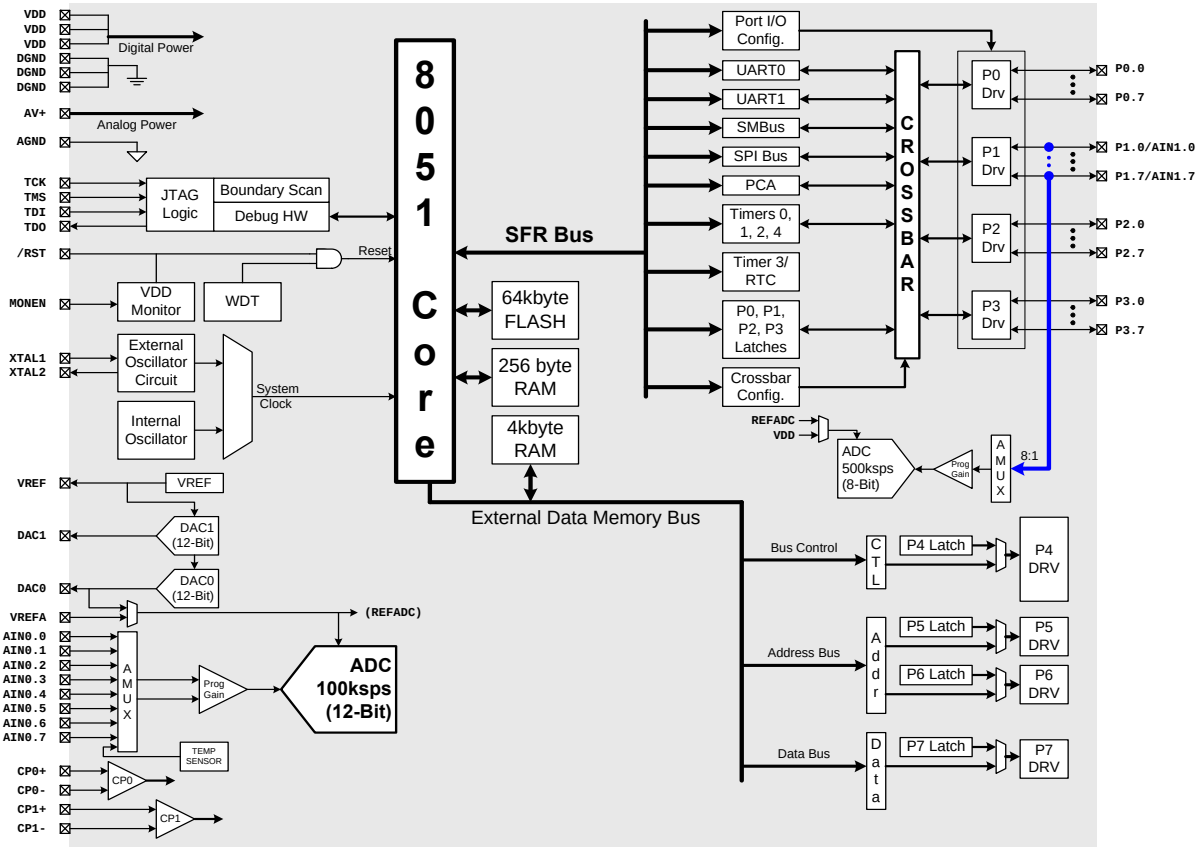
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F021-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- 22 vectored interrupt sources

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with 5 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using Timer 3 or PCA

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

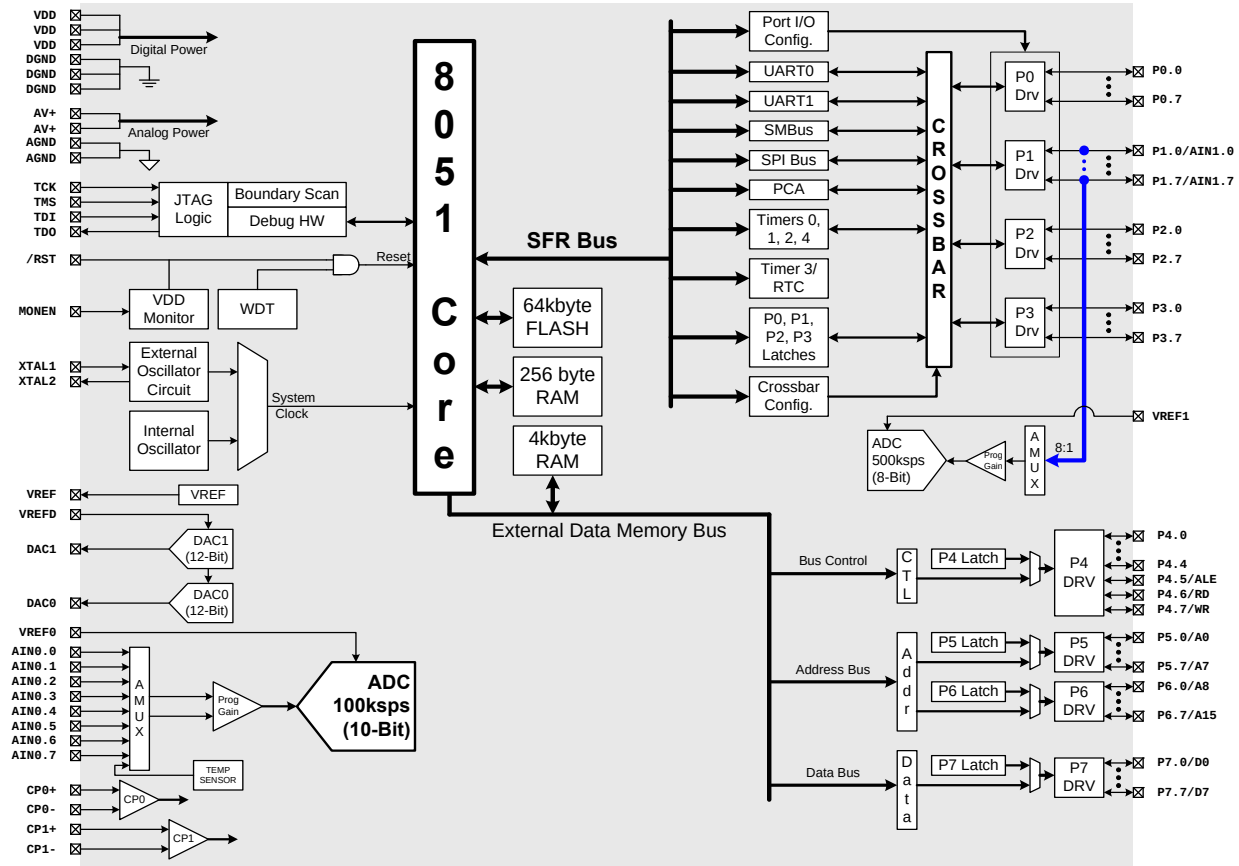
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F022-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- 22 vectored interrupt sources

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with 5 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using Timer 3 or PCA

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

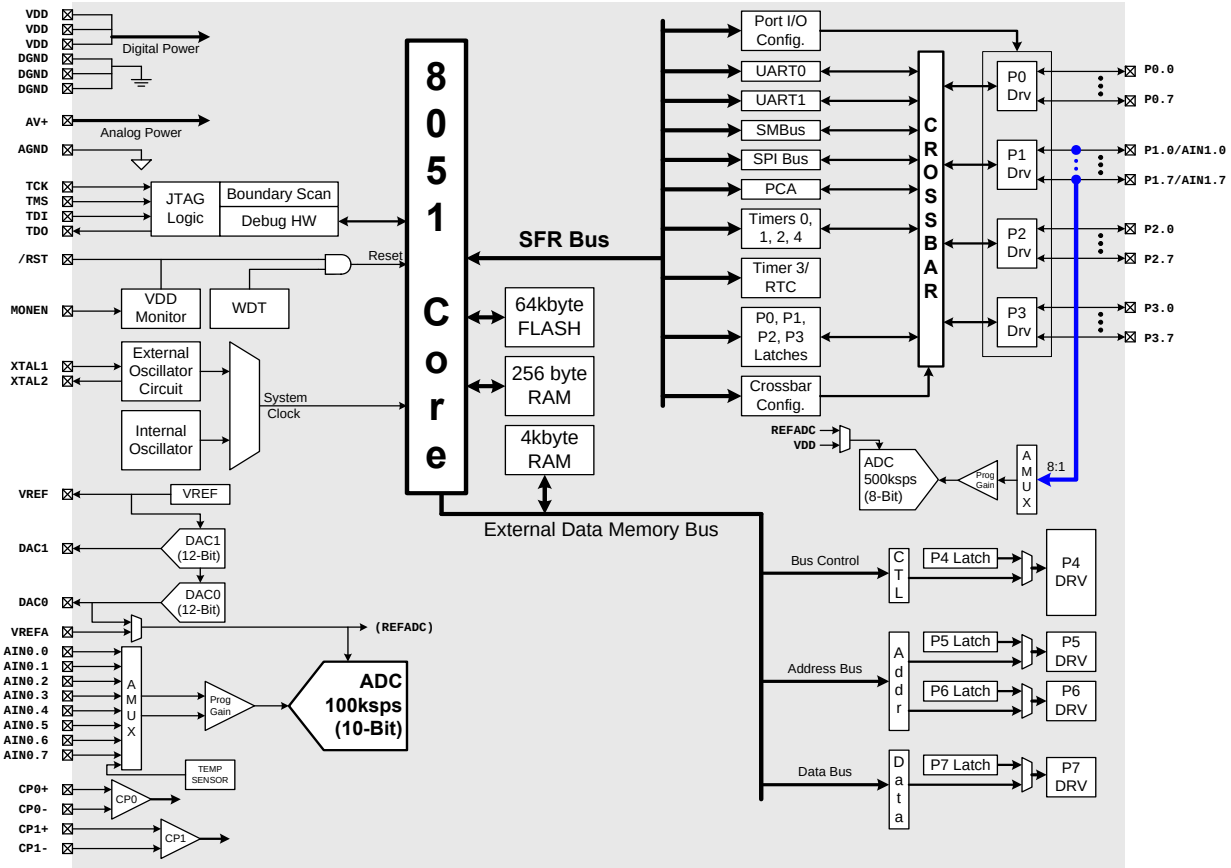
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F023-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 100 ksps
- 13 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

High-Voltage Differential Amplifier

- 60 V common mode input range
- Offset adjust from –60 to +60 V
- 16 gain settings from 0.05 to 16

8-Bit ADC

- Programmable throughput up to 500 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

Three Comparators

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor, program trace memory
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

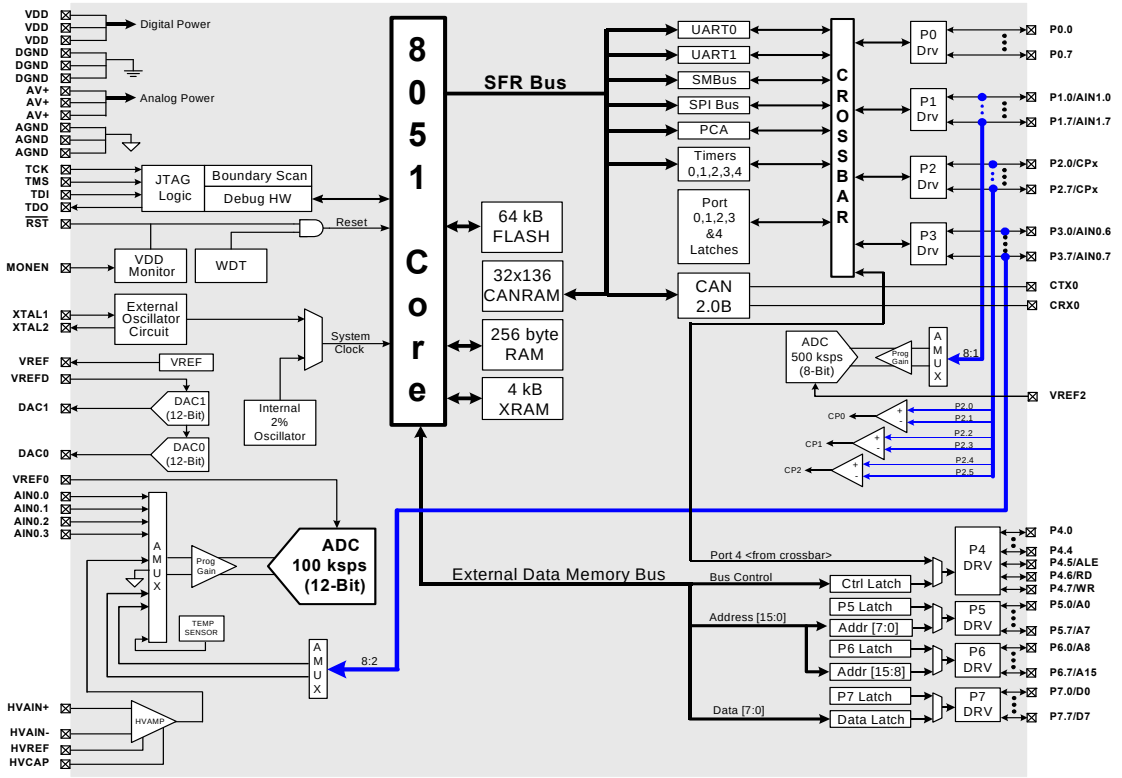
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

C8051F040-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 100 ksps
- 13 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

High-Voltage Differential Amplifier

- 60 V common mode input range
- Offset adjust from –60 to +60 V
- 16 gain settings from 0.05 to 16

8-Bit ADC

- Programmable throughput up to 500 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs
Three Comparators
Internal Voltage Reference
Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor, program trace memory
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

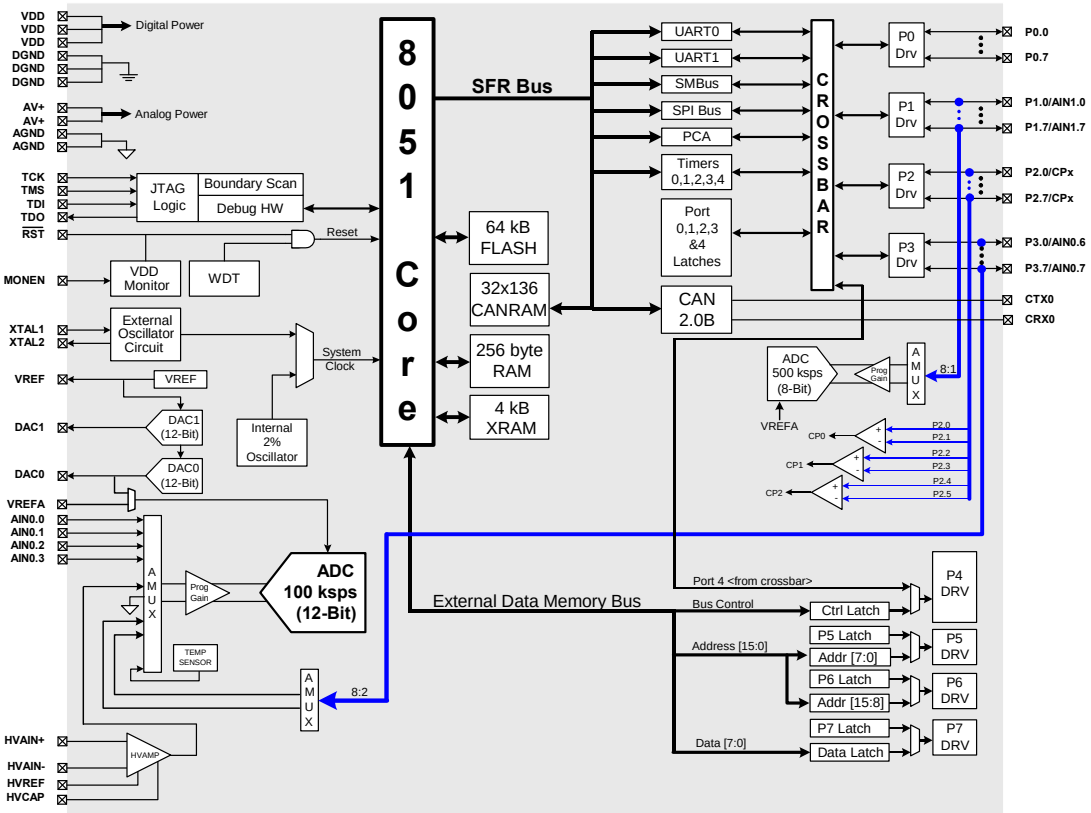
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown mode

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F041-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 100 ksps
- 13 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

High-Voltage Differential Amplifier

- 60 V common mode input range
- Offset adjust from –60 to +60 V
- 16 gain settings from 0.05 to 16

8-Bit ADC

- Programmable throughput up to 500 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs
Three Comparators
Internal Voltage Reference
Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor, program trace memory
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

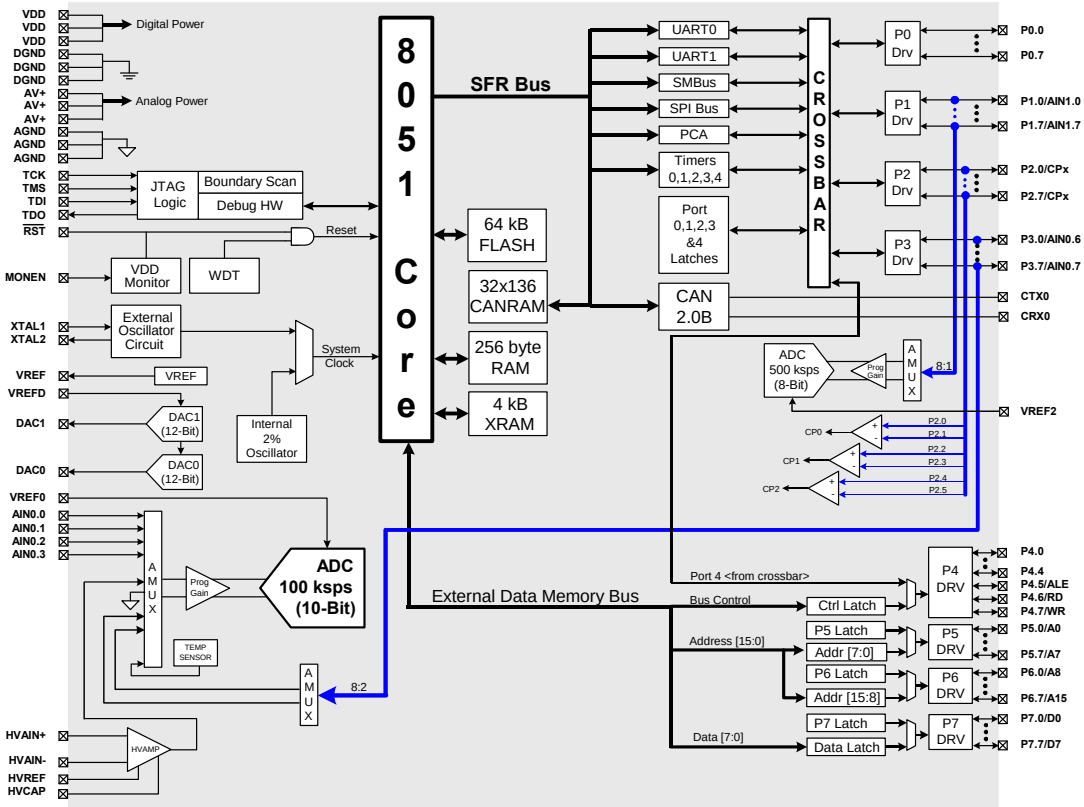
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown mode

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F042-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 100 ksps
- 13 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

High-Voltage Differential Amplifier

- 60 V common mode input range
- Offset adjust from –60 to +60 V
- 16 gain settings from 0.05 to 16

8-Bit ADC

- Programmable throughput up to 500 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs
Three Comparators
Internal Voltage Reference
Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
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- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

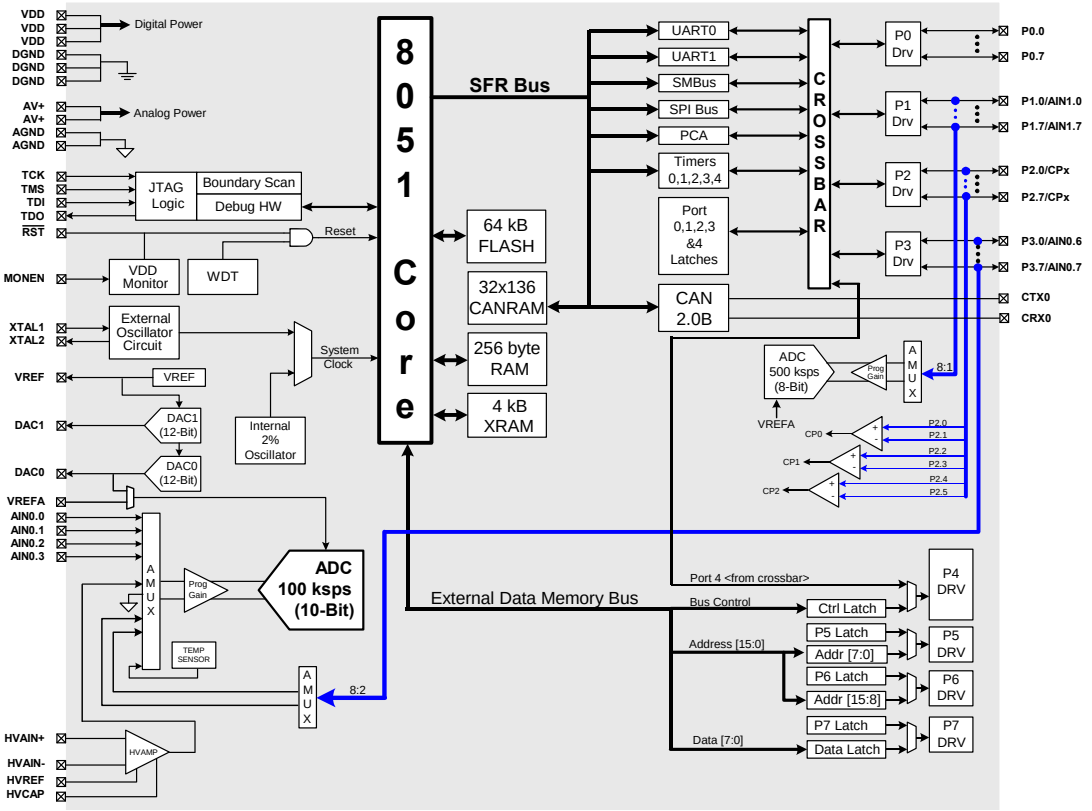
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown mode

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F043-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 100 ksps
- 13 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

High-Voltage Differential Amplifier

- 60 V common mode input range
- Offset adjust from –60 to +60 V
- 16 gain settings from 0.05 to 16

Three Comparators

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor, program trace memory
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

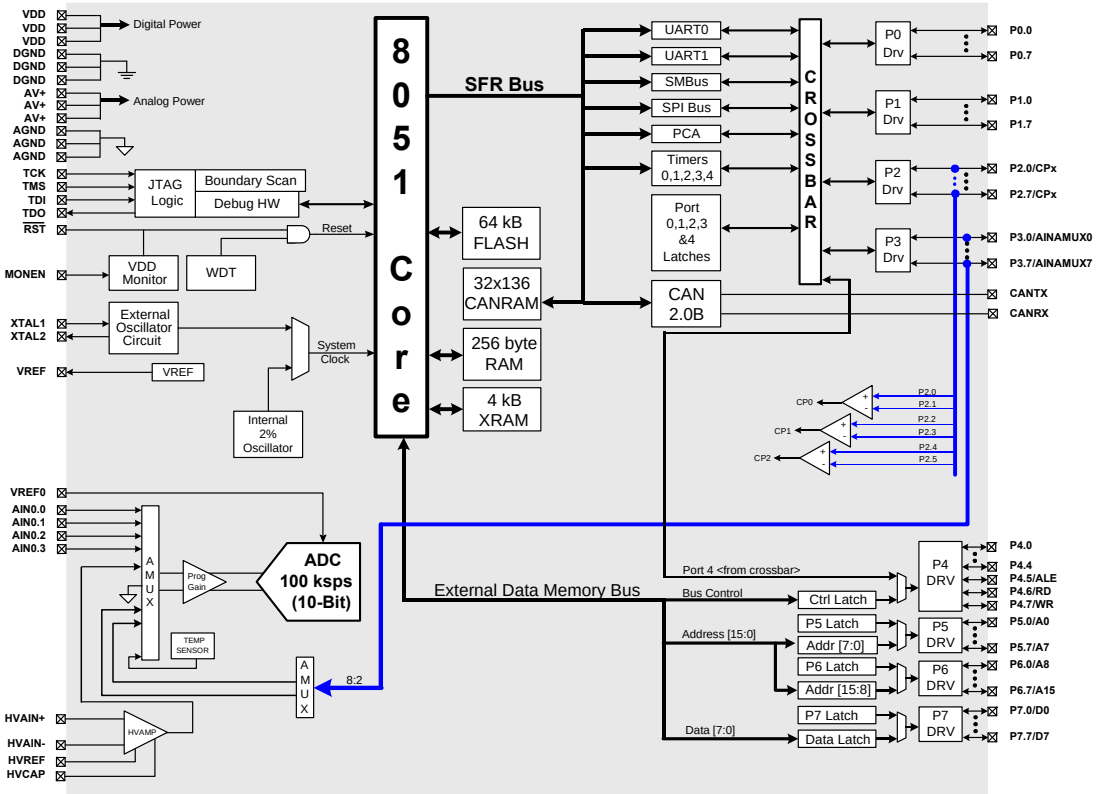
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F044-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 100 ksps
- 13 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

High-Voltage Differential Amplifier

- 60 V common mode input range
- Offset adjust from –60 to +60 V
- 16 gain settings from 0.05 to 16

Three Comparators

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor, program trace memory
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

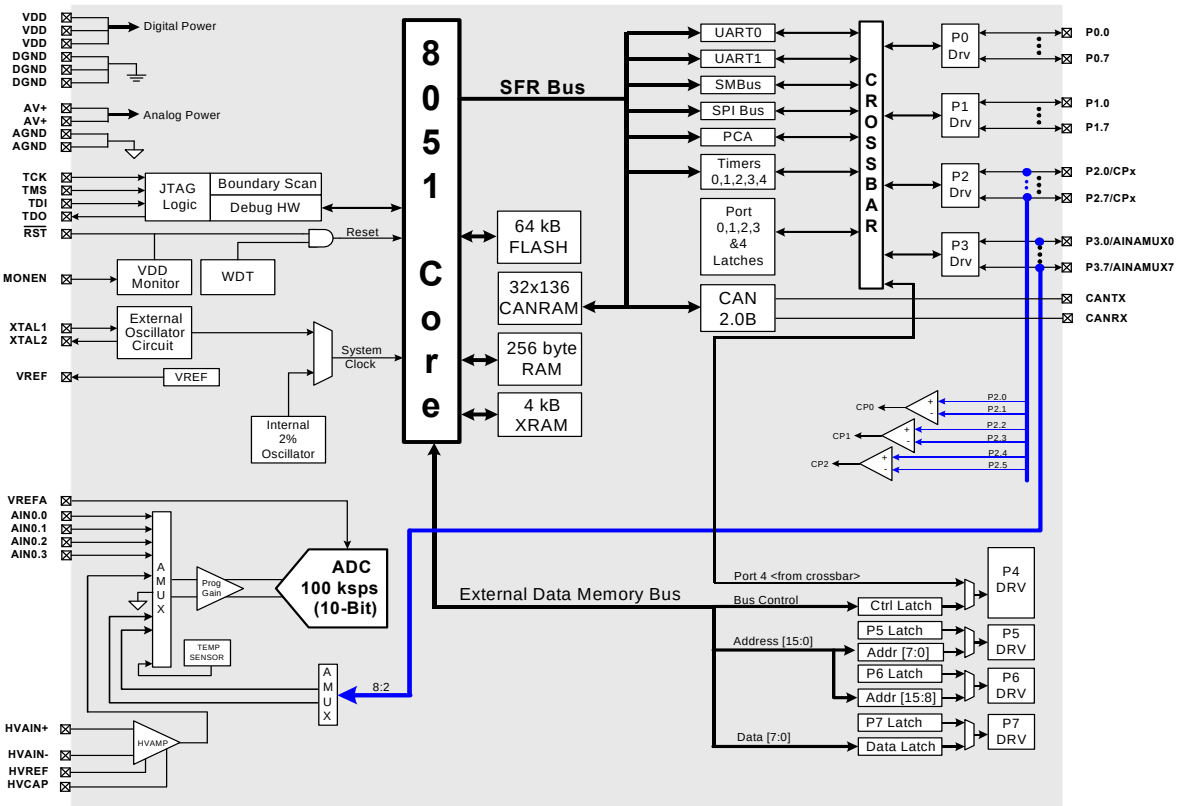
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown mode

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F045-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 100 ksps
- 13 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

High-Voltage Differential Amplifier

- 60 V common mode input range
- Offset adjust from –60 to +60 V
- 16 gain settings from 0.05 to 16

Three Comparators

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor, program trace memory
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

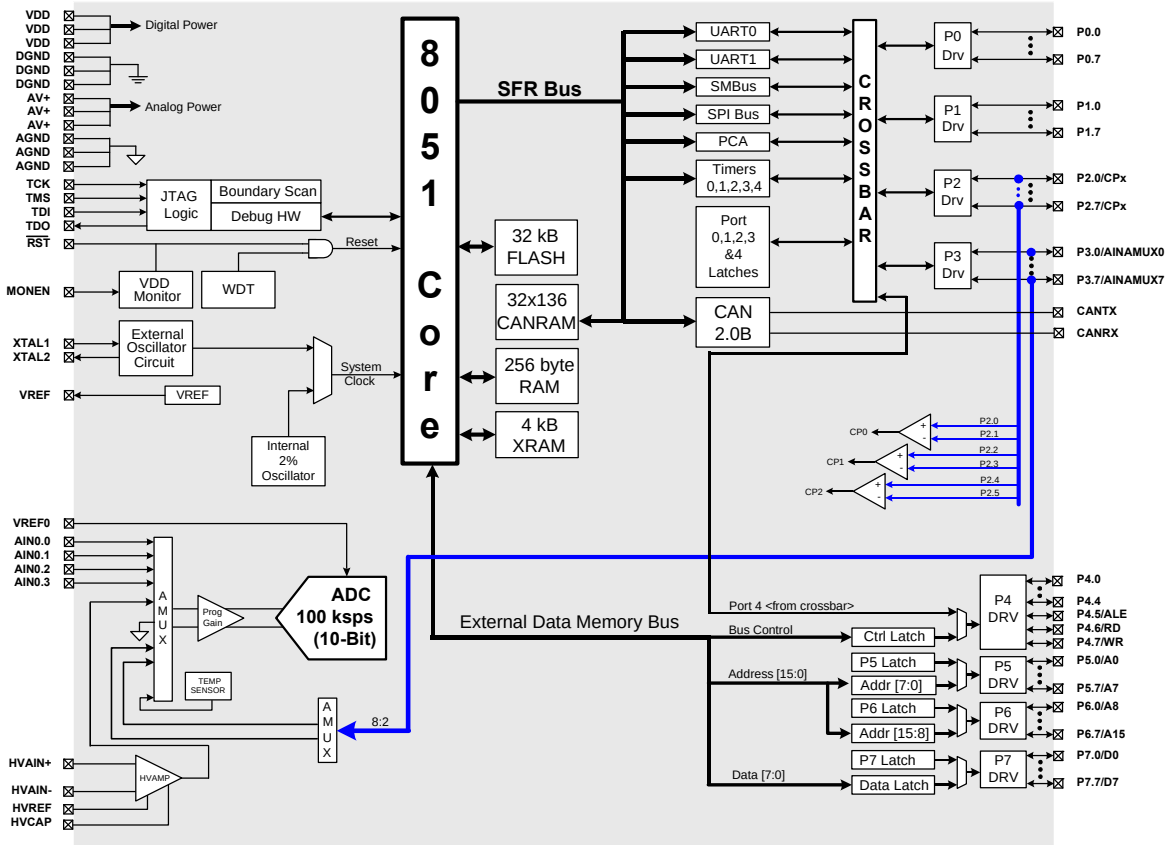
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown mode

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F046-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; guaranteed monotonic
- Programmable throughput up to 100 ksps
- 13 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

High-Voltage Differential Amplifier

- 60 V common mode input range
- Offset adjust from –60 to +60 V
- 16 gain settings from 0.05 to 16

Three Comparators

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor, program trace memory
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 25 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

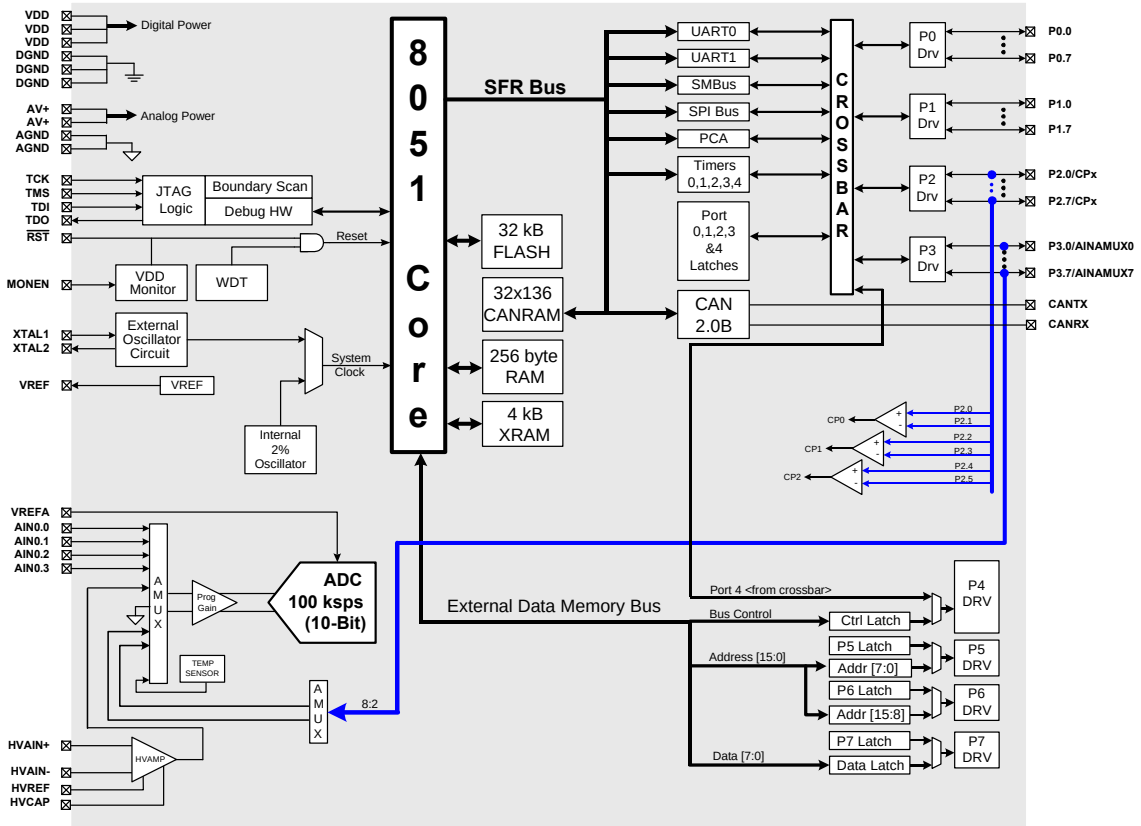
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown mode

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F047-GQ



Analog Peripherals

Two 16-Bit ADCs

- ±0.75 LSB INL; guaranteed no missing codes
- Programmable throughput up to 1 Msps (each ADC)
- Configurable as two single-ended or one differential ADC
- DMA to XRAM or external memory interface
- Data-dependent windowed interrupt generator

10-Bit ADC

- Programmable throughput up to 200 ksps
- 8 external inputs
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Three Comparators

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 59 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timers or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 24.5 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

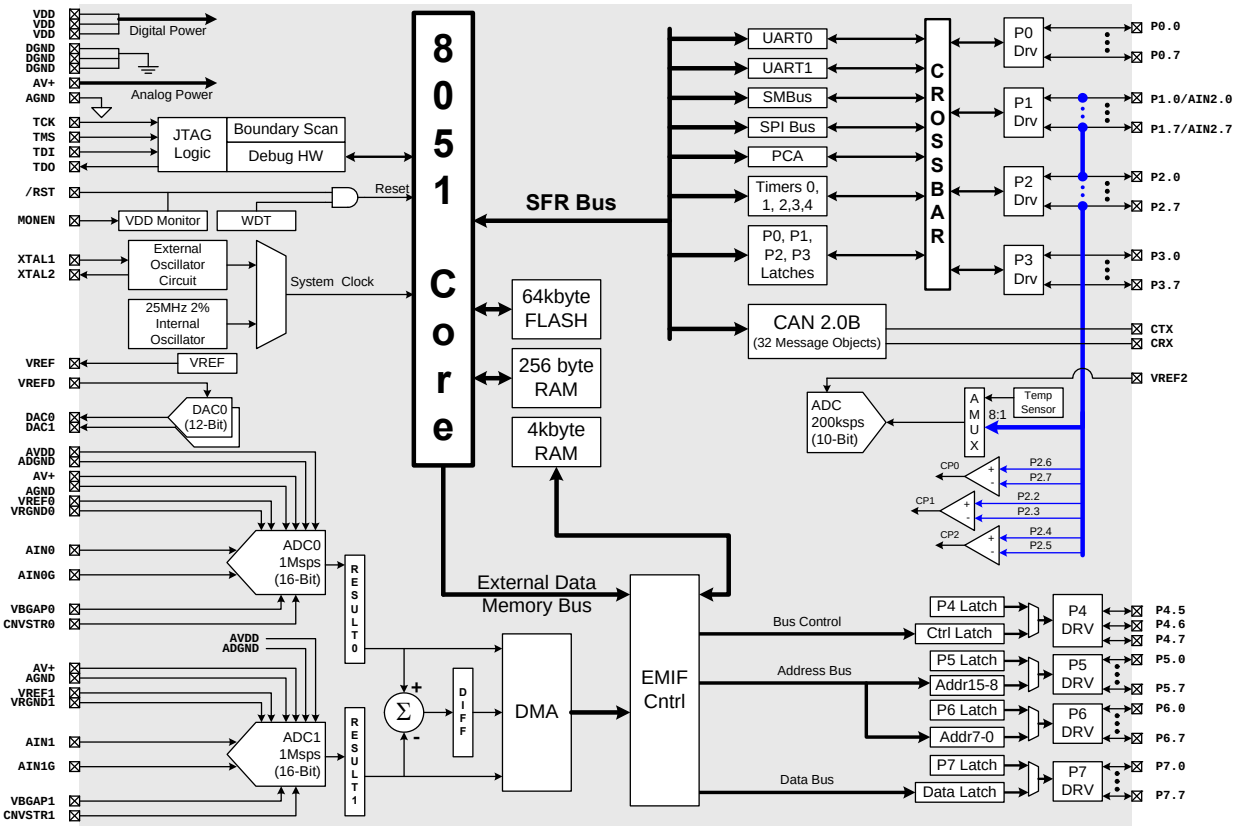
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F060-GQ



Analog Peripherals

Two 16-Bit ADCs

- ±0.75 LSB INL; guaranteed no missing codes
- Programmable throughput up to 1 Msps (each ADC)
- Configurable as two single-ended or one differential ADC
- DMA to XRAM or external memory interface
- Data-dependent windowed interrupt generator

10-Bit ADC

- Programmable throughput up to 200 ksps
- 8 external inputs
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Three Comparators

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 24 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timers or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 24.5 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

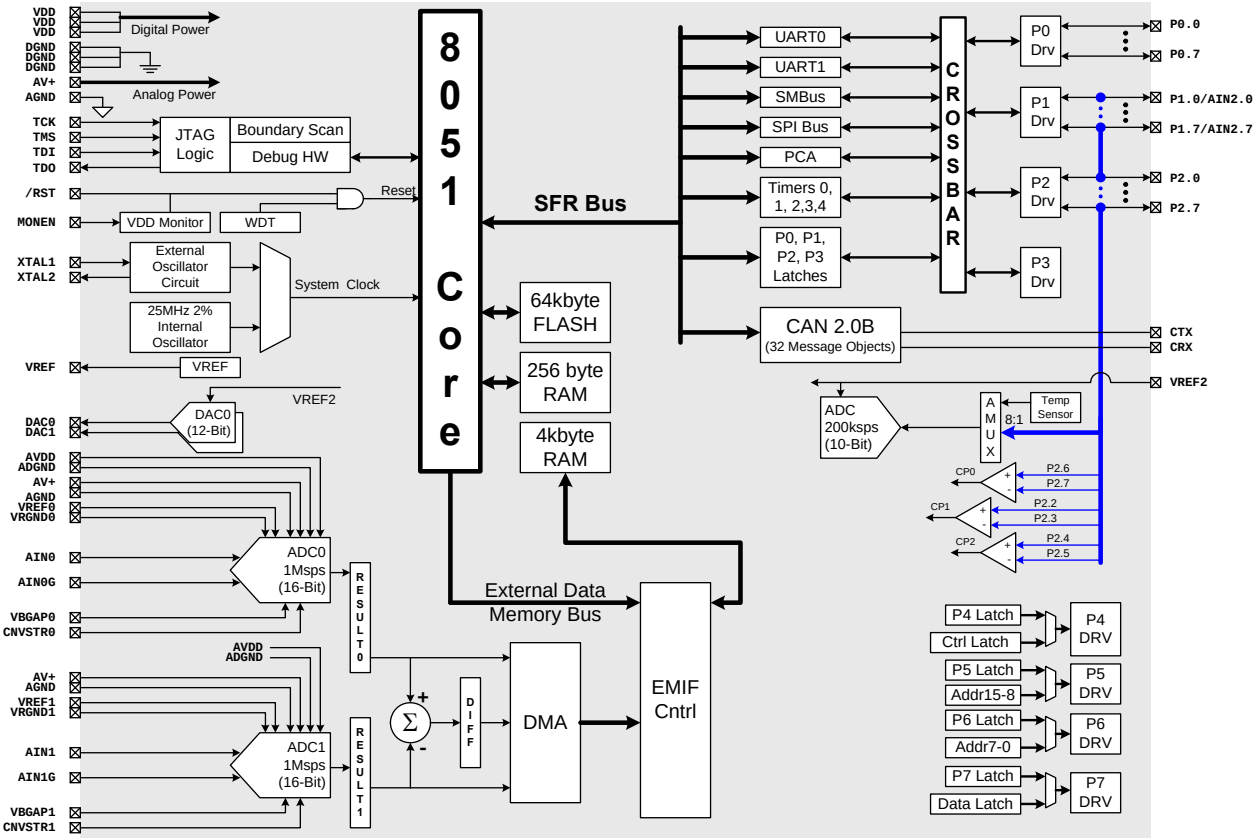
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F061-GQ



Analog Peripherals

Two 16-Bit ADCs

- ±1.5 LSB INL; guaranteed no missing codes
- Programmable throughput up to 1 Msps (each ADC)
- Configurable as two single-ended or one differential ADC
- DMA to XRAM or external memory interface
- Data-dependent windowed interrupt generator

10-Bit ADC

- Programmable throughput up to 200 ksps
- 8 external inputs
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Three Comparators

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 24 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timers or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 24.5 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

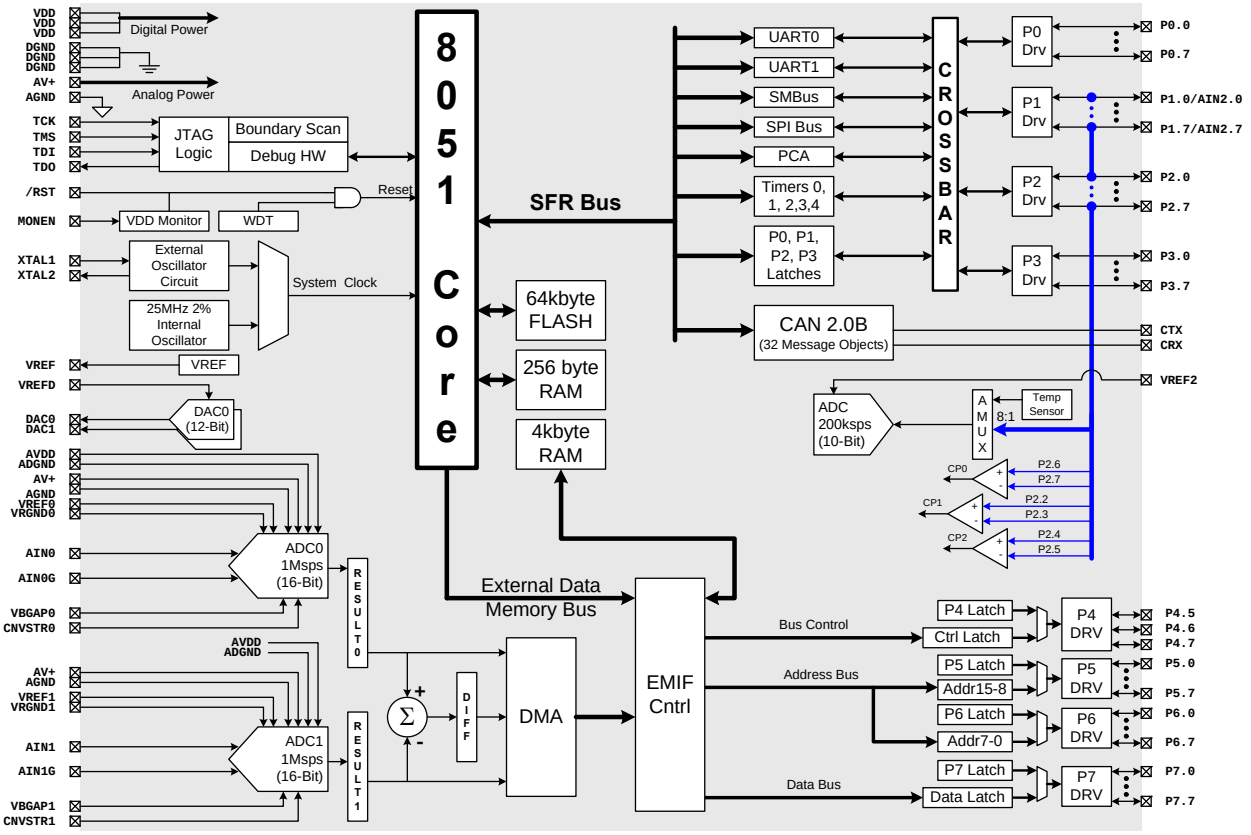
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F062-GQ



Analog Peripherals

Two 16-Bit ADCs

- ±1.5 LSB INL; guaranteed no missing codes
- Programmable throughput up to 1 Msps (each ADC)
- Configurable as two single-ended or one differential ADC
- DMA to XRAM or external memory interface
- Data-dependent windowed interrupt generator

10-Bit ADC

- Programmable throughput up to 200 ksps
- 8 external inputs
- Built-in temperature sensor (±3 °C)

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Three Comparators

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

CAN Bus 2.0B

- 32 message objects
- "Mailbox" implementation only interrupts CPU when needed

Digital Peripherals

- 24 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter array with 6 capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timers or PCA

Clock Sources

- Internal programmable 2% oscillator: up to 24.5 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

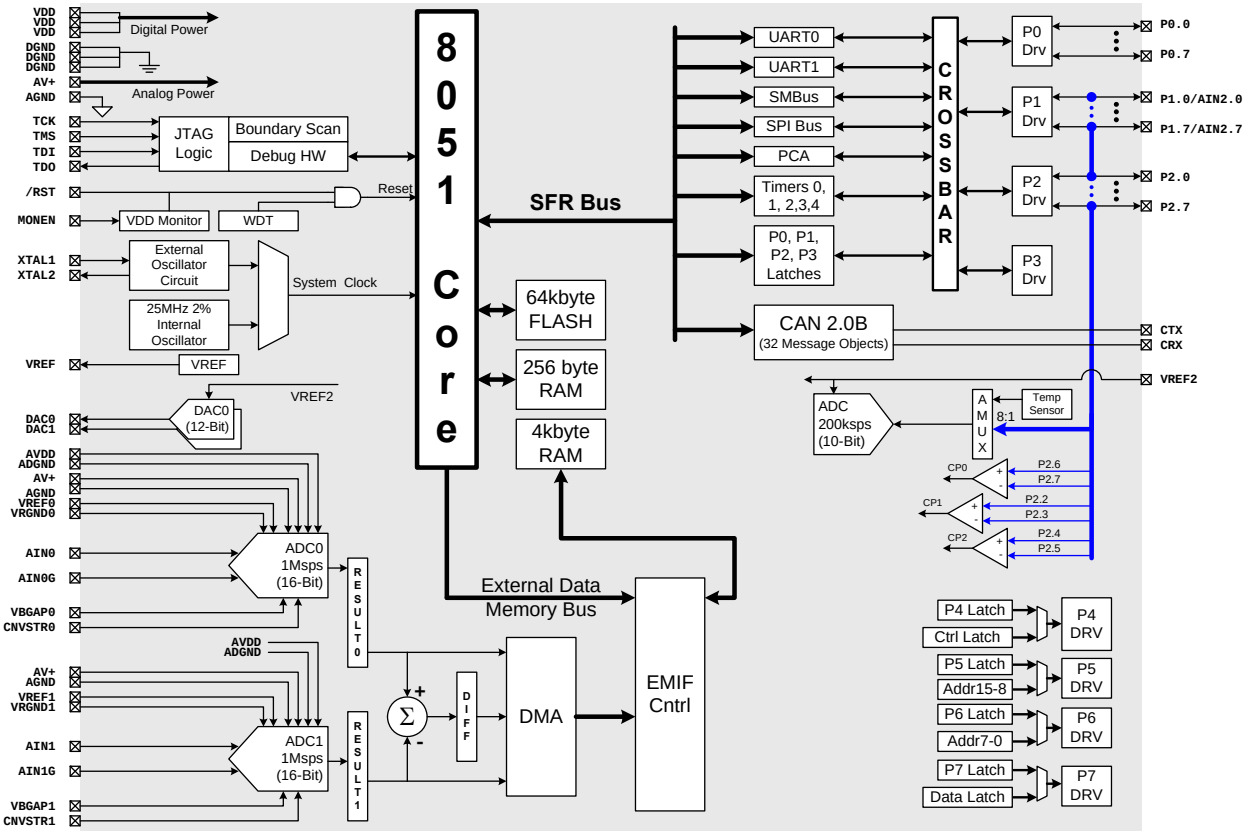
- Typical operating current: 10 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F063-GQ



Analog Peripherals

Two 16-Bit ADCs

- ±0.75 LSB INL; no missing codes
- Programmable throughput up to 1 Msps (each ADC)
- 1 external input each; programmable as two single-ended or one differential ADC
- DMA to XRAM or external memory interface
- Data-dependent windowed interrupt generator

Three Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 59 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timers or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

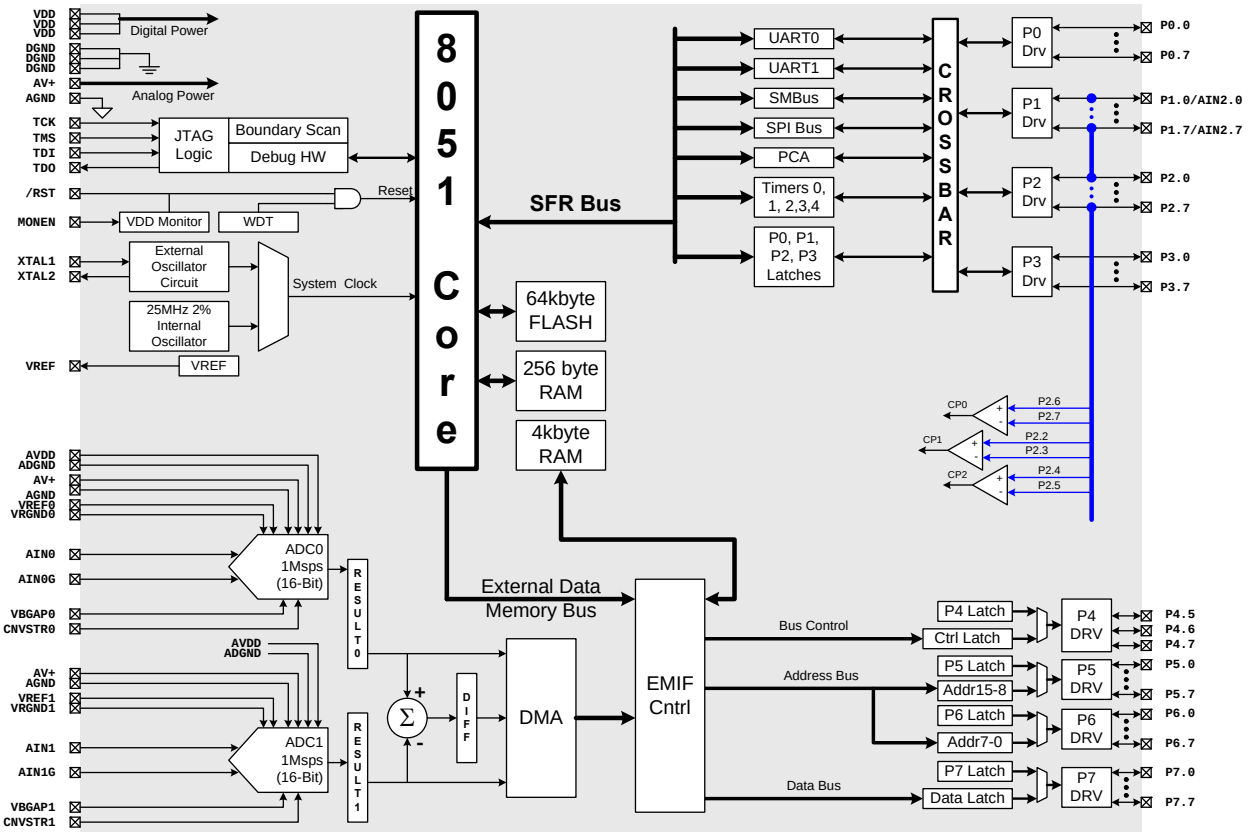
- Typical operating current: 18 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F064-GQ



Analog Peripherals

Two 16-Bit ADCs

- ±0.75 LSB INL; no missing codes
- Programmable throughput up to 1 Msps (each ADC)
- 1 external input each; programmable as two single-ended or one differential ADC
- DMA to XRAM or external memory interface
- Data-dependent windowed interrupt generator

Three Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 64 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)

Digital Peripherals

- 24 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timers or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

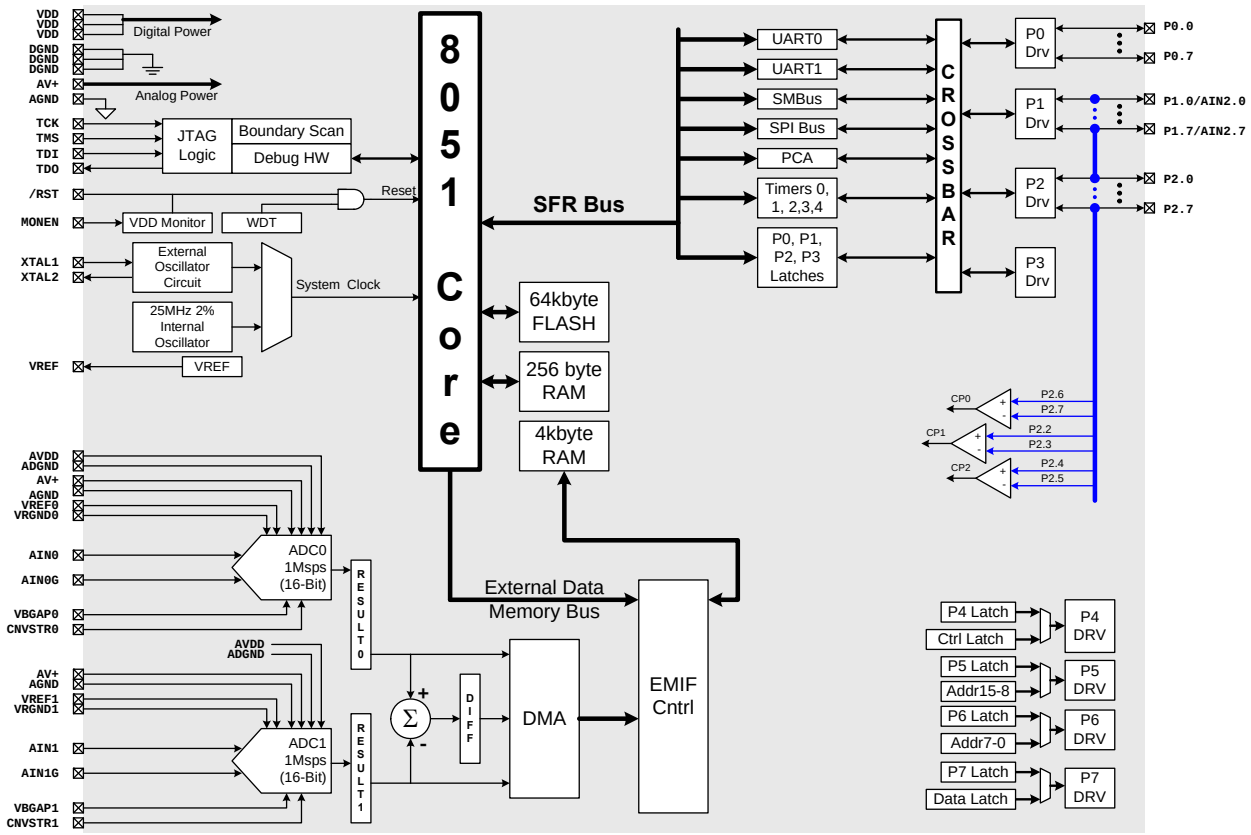
- Typical operating current: 18 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F065-GQ



Analog Peripherals

Two 16-Bit ADCs

- ±0.75 LSB INL; no missing codes
- Programmable throughput up to 1 Msps (each ADC)
- 1 external input each; programmable as two single-ended or one differential ADC
- DMA to XRAM or external memory interface
- Data-dependent windowed interrupt generator

Three Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

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- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 32 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 59 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timers or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

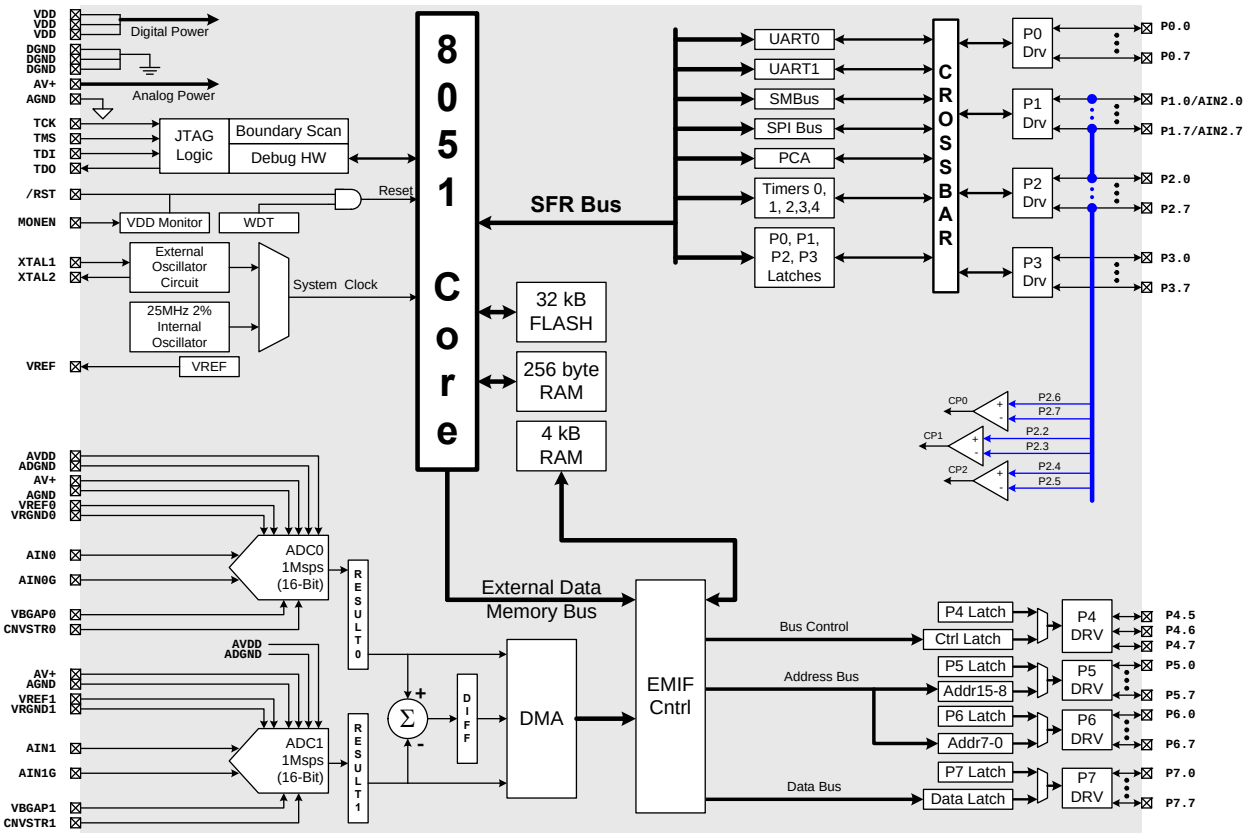
- Typical operating current: 18 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F066-GQ



Analog Peripherals

Two 16-Bit ADCs

- ±0.75 LSB INL; no missing codes
- Programmable throughput up to 1 Msps (each ADC)
- 1 external input each; programmable as two single-ended or one differential ADC
- DMA to XRAM or external memory interface
- Data-dependent windowed interrupt generator

Three Comparators

- 16 programmable hysteresis values
- Configurable to generate interrupts or reset

Internal Voltage Reference

Precision V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipe-lined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM
- 32 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)

Digital Peripherals

- 24 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timers or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

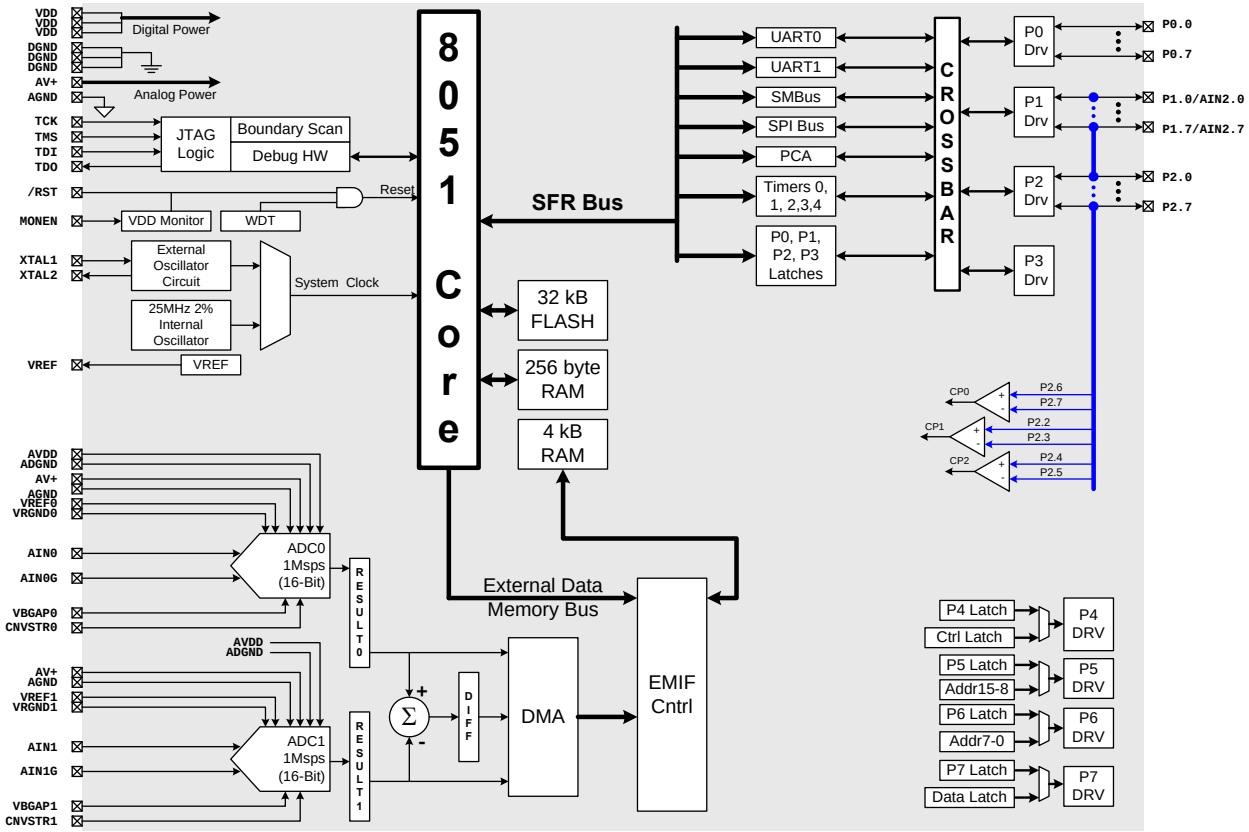
- Typical operating current: 18 mA at 25 MHz
- Multiple power saving sleep and shutdown modes

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F067-GQ



100 MIPS, 128 kB Flash, 12-Bit ADC, 100-Pin Mixed-Signal MCU

Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 100 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 3.0 to 3.6 V

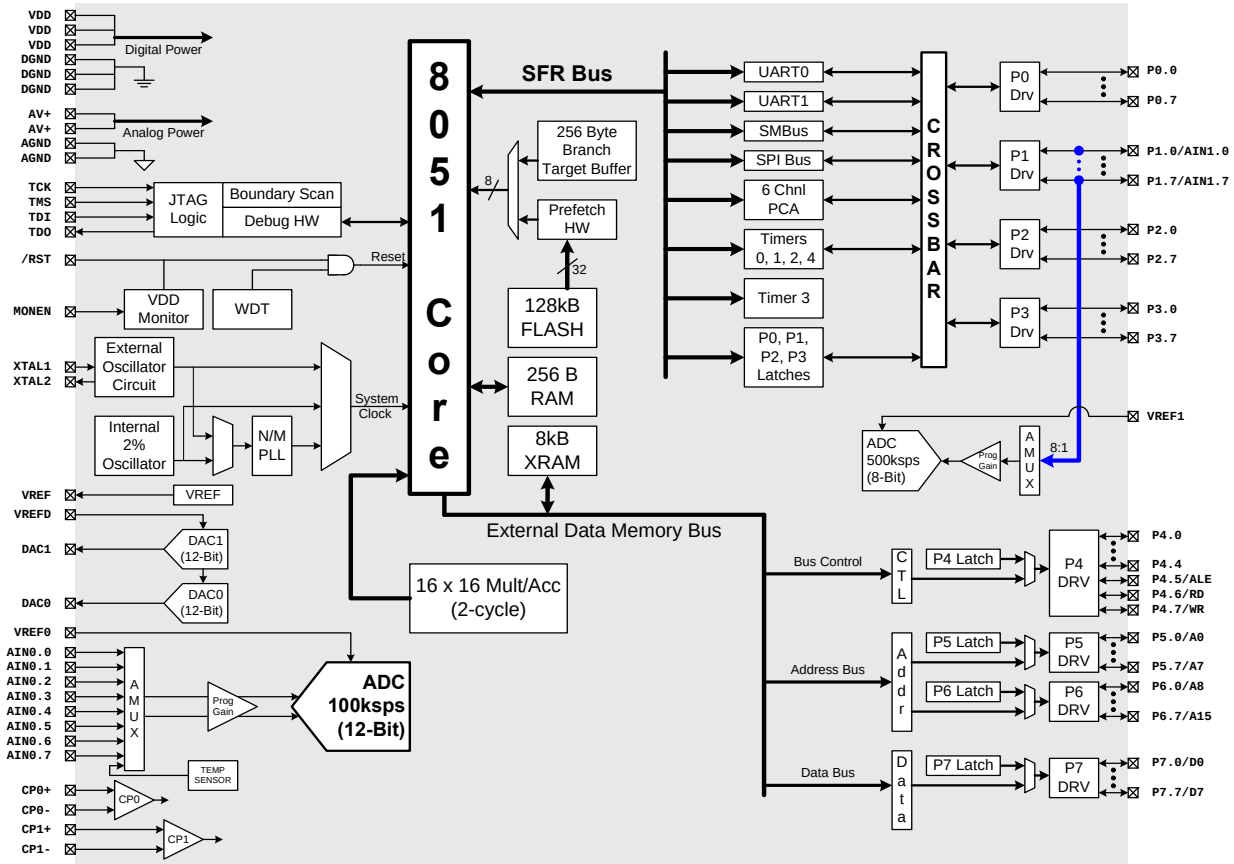
- Typical operating current: 50 mA at 100 MHz
- Typical stop mode current: 0.4 µA

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F120-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ Compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using Timer 3 or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 100 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 3.0 to 3.6 V

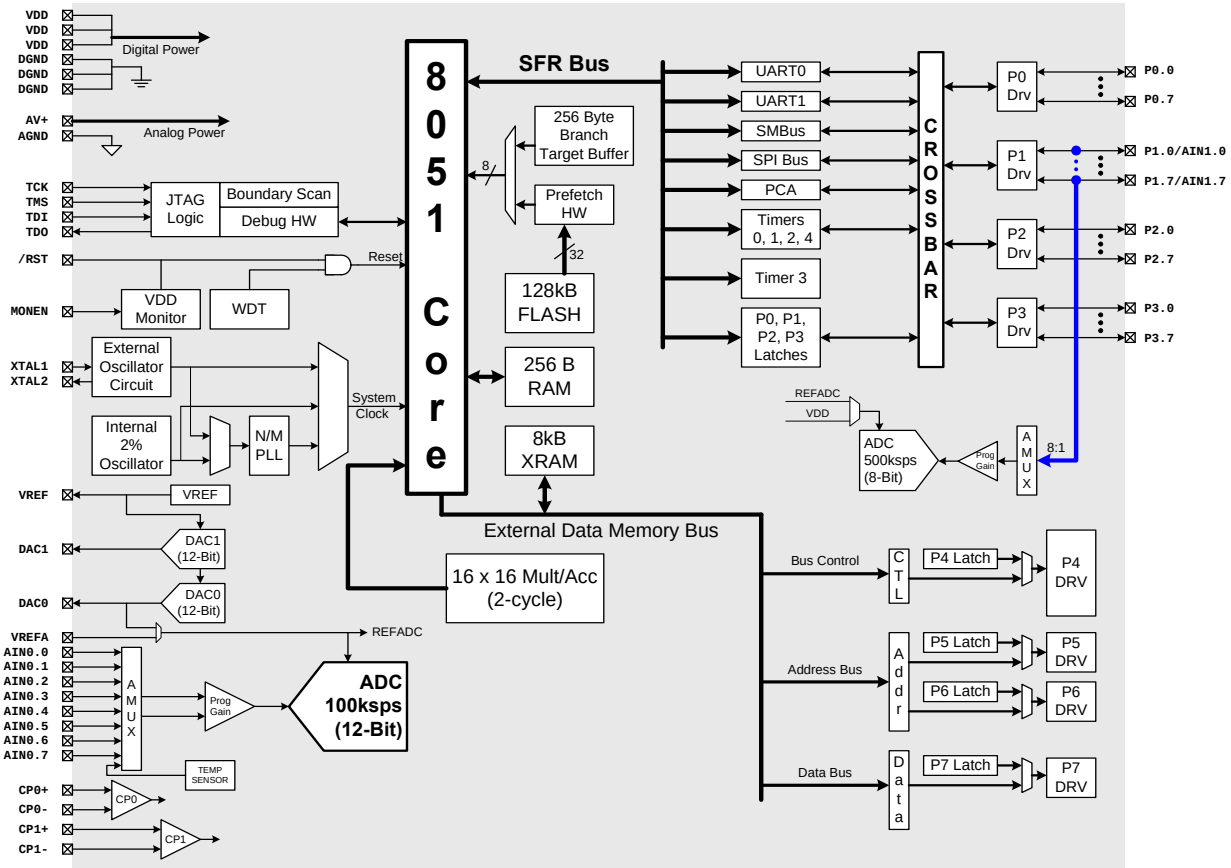
- Typical operating current: 50 mA at 100 MHz
- Typical stop mode current: 0.4 µA

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F121-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using Timer 3 or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 100 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 3.0 to 3.6 V

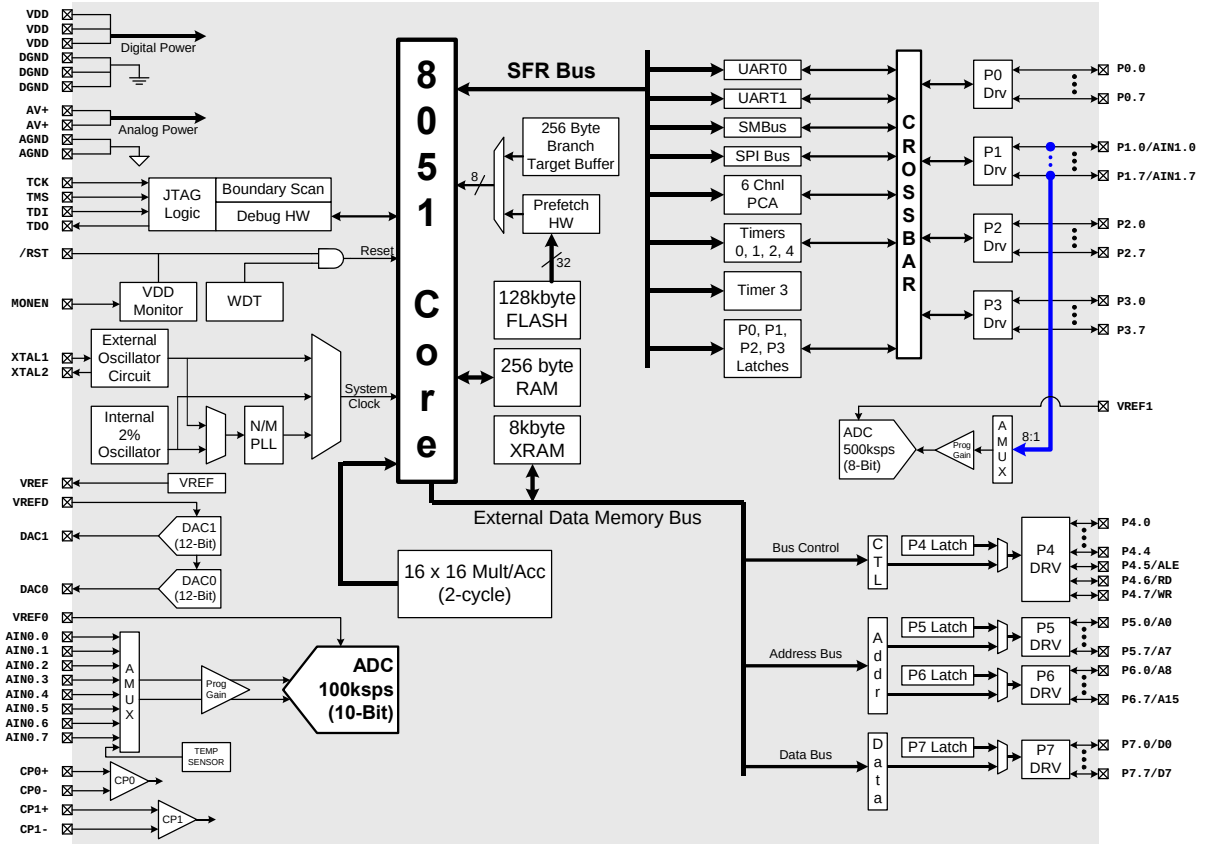
- Typical operating current: 50 mA at 100 MHz
- Typical stop mode current: 0.4 µA

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F122-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ Compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using Timer 3 or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 100 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 3.0 to 3.6 V

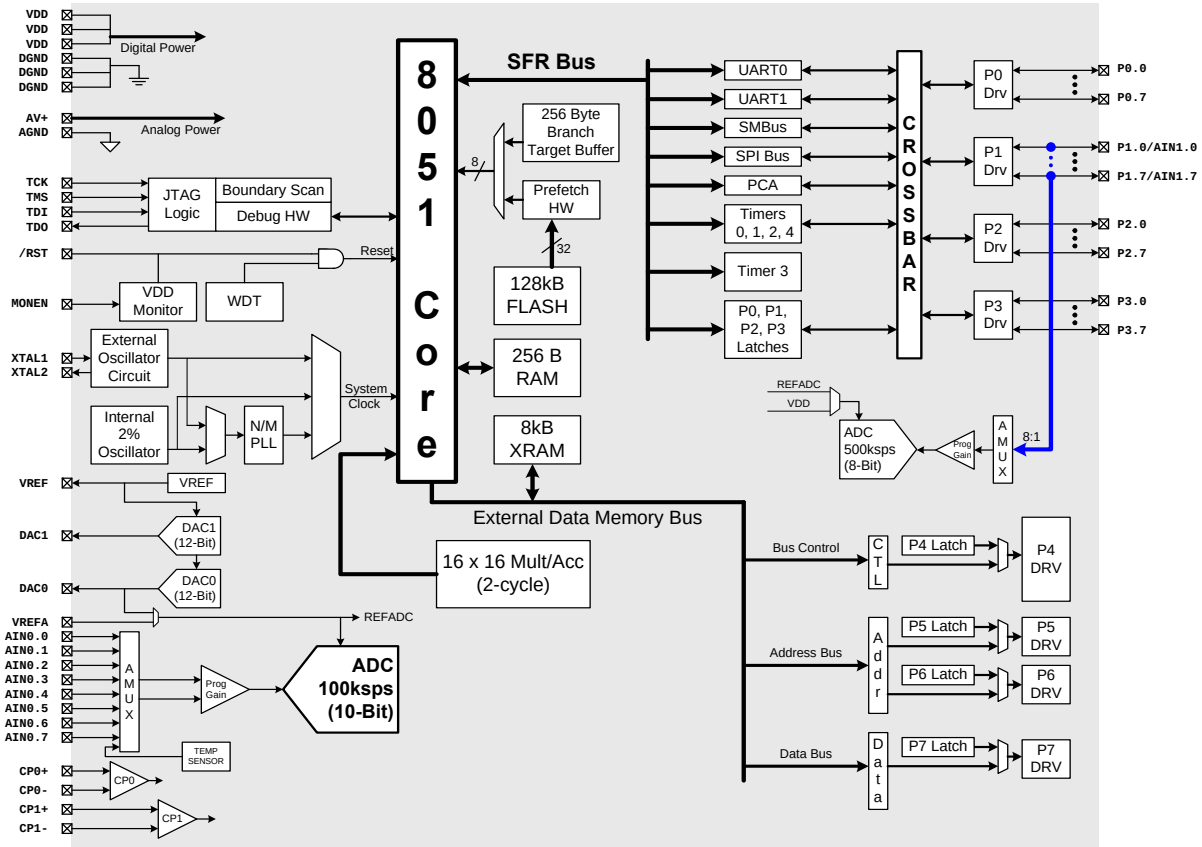
- Typical operating current: 50 mA at 100 MHz
- Typical stop mode current: 0.4 µA

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F123-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Real-time instruction trace buffer
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz system clock
- Expanded interrupt handler

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using a timer or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 50 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

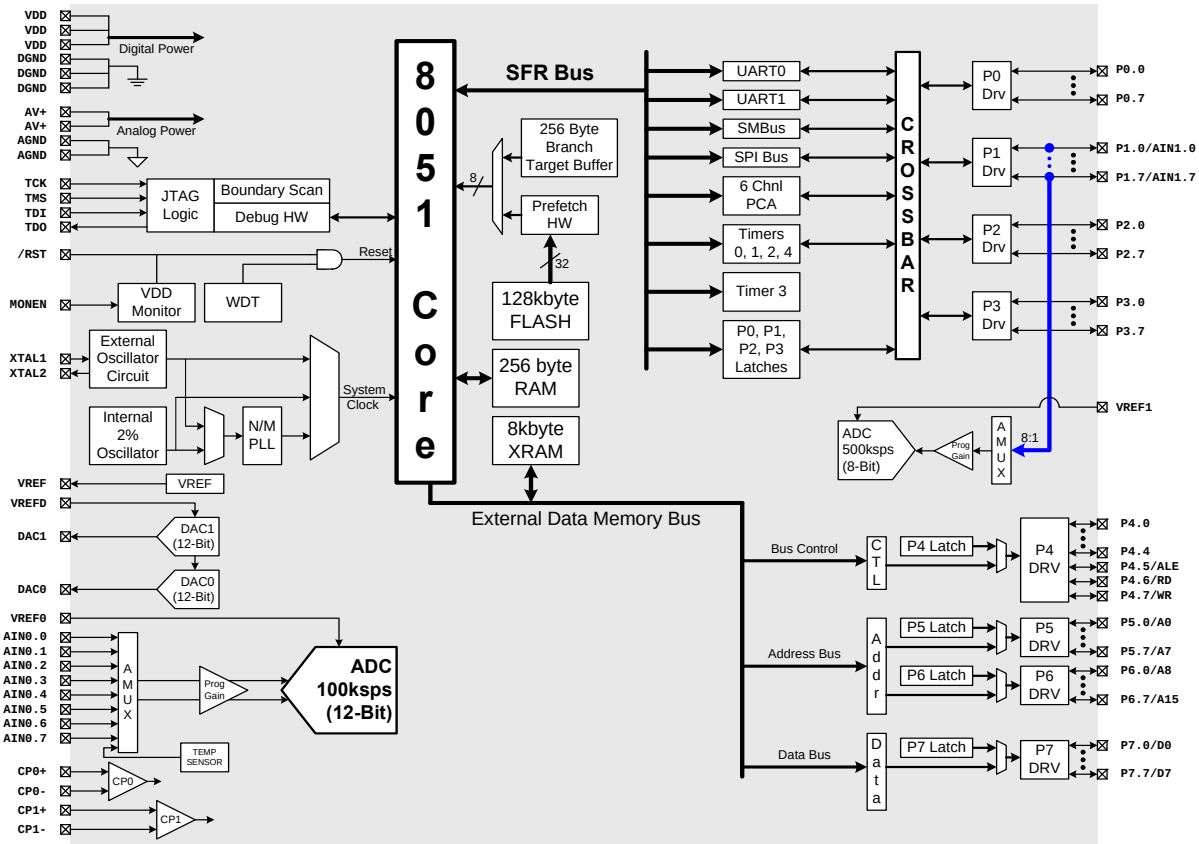
- Typical operating current: 25 mA at 50 MHz
- Typical stop mode current: <0.1 µA

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F124-GQ



Analog Peripherals

12-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Real-time instruction trace buffer
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz system clock
- Expanded interrupt handler

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using a timer or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 50 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

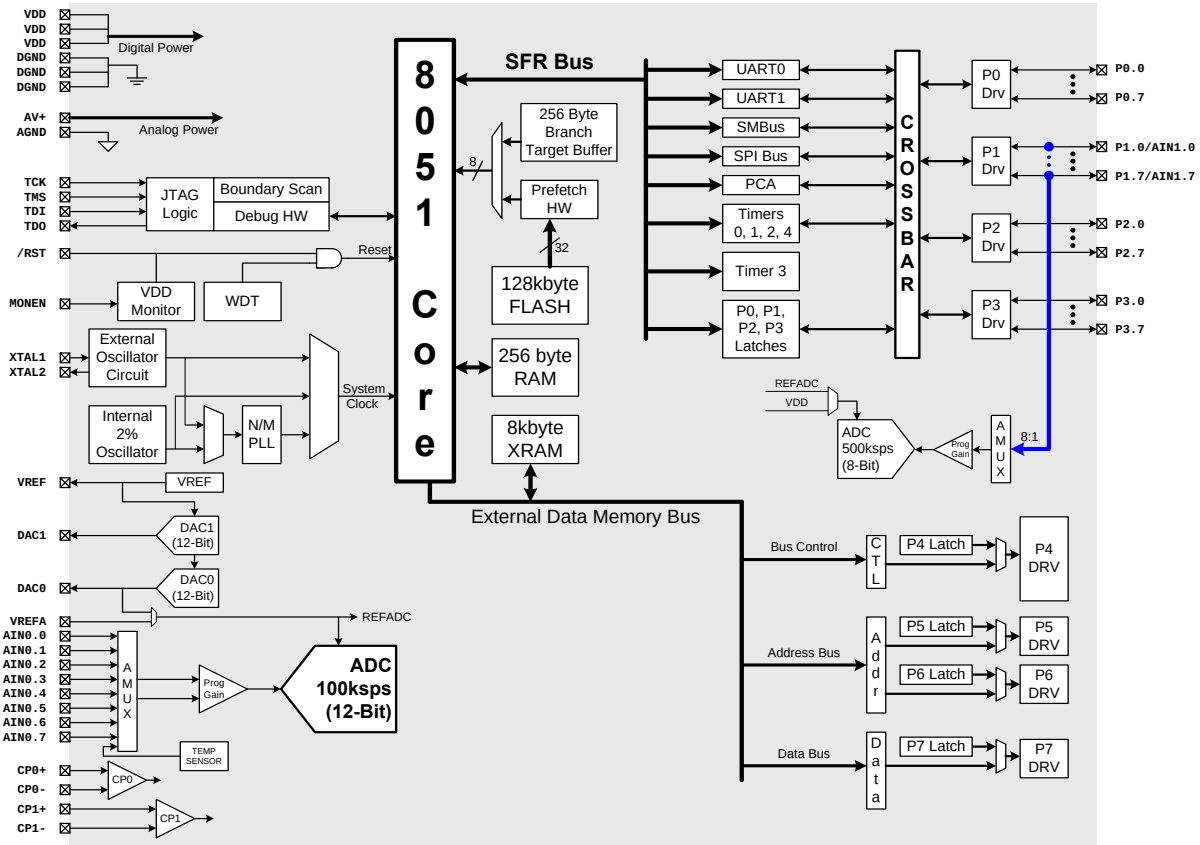
- Typical operating current: 25 mA at 50 MHz
- Typical stop mode current: <0.1 µA

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

C8051F125-GQ



50 MIPS, 128 kB Flash, 10-Bit ADC, 100-Pin Mixed-Signal MCU

Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Real-time instruction trace buffer
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS Throughput with 50 MHz system clock
- Expanded interrupt handler

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using a timer or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 50 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

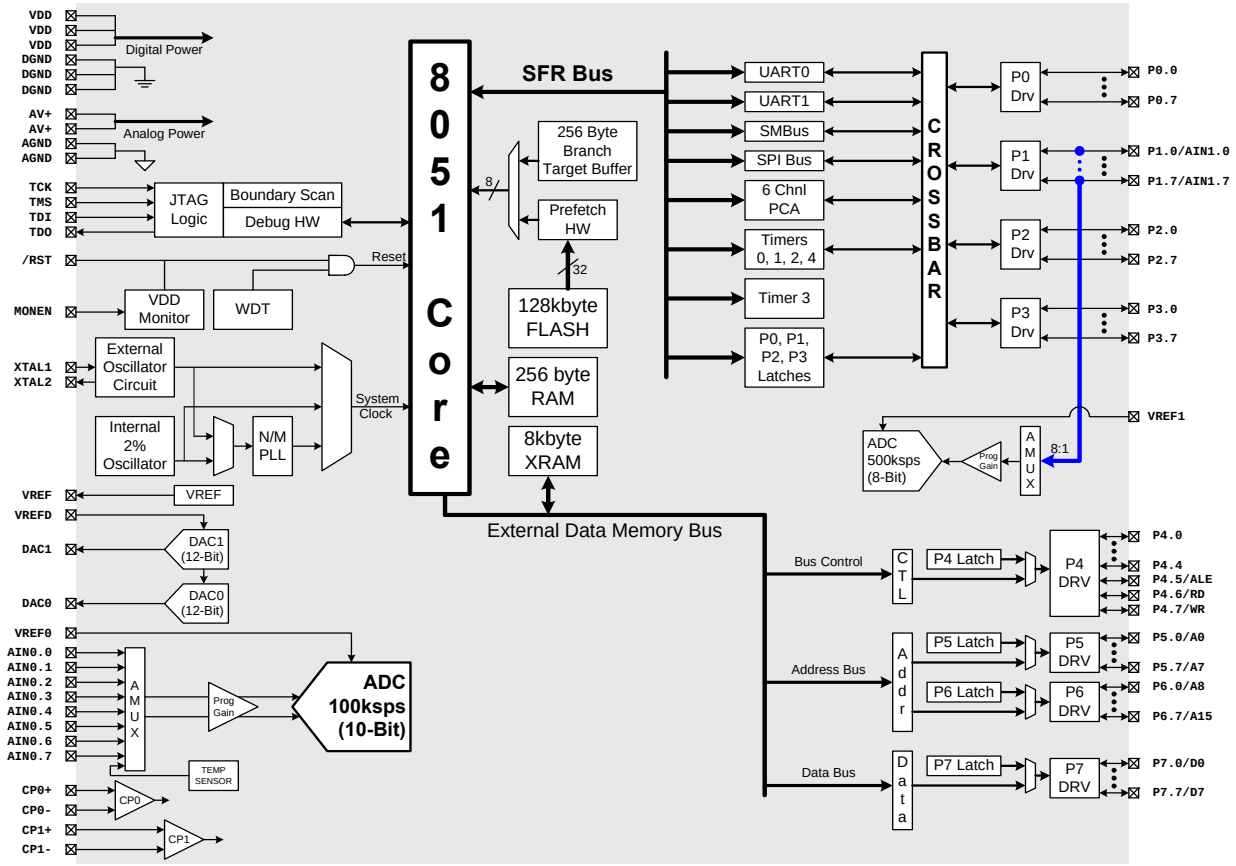
- Typical operating current: 25 mA at 50 MHz
- Typical stop mode current: <0.1 µA

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F126-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- 8 external inputs
- Programmable amplifier gain: 4, 2, 1, 0.5

Two 12-Bit DACs

- Can synchronize outputs to timers for jitter-free waveform generation

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Real-time instruction trace buffer
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz system clock
- Expanded interrupt handler

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using a timer or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 50 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 2.7 to 3.6 V

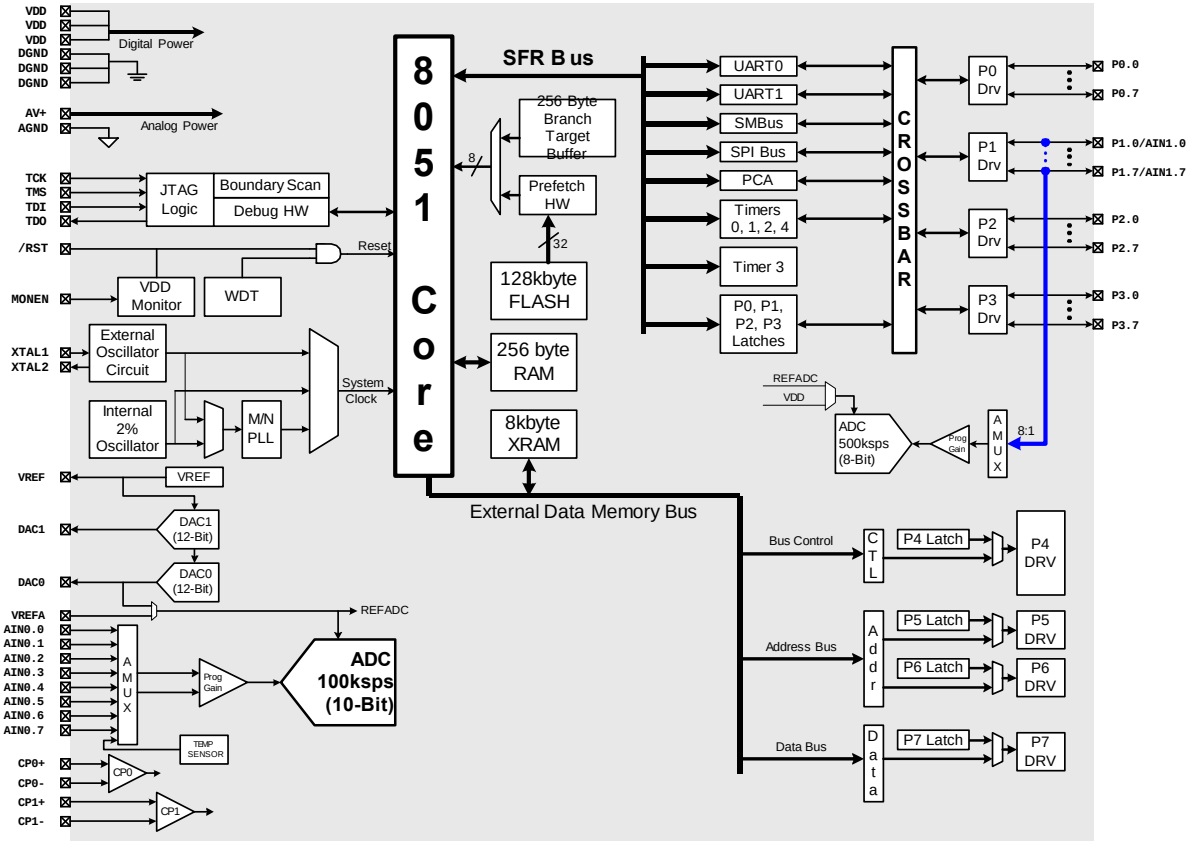
- Typical operating current: 25 mA at 50 MHz
- Typical stop mode current: <0.1 µA

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F127-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 100 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 3.0 to 3.6 V

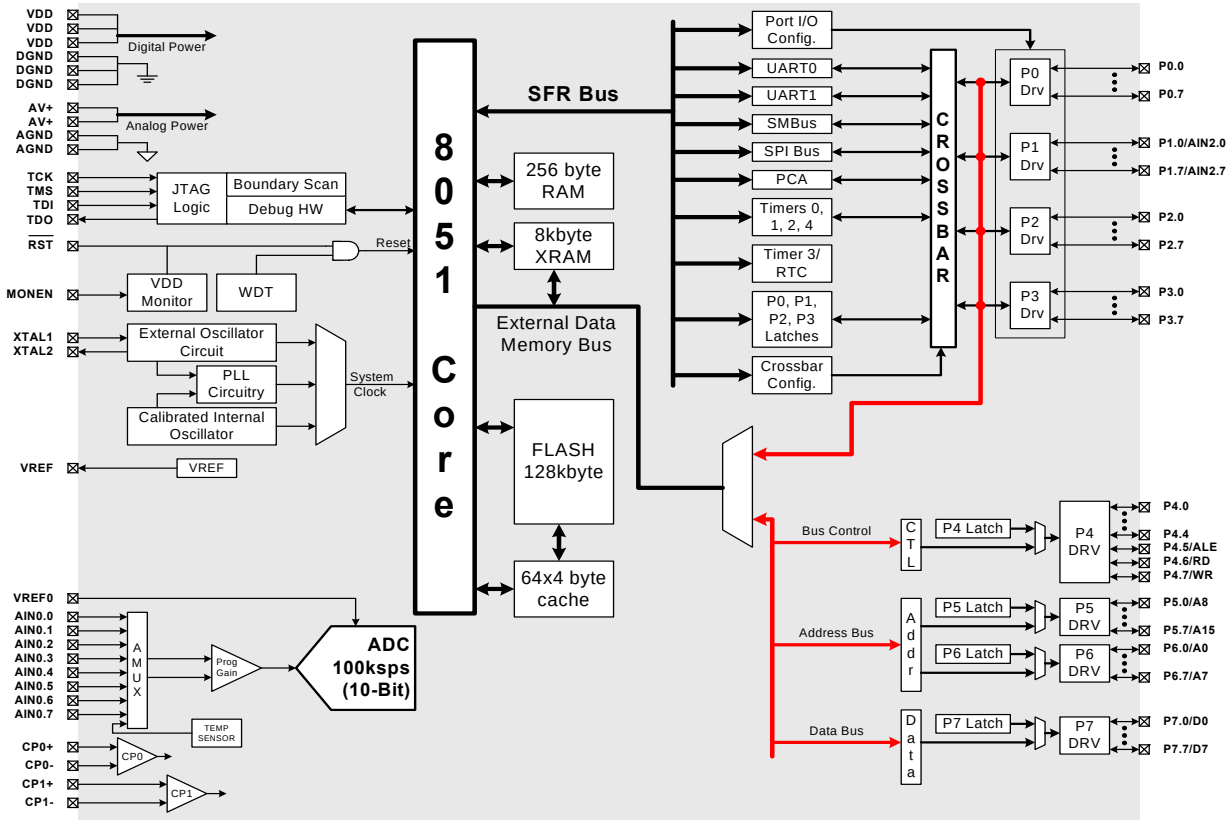
- Typical operating current: 50 mA at 100 MHz
- Typical stop mode current: 0.4 µA

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F130-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 8448 bytes data RAM
- 128 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ Compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using Timer 3 or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 100 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 3.0 to 3.6 V

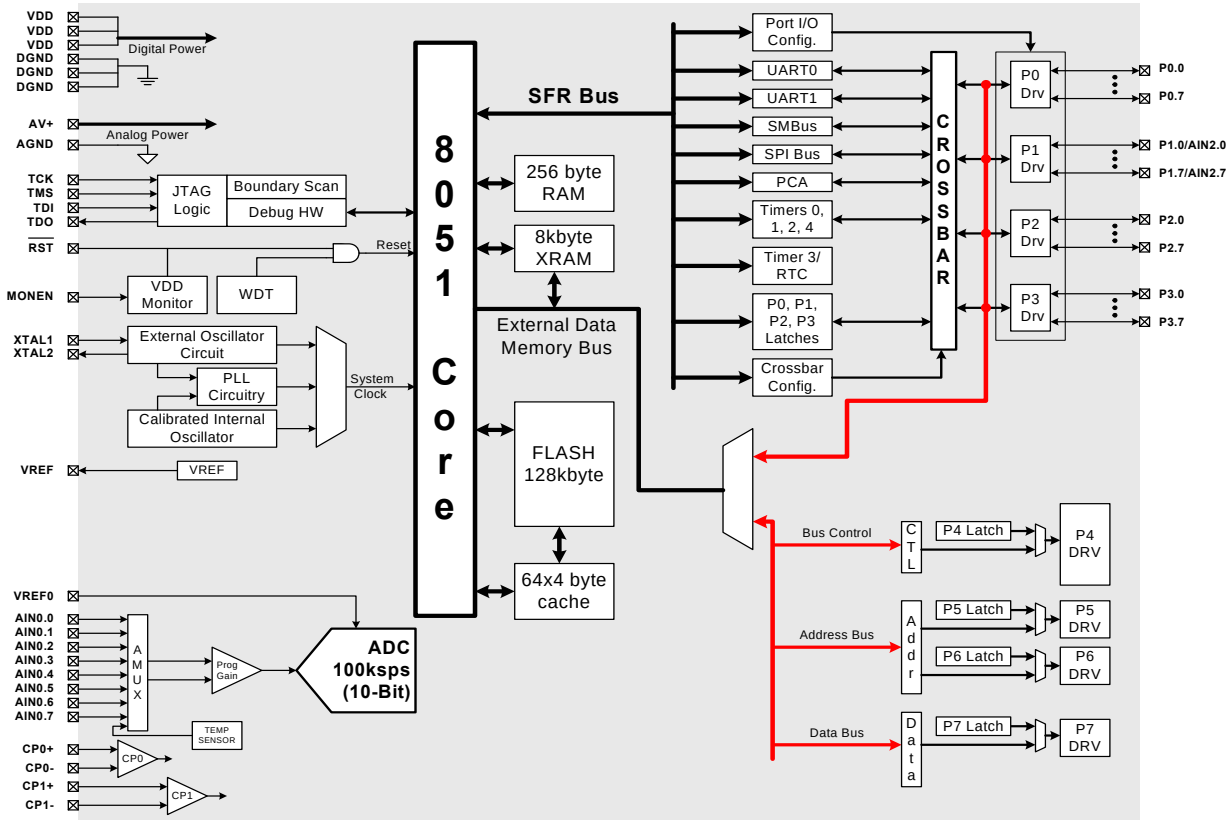
- Typical operating current: 50 mA at 100 MHz
- Typical stop mode current: 0.4 µA

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F131-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 8448 bytes data RAM
- 64 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 64 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using timer 3 or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 100 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 3.0 to 3.6 V

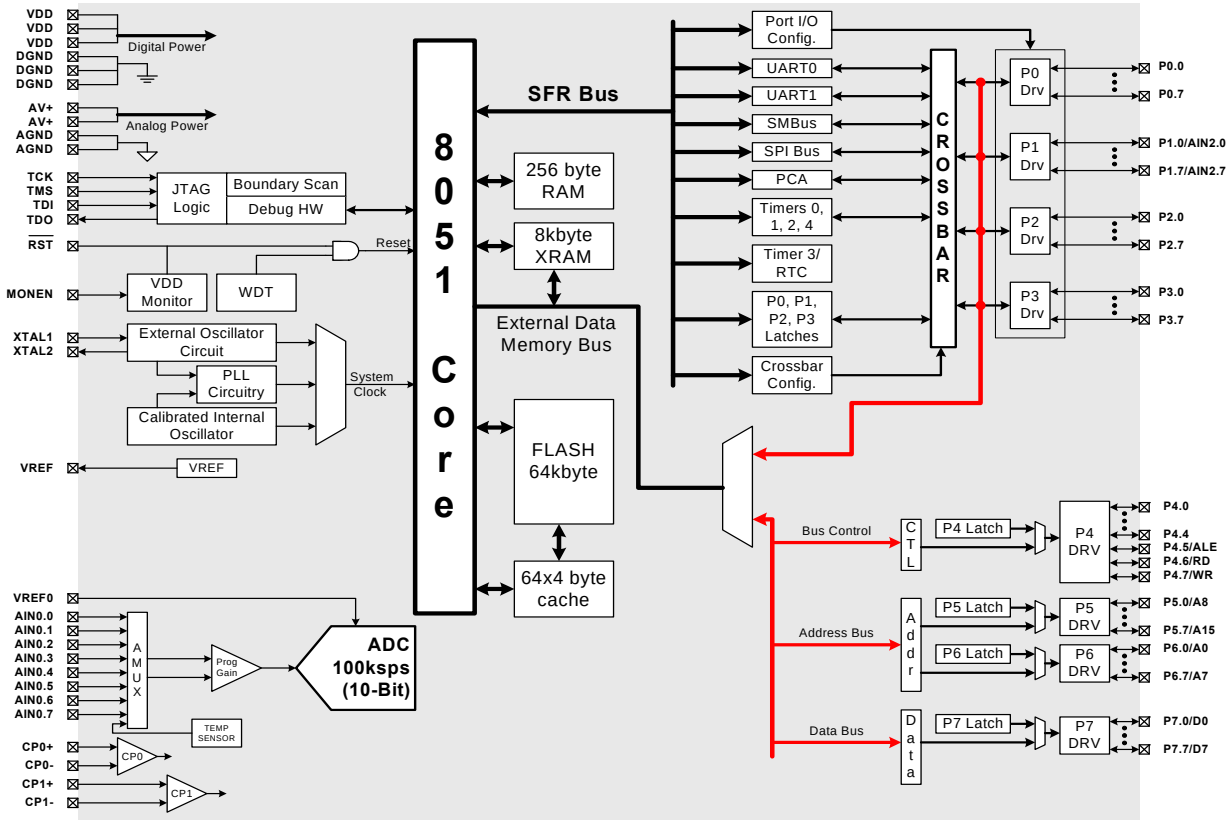
- Typical operating current: 50 mA at 100 MHz
- Typical stop mode current: 0.4 µA

Package

- 100-pin TQFP (lead-free package)

Ordering Part Number

- C8051F132-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two Comparators

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip JTAG Debug & Boundary Scan

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints, stack monitor
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- IEEE1149.1 compliant boundary scan

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 8448 bytes data RAM
- 64 kB Flash; in-system programmable in 1024-byte sectors (1024 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ Compatible), SPI™, and two UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using Timer 3 or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- On-chip programmable PLL: up to 100 MHz
- External oscillator: Crystal, RC, C, or Clock

Supply Voltage: 3.0 to 3.6 V

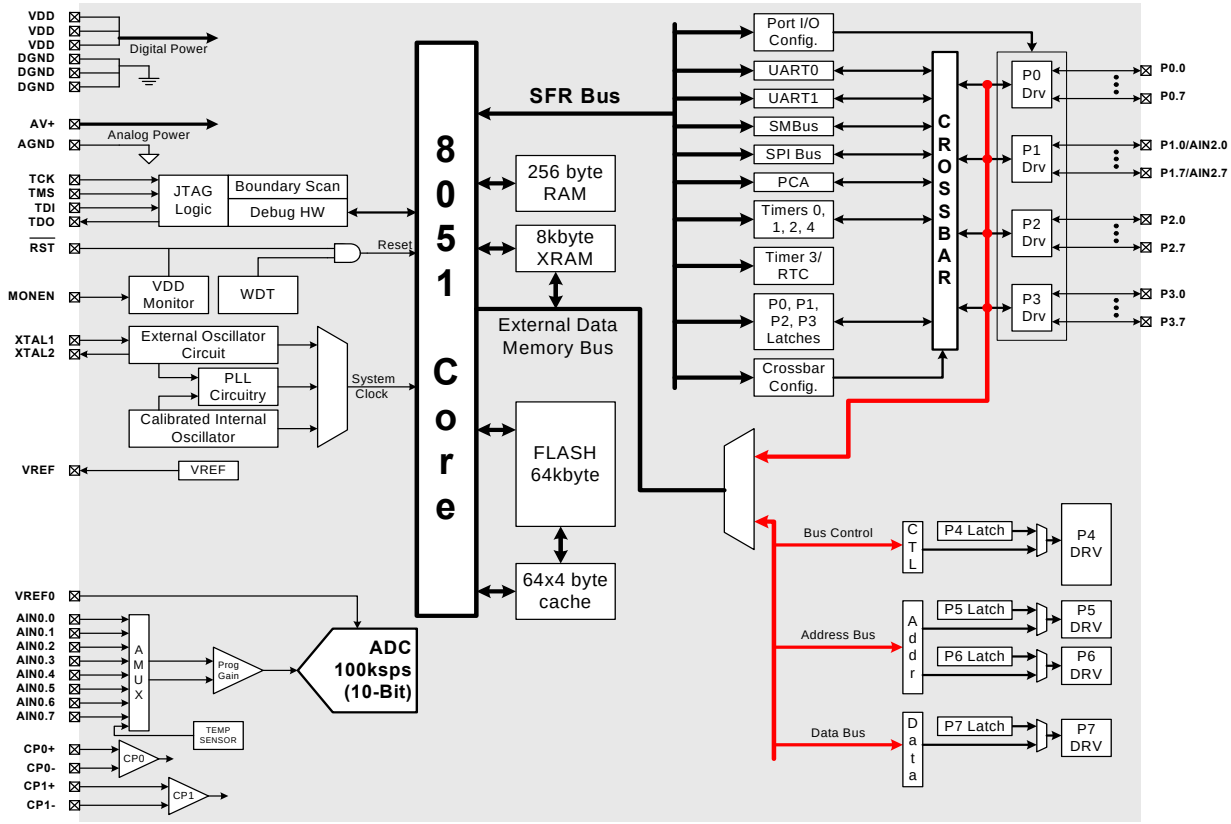
- Typical operating current: 50 mA at 100 MHz
- Typical stop mode current: 0.4 µA

Package

- 64-pin TQFP (lead-free package)

Ordering Part Number

- C8051F133-GQ



Analog Peripherals

24-Bit ADC

- 0.0015% nonlinearity
- Programmable throughput up to 1 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 128, 64, 32, 16, 8, 4, 2, 1
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 8-Bit Current DACs

Comparator

- 16 Programmable hysteresis values and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- 16-bit programmable counter array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Realtime clock mode using PCA or timer and external clock source

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or clock (1 or 2 pin modes)
- 2x clock multiplier to achieve 50 MHz internal clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

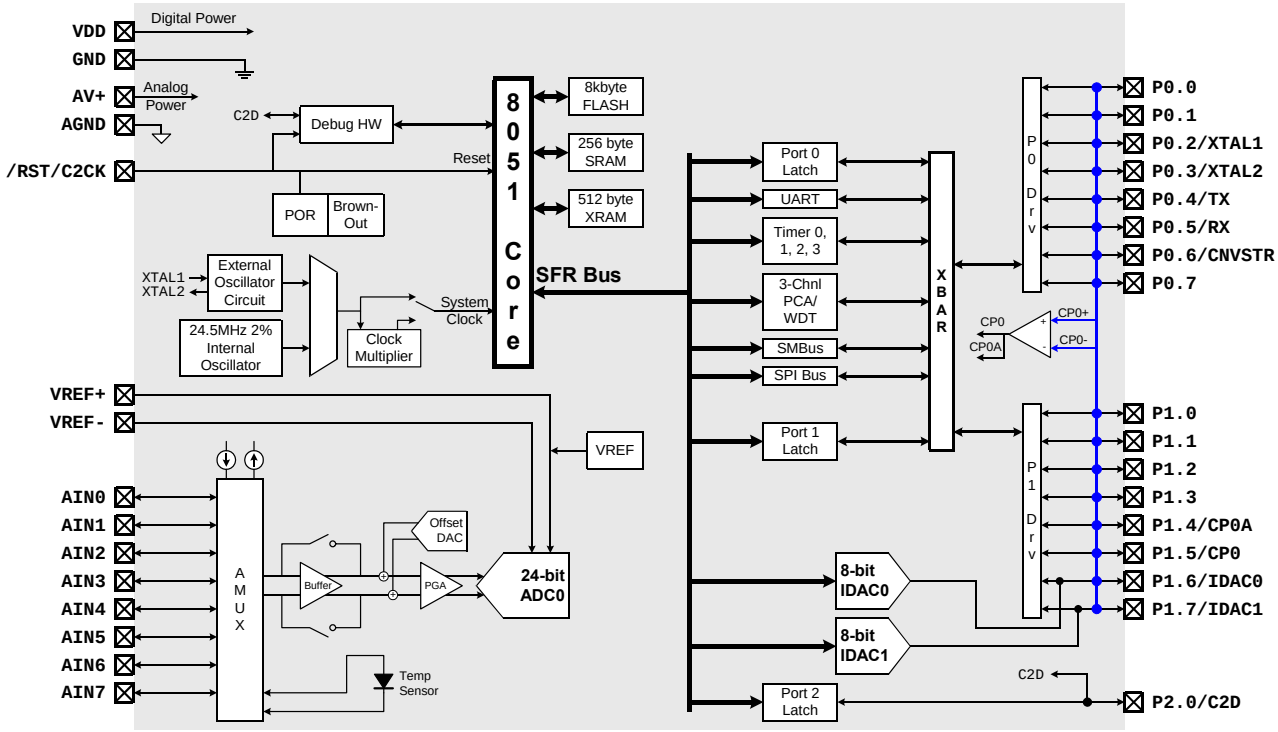
- Typical operating current: 17 mA at 50 MHz
  16 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F350-GQ



Analog Peripherals

24-Bit ADC

- 0.0015% nonlinearity
- Programmable throughput up to 1 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 128, 64, 32, 16, 8, 4, 2, 1
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 8-Bit Current DACs

Comparator

- 16 Programmable hysteresis values and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- 16-bit programmable counter array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Realtime clock mode using PCA or timer and external clock source

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or clock (1 or 2 pin modes)
- 2x clock multiplier to achieve 50 MHz internal clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

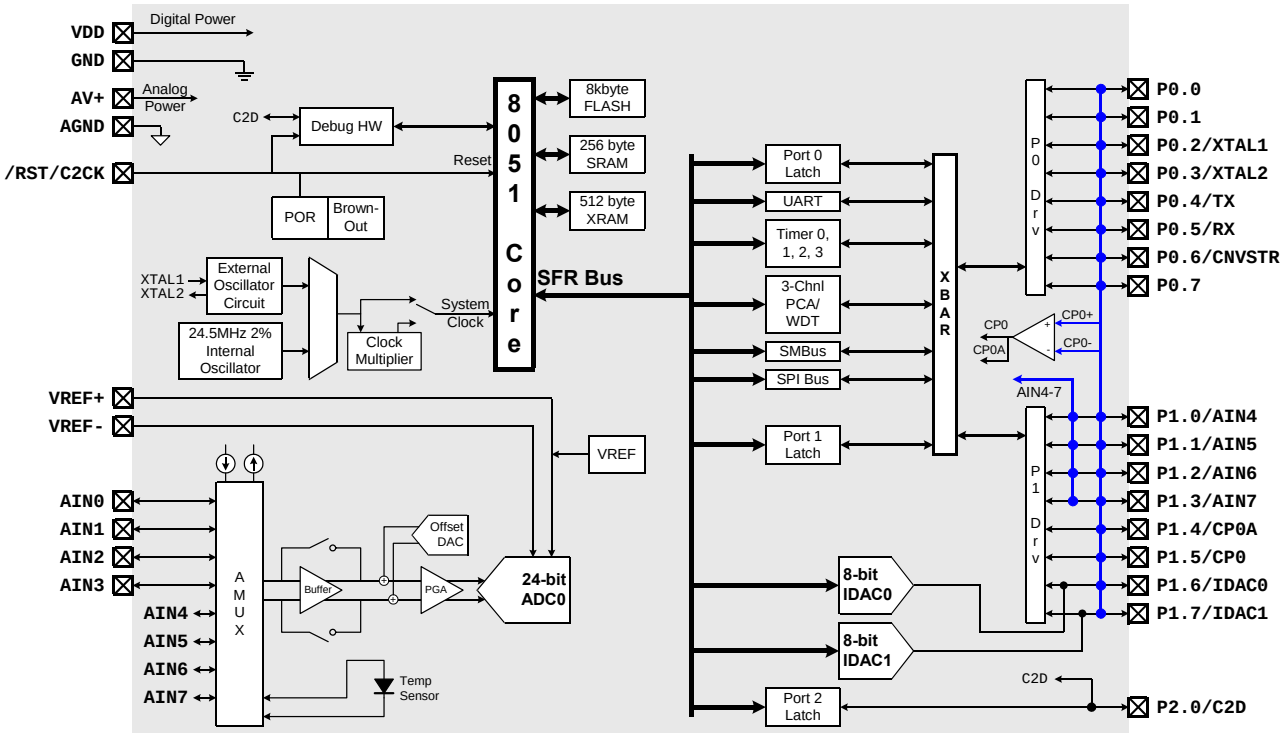
- Typical operating current: 17 mA at 50 MHz
  16 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 28-pin QFN (lead-free package)

Ordering Part Number

- C8051F351-GM



Analog Peripherals

16-Bit ADC

- 0.0015% nonlinearity
- Programmable throughput up to 1 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 128, 64, 32, 16, 8, 4, 2, 1
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 8-Bit Current DACs

Comparator

- 16 Programmable hysteresis values and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- 16-bit programmable counter array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Realtime clock mode using PCA or timer and external clock source

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or clock (1 or 2 pin modes)
- 2x clock multiplier to achieve 50 MHz internal clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

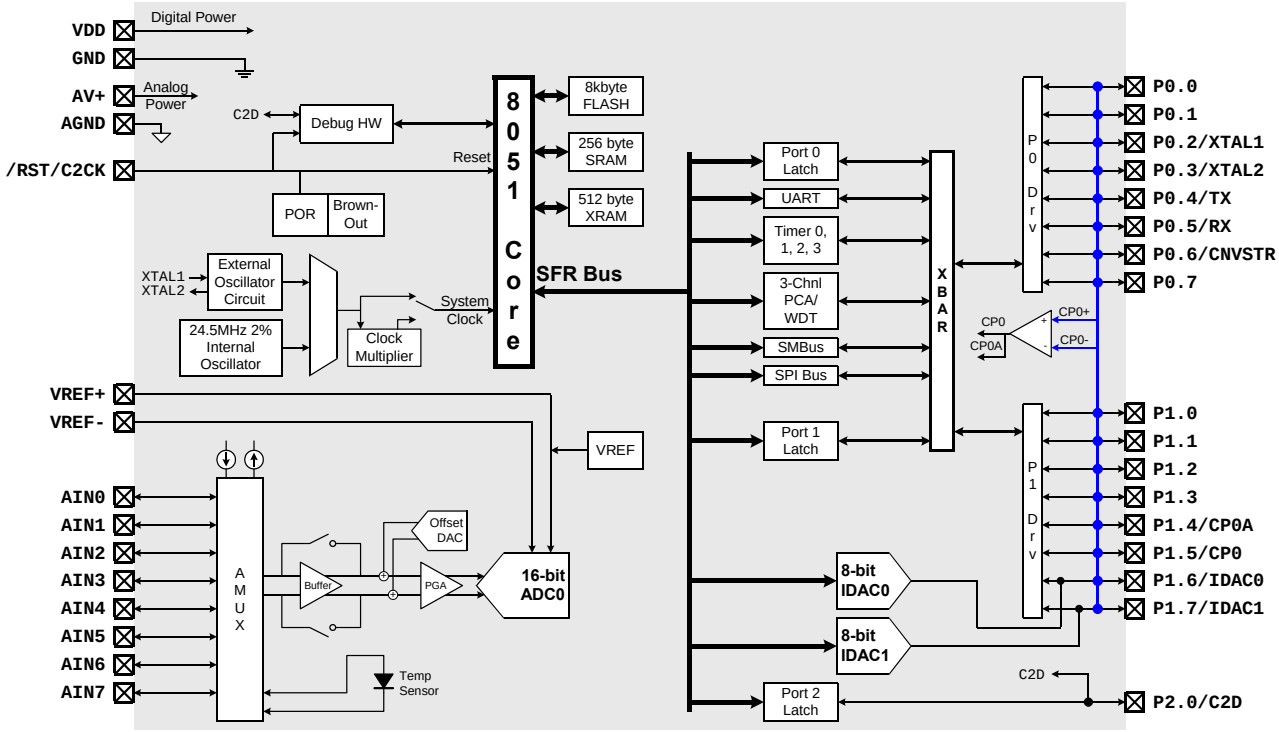
- Typical operating current: 17 mA at 50 MHz
  16 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F352-GQ



Analog Peripherals

16-Bit ADC

- 0.0015% nonlinearity
- Programmable throughput up to 1 ksps
- 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 128, 64, 32, 16, 8, 4, 2, 1
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two 8-Bit Current DACs

Comparator

- 16 Programmable hysteresis values and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

Internal Voltage Reference

V_{DD} Monitor/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- 16-bit programmable counter array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Realtime clock mode using PCA or timer and external clock source

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or clock (1 or 2 pin modes)
- 2x clock multiplier to achieve 50 MHz internal clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

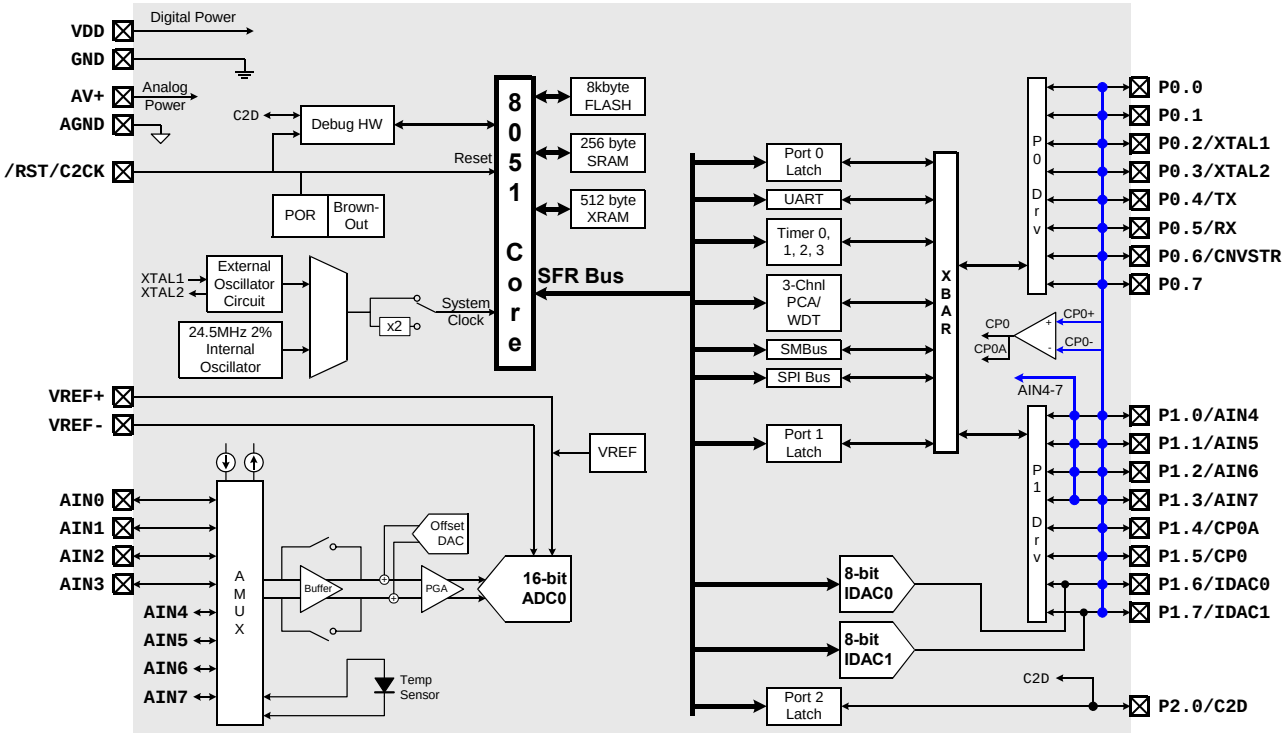
- Typical operating current: 17 mA at 50 MHz
  16 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

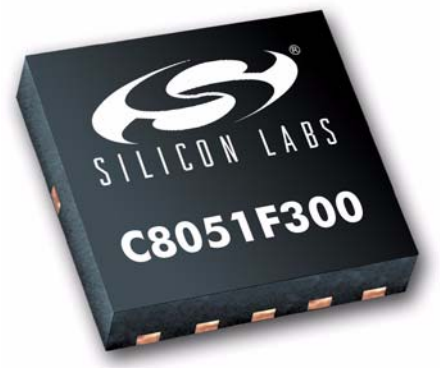
- 28-pin QFN (lead-free package)

Ordering Part Number

- C8051F353-GM



Small Form Factor MCUs



Analog Peripherals

12-Bit ADC

- No missing codes
- Programmable throughput up to 100 ksps
- 32 external inputs (each port I/O can be configured as an ADC input on-the-fly)
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- V_{REF} from external pin or V_{DD}

Two comparators

- Programmable hysteresis
- Configurable to generate interrupts or reset

V_{DD} Monitor and Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 1280 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SPI™ and UART serial ports available concurrently
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

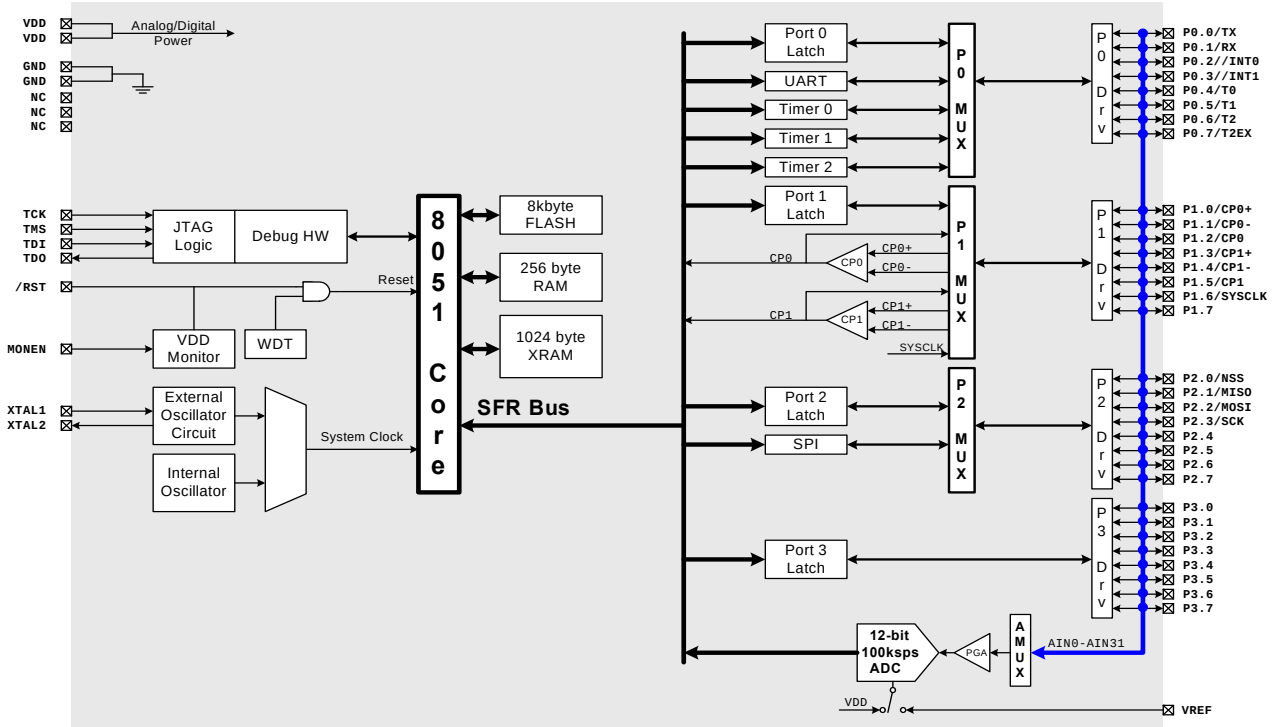
- Typical operating current: 9 mA at 25 MHz
- Typical stop mode current: <0.1 µA

Package

- 48-pin TQFP (lead-free package)

Ordering Part Number

- C8051F206-GQ



Analog Peripherals

8-Bit ADC

- ±1/2 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 32 external inputs (each port I/O can be configured as an ADC input on-the-fly)
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- V_{REF} from external pin or V_{DD}

Two comparators

- Programmable hysteresis
- Configurable to generate interrupts or reset

V_{DD} Monitor and Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 256 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SPI™ and UART serial ports available concurrently
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

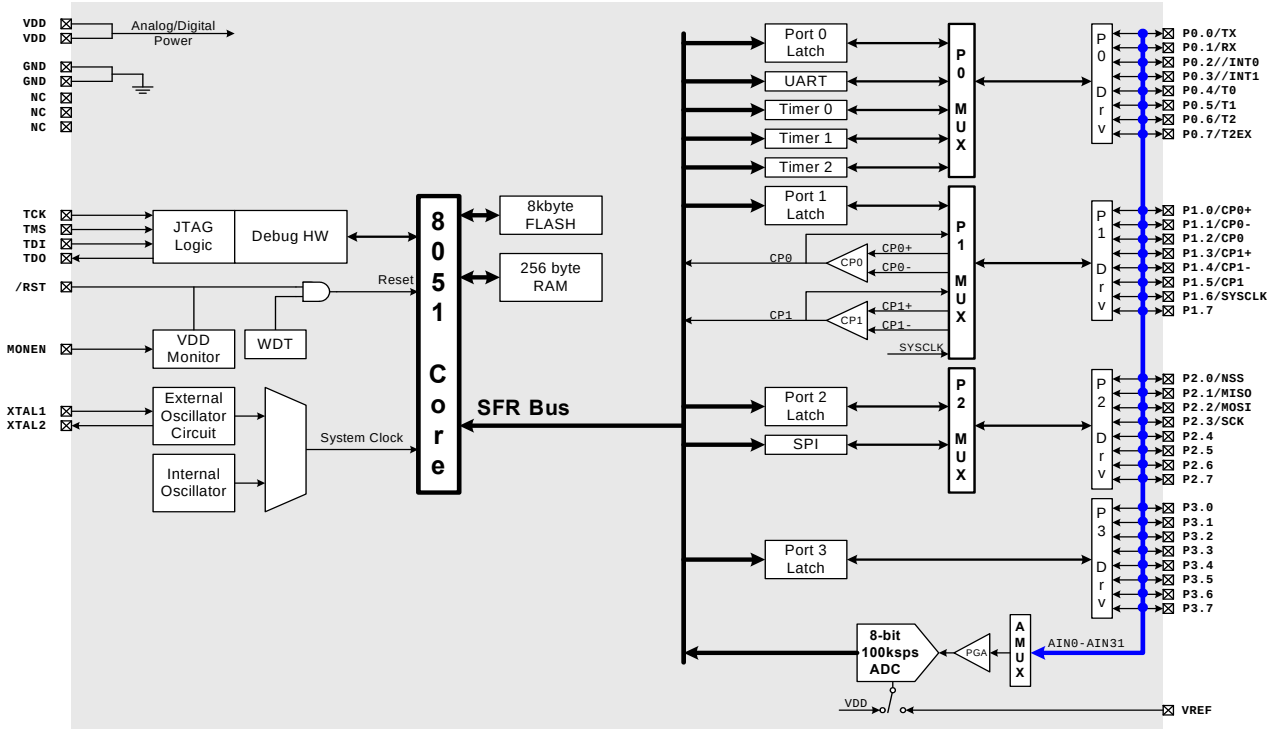
- Typical operating current: 9 mA at 25 MHz
- Typical stop mode current: <0.1 µA

Package

- 48-pin TQFP (lead-free package)

Ordering Part Number

- C8051F220-GQ



Analog Peripherals

8-Bit ADC

- ±1/2 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 32 external inputs (each port I/O can be configured as an ADC input on-the-fly)
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- V_{REF} from external pin or V_{DD}

Two comparators

- Programmable hysteresis
- Configurable to generate interrupts or reset

V_{DD} Monitor and Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 256 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 22 port I/O; all are 5 V tolerant
- Hardware SPI™ and UART serial ports available concurrently
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

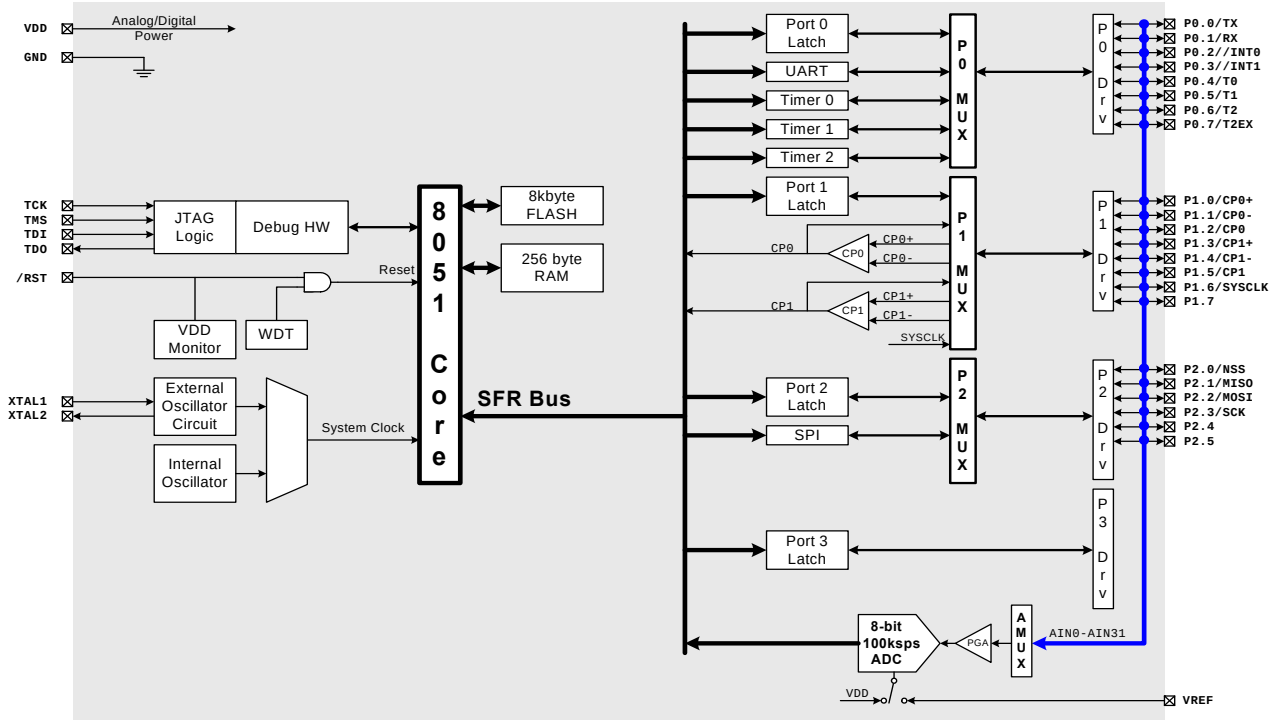
- Typical operating current: 9 mA at 25 MHz
- Typical stop mode current: <0.1 µA

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F221-GQ



Analog Peripherals

8-Bit ADC

- ±1/2 LSB INL; no missing codes
- Programmable throughput up to 100 ksps
- 32 external inputs (each port I/O can be configured as an ADC input on-the-fly)
- Programmable amplifier gain: 16, 8, 4, 2, 1, 0.5
- Data-dependent windowed interrupt generator
- V_{REF} from external pin or V_{DD}

Two comparators

- Programmable hysteresis
- Configurable to generate interrupts or reset

V_{DD} Monitor and Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 1280 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SPI™ and UART serial ports available concurrently
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

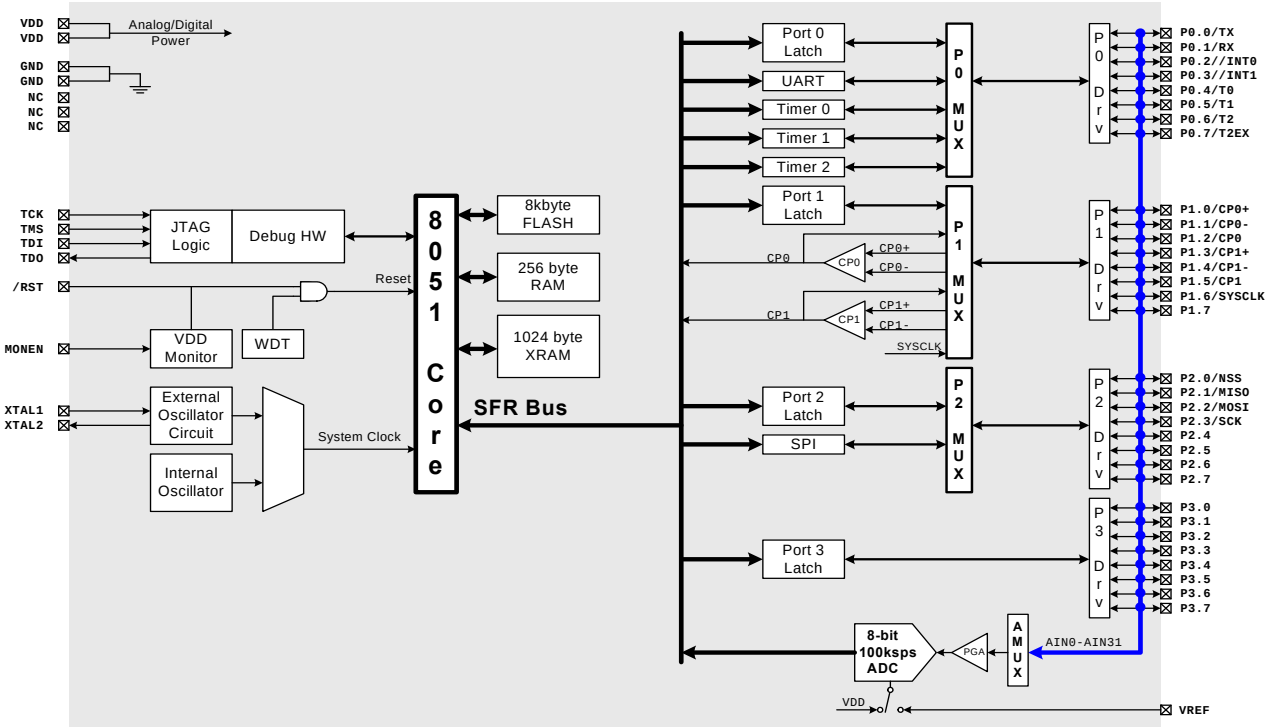
- Typical operating current: 9 mA at 25 MHz
- Typical stop mode current: <0.1 µA

Package

- 48-pin TQFP (lead-free package)

Ordering Part Number

- C8051F226-GQ



Analog Peripherals

Two comparators

- Programmable hysteresis
- Configurable to generate interrupts or reset

V_{DD} Monitor and Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
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High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 256 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SPI™ and UART serial ports available concurrently
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

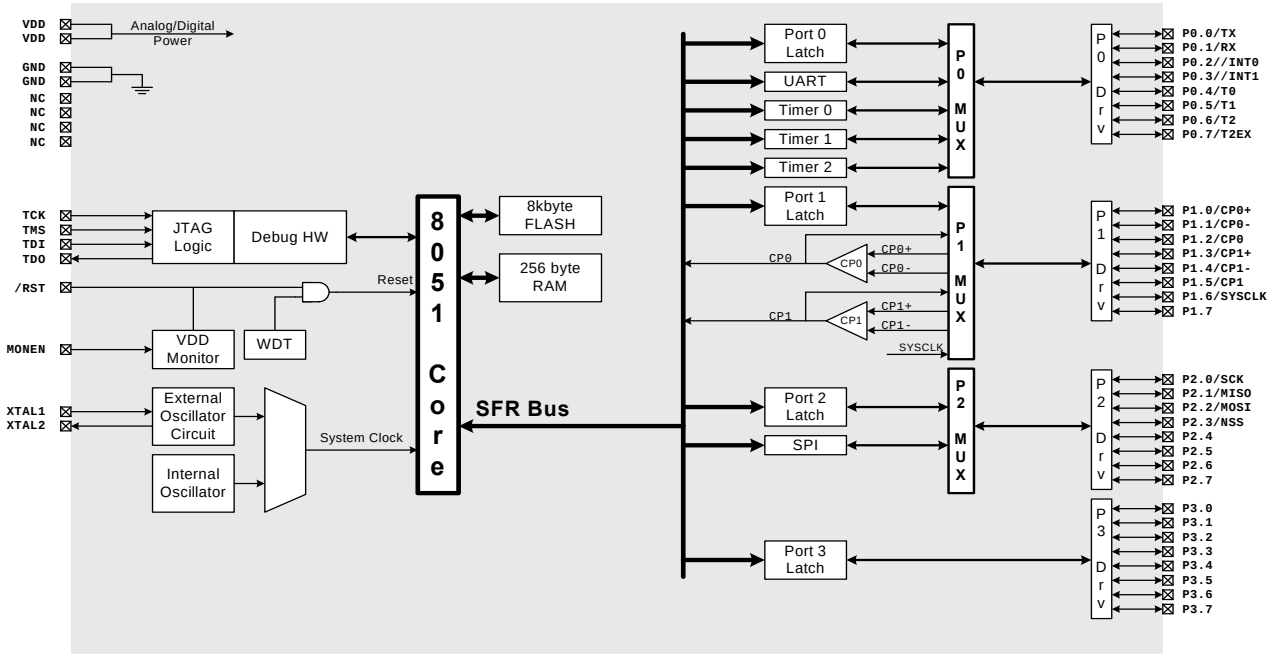
- Typical operating current: 9 mA at 25 MHz
- Typical stop mode current: <0.1 µA

Package

- 48-pin TQFP (lead-free package)

Ordering Part Number

- C8051F230-GQ



Analog Peripherals

Two comparators

- Programmable hysteresis
- Configurable to generate interrupts or reset

V_{DD} Monitor and Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 256 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 22 port I/O; all are 5 V tolerant
- Hardware SPI™ and UART serial ports available concurrently
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

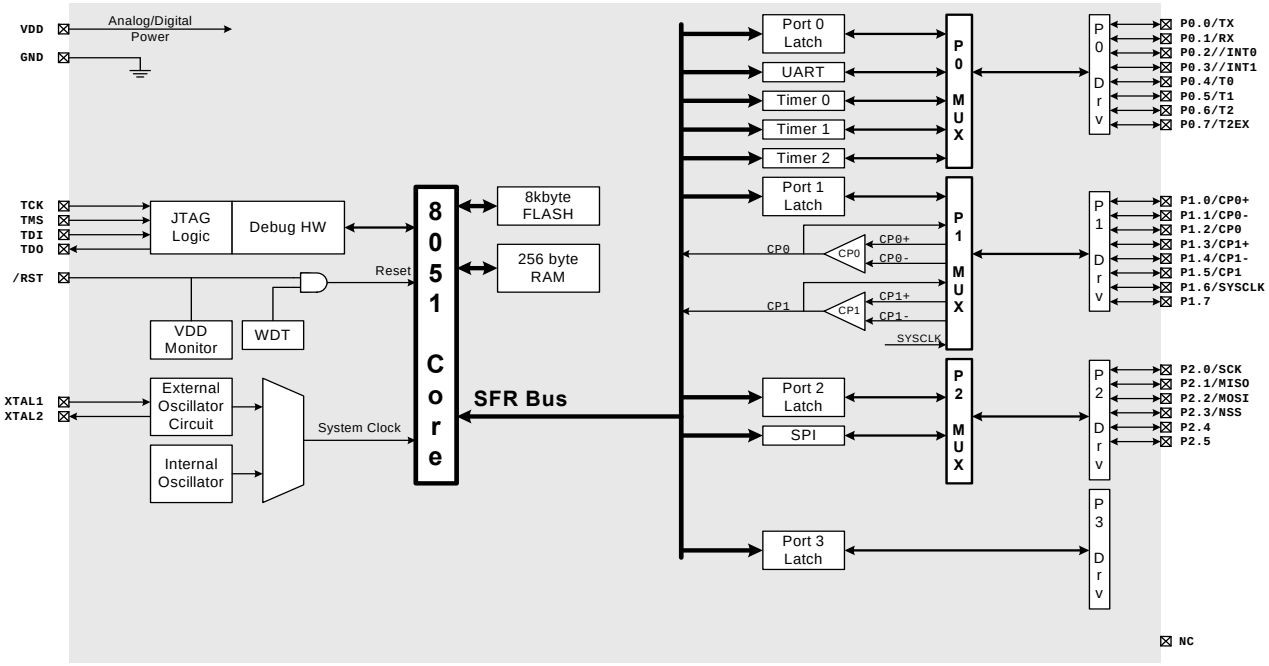
- Typical operating current: 9 mA at 25 MHz
- Typical stop mode current: <0.1 µA

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F231-GQ



Analog Peripherals

Two comparators

- Programmable hysteresis
- Configurable to generate interrupts or reset

V_{DD} Monitor and Brown-out Detector

On-Chip JTAG Debug

- On-chip emulation circuitry facilitates full-speed, non-intrusive, in-circuit emulation
- Supports breakpoints, single stepping, watchpoints, inspect/modify memory, and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- Fully compliant with IEEE 1149.1 specification

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler; up to 21 interrupt sources

Memory

- 1280 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 32 port I/O; all are 5 V tolerant
- Hardware SPI™ and UART serial ports available concurrently
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset

Clock Sources

- Internal programmable oscillator: 2–16 MHz
- External oscillator: Crystal, RC, C, or Clock
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

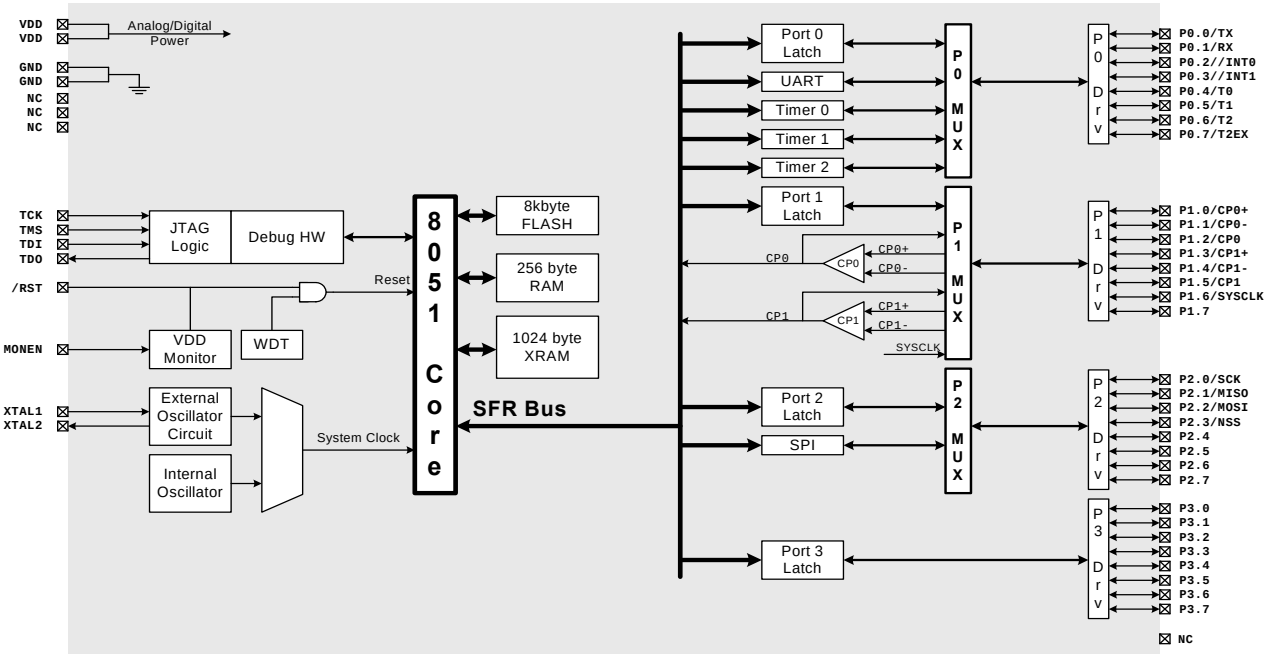
- Typical operating current: 9 mA at 25 MHz
- Typical stop mode current: <0.1 µA

Package

- 48-pin TQFP (lead-free package)

Ordering Part Number

- C8051F236-GQ



Analog Peripherals

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- Up to 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 4, 2, 1, 0.5
- V_{REF} from external pin or V_{DD}
- Internal or external start of conversion sources
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-Out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 256 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Enhanced Hardware SMBus™ (I^2C™ compatible) and UART serial ports
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Internal oscillator: 25 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock (1 or 2 Pin Modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

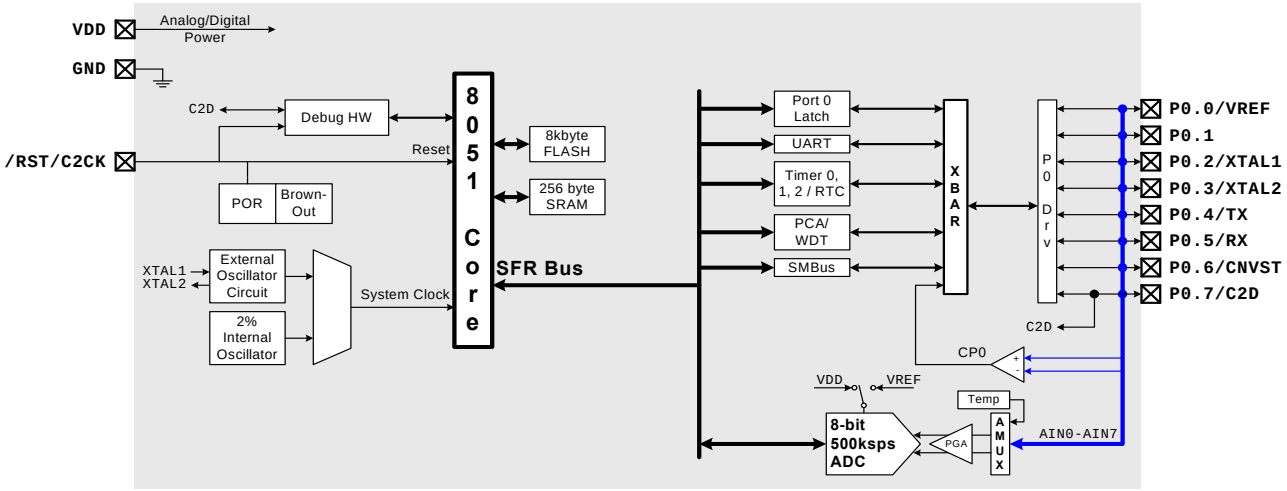
- Typical operating current: 5.8 mA at 25 MHz
  11 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 11-pin QFN (lead-free package)

Ordering Part Number

- C8051F300-GM



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-Out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined Instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 256 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Enhanced Hardware SMBus™ (I^2C™ compatible) and UART serial ports
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Internal oscillator: 25 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

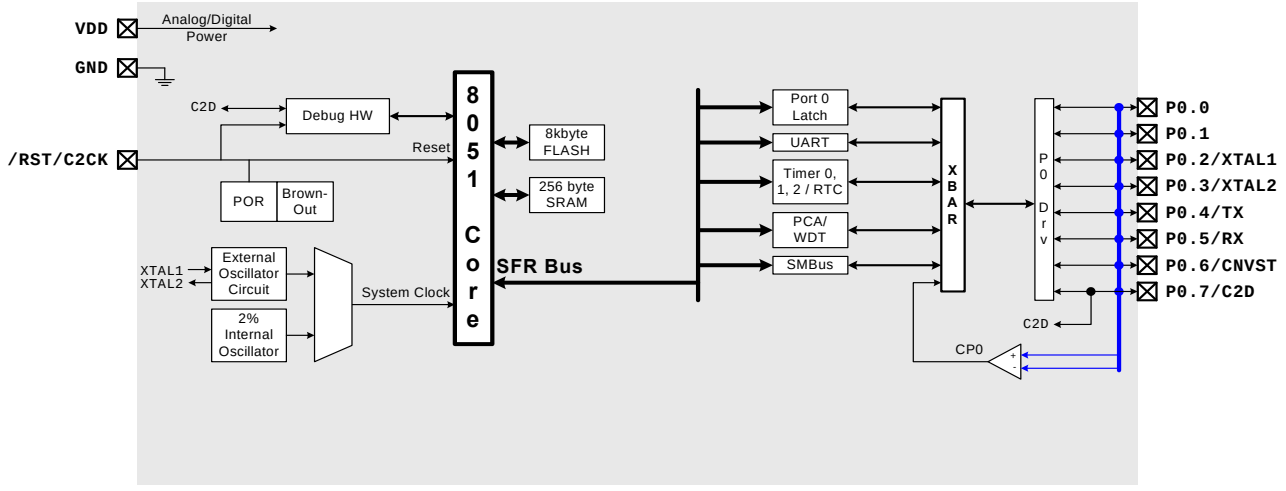
- Typical operating current: 5.8 mA at 25 MHz
  11 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 11-pin QFN (lead-free package)

Ordering Part Number

- C8051F301-GM



Analog Peripherals

8-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 500 ksps
- Up to 8 external inputs; programmable as single-ended or differential
- Programmable amplifier gain: 4, 2, 1, 0.5
- V_{REF} from external pin or V_{DD}
- Internal or external start of conversion sources
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-Out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 256 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Enhanced Hardware SMBus™ (I^2C™ compatible) and UART serial ports
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Internal oscillator: 20 MHz nominal
- External oscillator: Crystal, RC, C, or Clock (1 or 2 Pin Modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

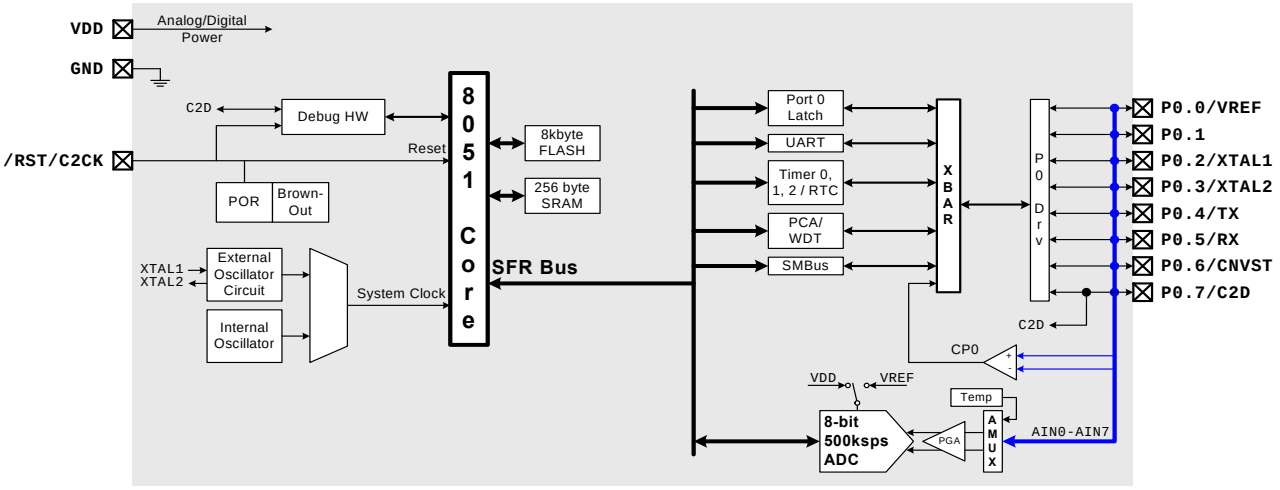
- Typical operating current: 5.8 mA at 25 MHz
  11 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 11-pin QFN (lead-free package)

Ordering Part Number

- C8051F302-GM



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-Out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined Instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 256 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Enhanced Hardware SMBus™ (I^2C™ compatible) and UART serial ports
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Internal oscillator: 20 MHz nominal
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

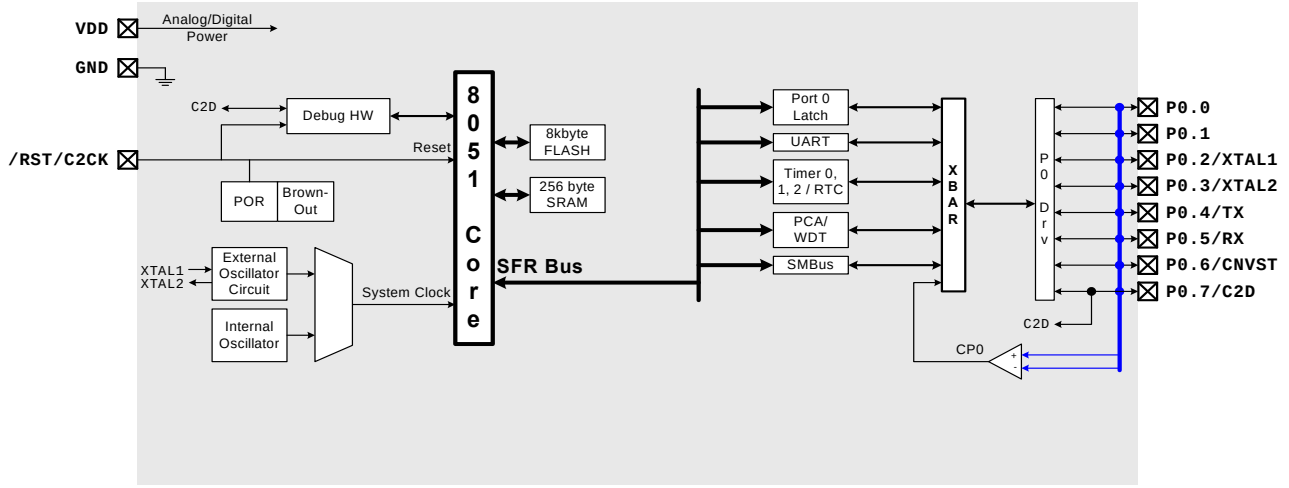
- Typical operating current: 5.8 mA at 25 MHz
  11 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 11-pin QFN (lead-free package)

Ordering Part Number

- C8051F303-GM



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-Out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined Instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 256 bytes data RAM
- 4 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Enhanced Hardware SMBus™ (I^2C™ compatible) and UART serial ports
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Internal oscillator: 20 MHz nominal
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

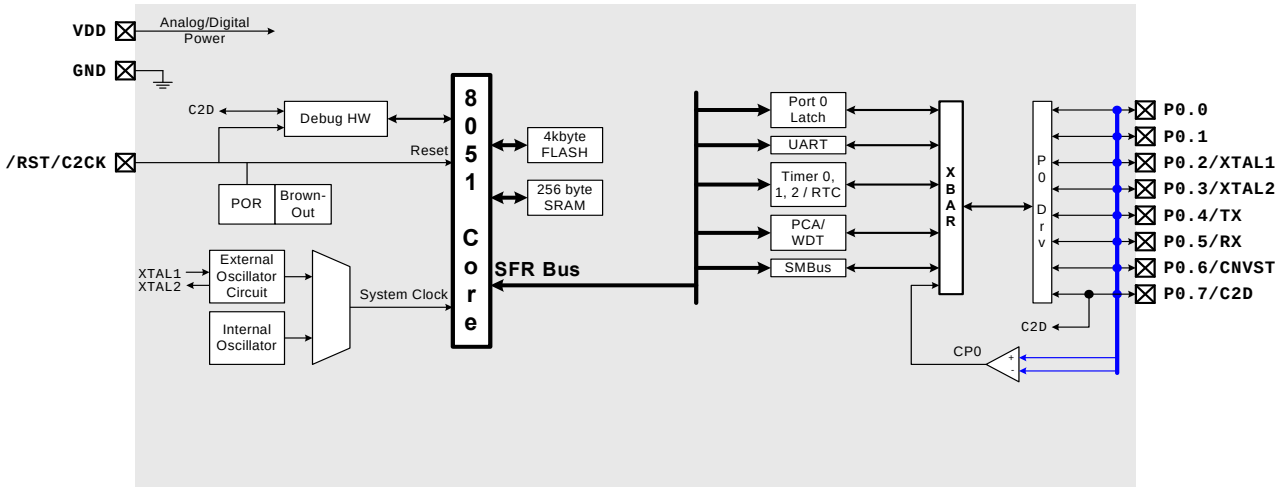
- Typical operating current: 5.8 mA at 25 MHz
  11 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 11-pin QFN (lead-free package)

Ordering Part Number

- C8051F304-GM



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-Out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined Instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 256 bytes data RAM
- 2 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 8 port I/O; all are 5 V tolerant
- Enhanced Hardware SMBus™ (I^2C™ compatible) and UART serial ports
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 3 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Internal oscillator: 20 MHz nominal
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

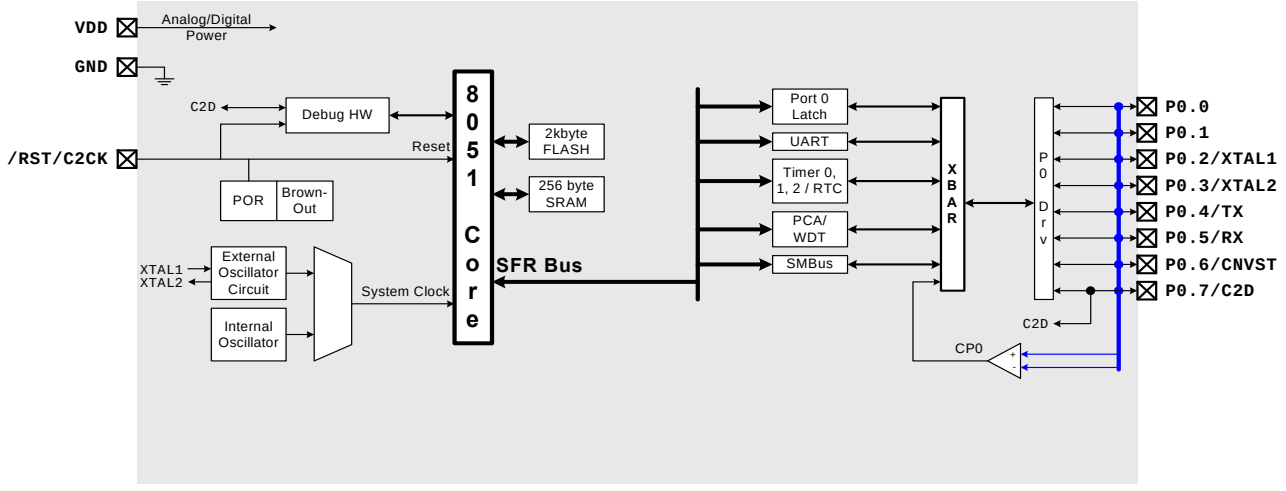
- Typical operating current: 5.8 mA at 25 MHz
  11 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 11-pin QFN (lead-free package)

Ordering Part Number

- C8051F305-GM



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 21 external inputs; programmable as single-ended or differential
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two Comparators

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 1280 bytes data RAM
- 16 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 29 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Realtime clock mode using timer or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

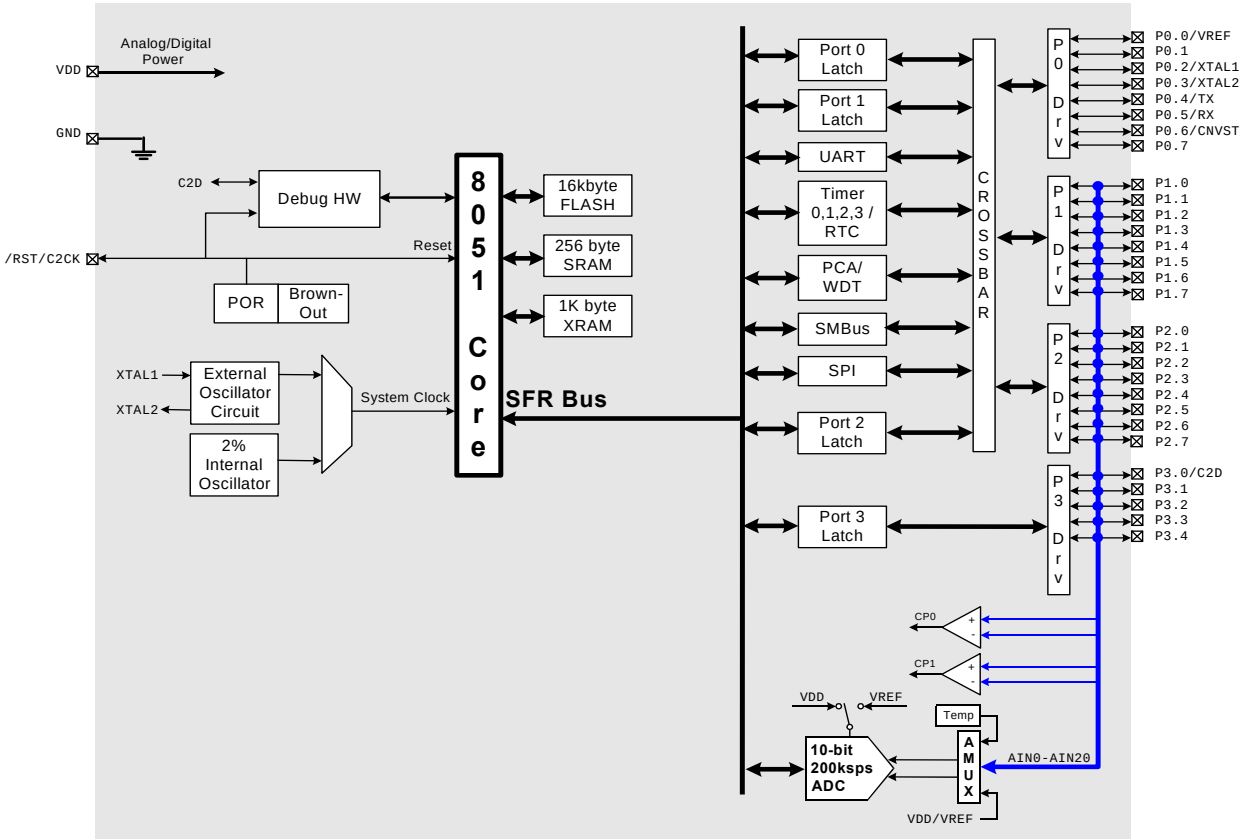
- Typical Operating Current: 7 mA at 25 MHz
  15 µA at 32 kHz
- Typical Stop Mode Current: <0.1 µA

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F310-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 17 external inputs; programmable as single-ended or differential
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two Comparators

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 1280 bytes internal data RAM (256 + 1 k)
- 16 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 25 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Realtime clock mode using timer or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

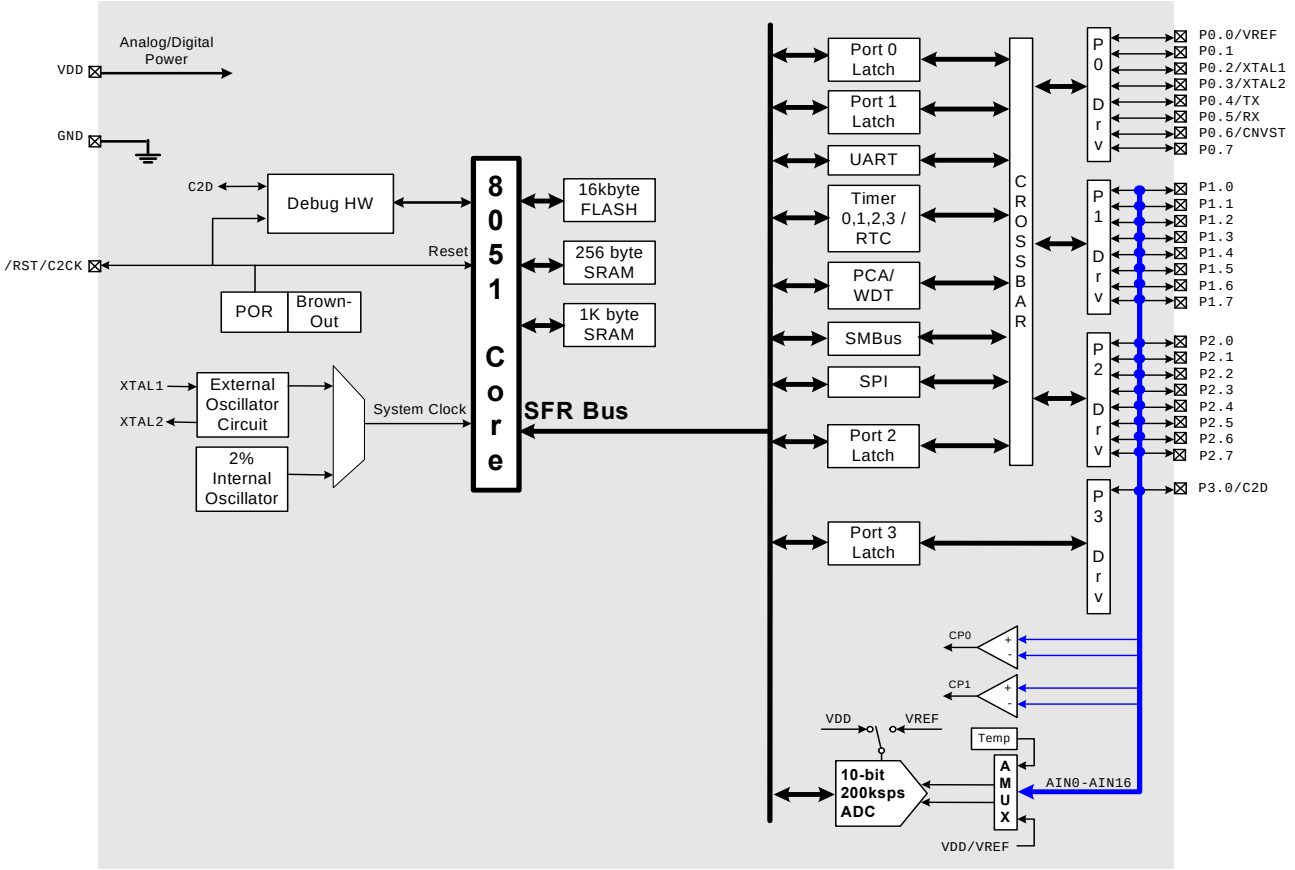
- Typical Operating Current: 7 mA at 25 MHz
  15 µA at 32 kHz
- Typical Stop Mode Current: <0.1 µA

Package

- 28-pin QFN (lead-free package)

Ordering Part Number

- C8051F311-GM



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 21 external inputs; programmable as single-ended or differential
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two Comparators

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 1280 bytes data RAM
- 8 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 29 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Realtime clock mode using timer or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

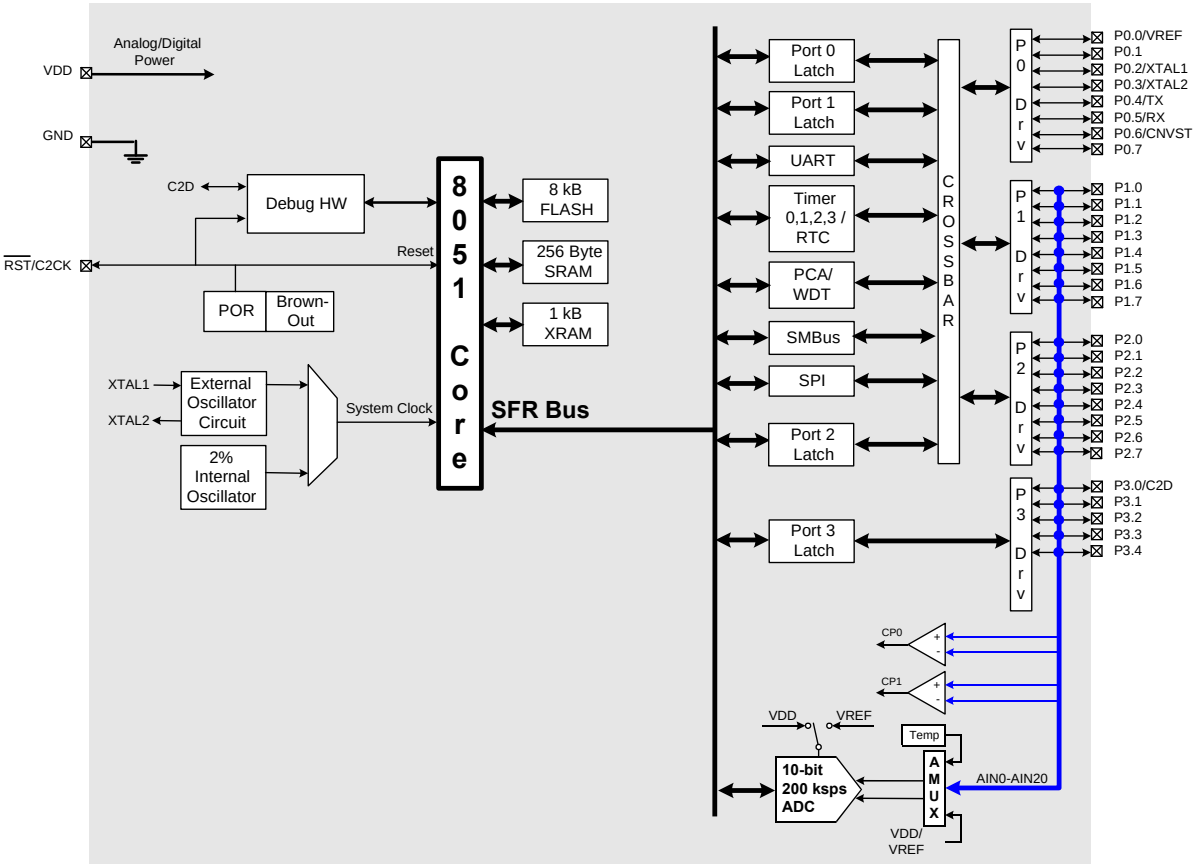
- Typical Operating Current: 7 mA at 25 MHz
  15 µA at 32 kHz
- Typical Stop Mode Current: <0.1 µA

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F312-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 17 external inputs; programmable as single-ended or differential
- Data-dependent windowed interrupt generator
- Built-in temperature sensor (±3 °C)

Two Comparators

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 1280 bytes internal data RAM (256 + 1 k)
- 8 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 25 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Realtime clock mode using timer or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

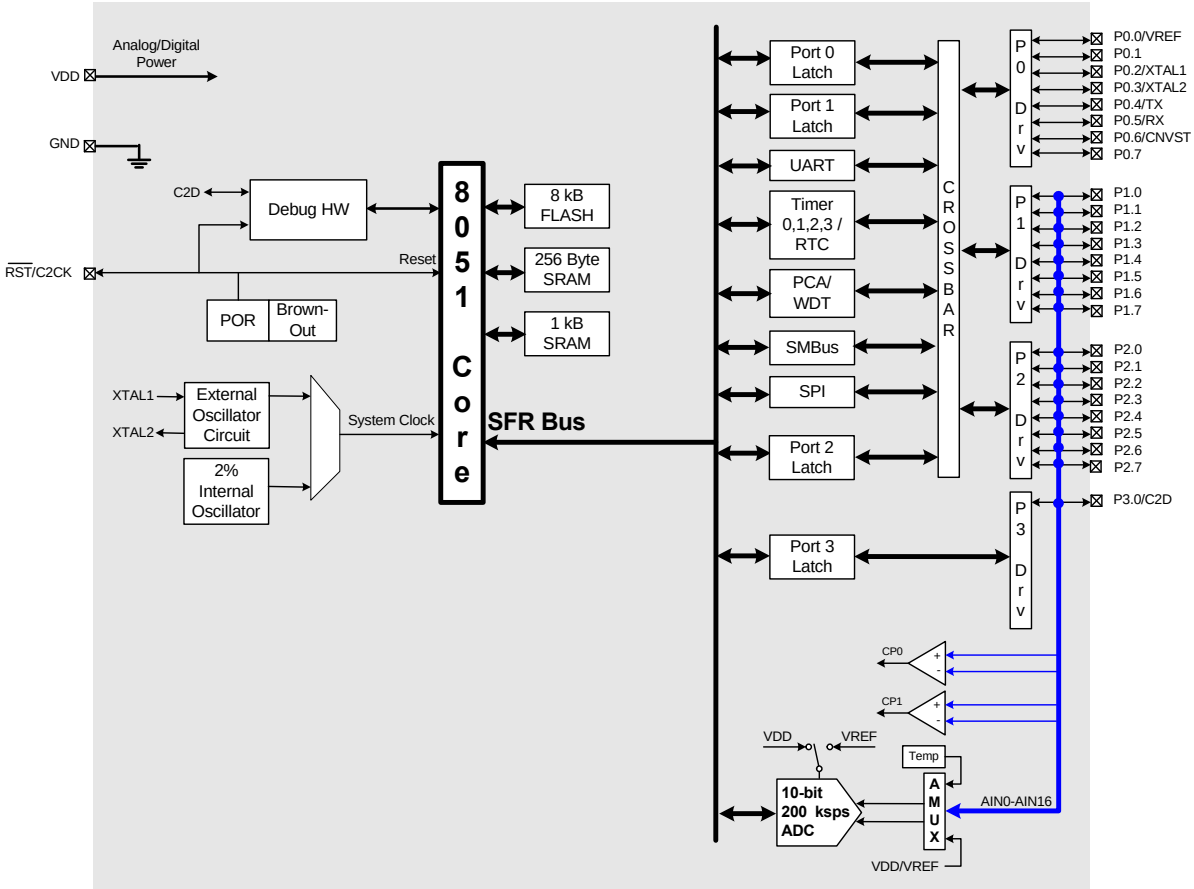
- Typical Operating Current: 7 mA at 25 MHz
  15 µA at 32 kHz
- Typical Stop Mode Current: <0.1 µA

Package

- 28-pin QFN (lead-free package)

Ordering Part Number

- C8051F313-GM



Analog Peripherals

Two Comparators

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 1280 bytes data RAM
- 8 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 29 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Realtime clock mode using timer or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

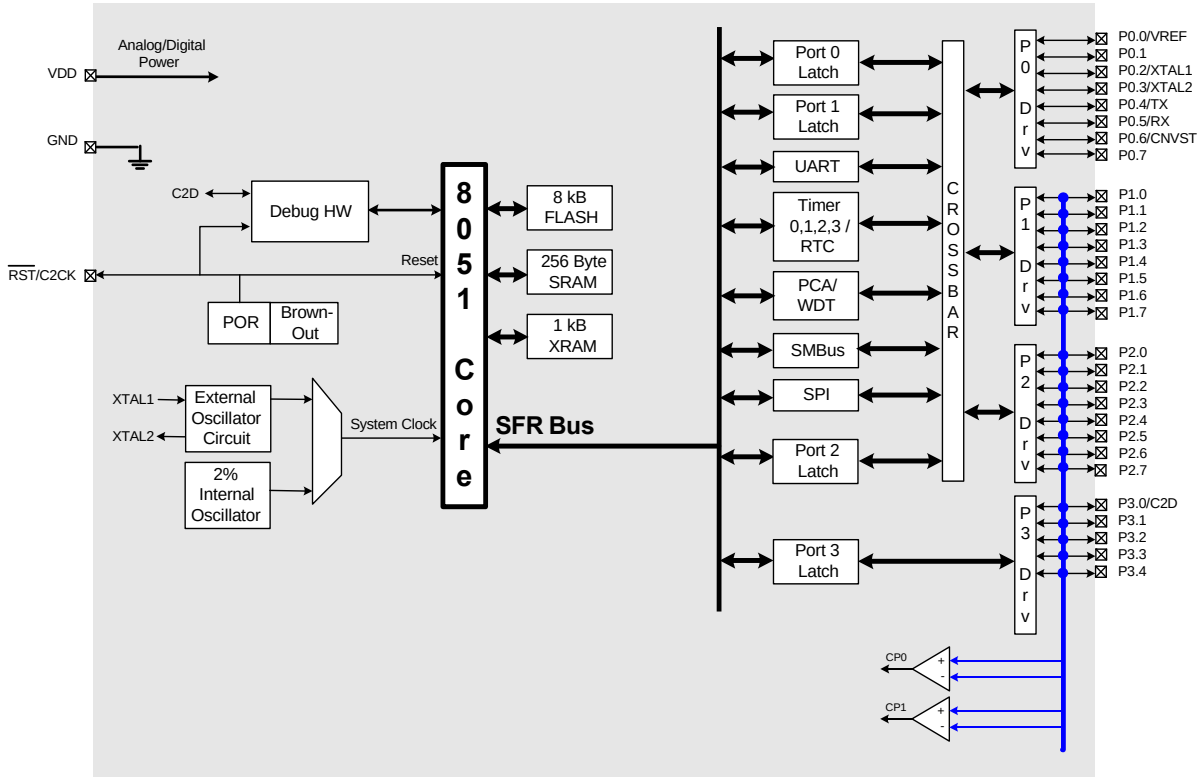
- Typical Operating Current: 7 mA at 25 MHz
  15 µA at 32 kHz
- Typical Stop Mode Current: <0.1 µA

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F314-GQ



Analog Peripherals

Two Comparators

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

POR/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory and registers
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 1280 bytes internal data RAM (256 + 1 k)
- 8 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 25 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Realtime clock mode using timer or PCA

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

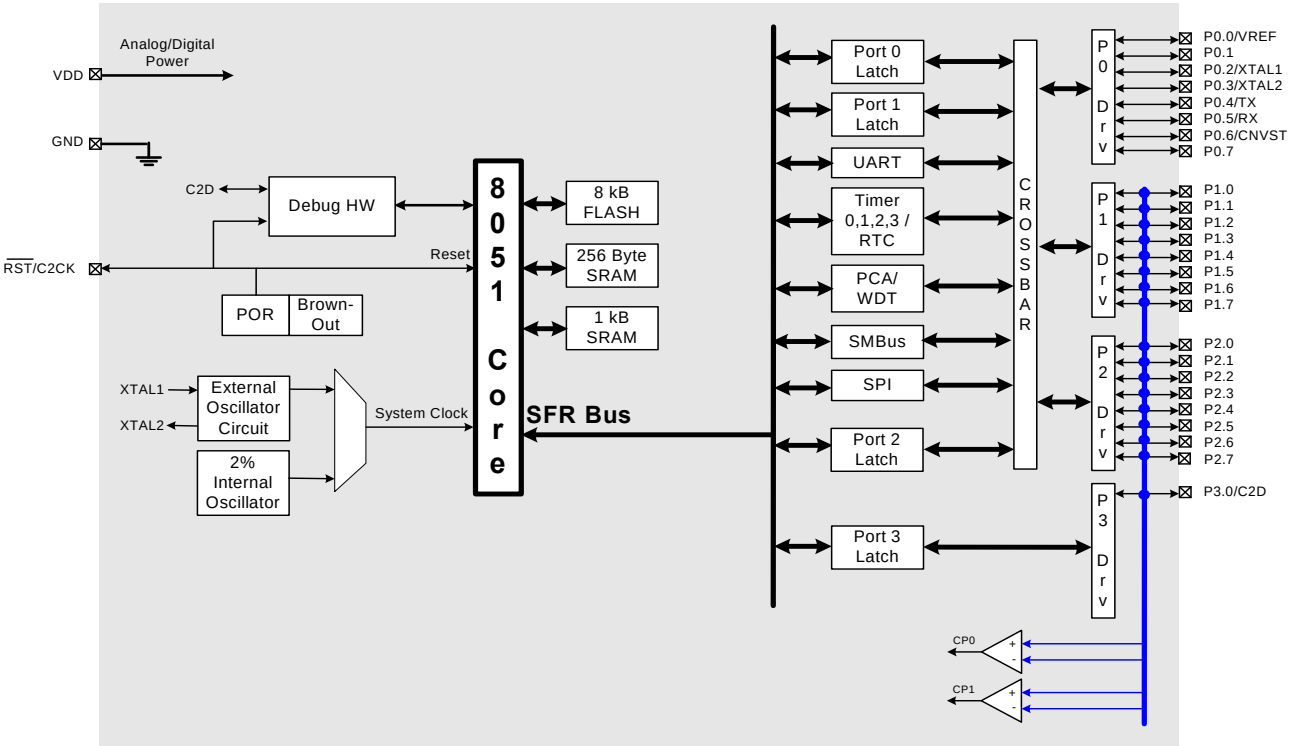
- Typical Operating Current: 7 mA at 25 MHz
  15 µA at 32 kHz
- Typical Stop Mode Current: <0.1 µA

Package

- 28-pin QFN (lead-free package)

Ordering Part Number

- C8051F315-GM



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 13 external inputs
- VREF from external pin or VDD
- Internal or external start of conversion sources
- Data-dependent windowed interrupt generator

Built-in temperature sensor (±3 °C)

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (<0.5 µA)

POR/Brown-Out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 1280 bytes data RAM (1024 + 256)
- 16 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 21 port I/O; all are 5 V tolerant
- 1 Enhanced Hardware SMBus™ (I^2C™ compatible) and UART serial port
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode for maximum power saving

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

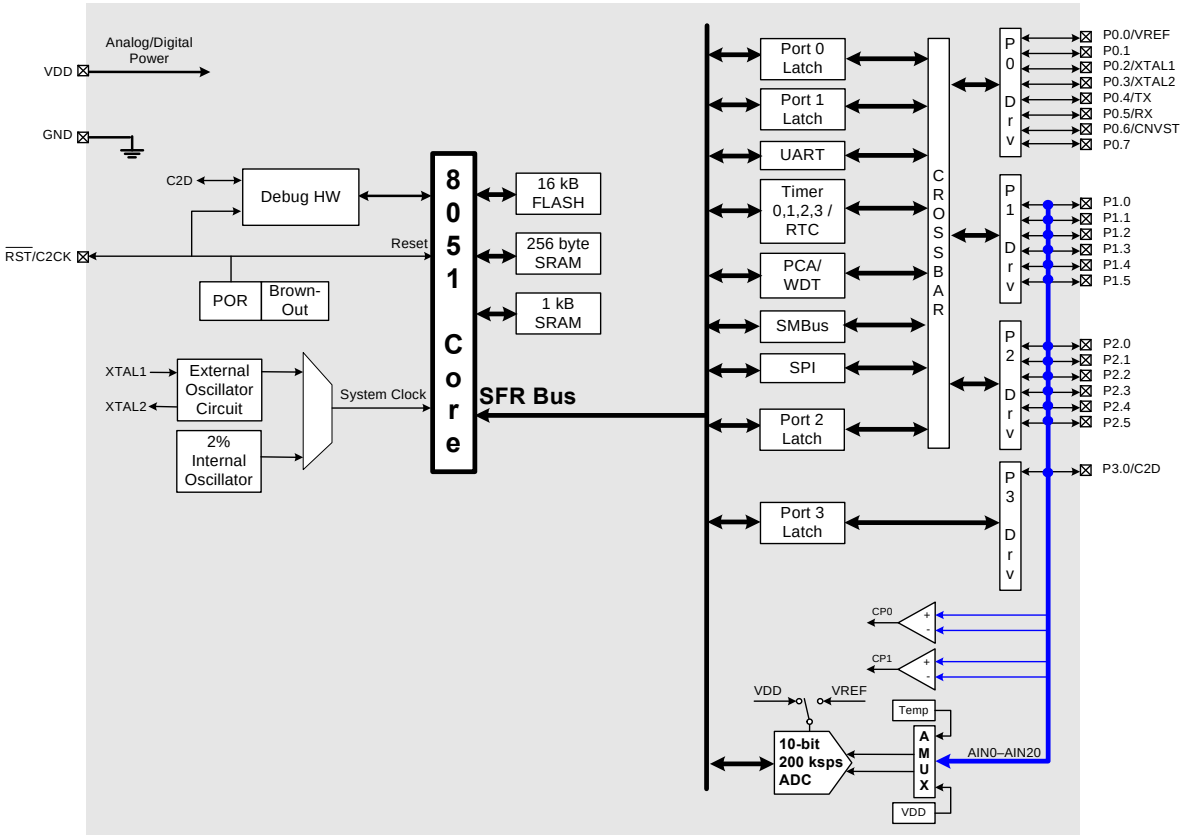
- Typical operating current: 5 mA at 25 MHz
- Typical: 11 µA at 32 kHz
- Target stop mode current: <0.1 µA

Package

- 24-pin QFN (lead-free package)

Ordering Part Number

- C8051F316-GM



Analog Peripherals

Two Comparators

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (<0.5 µA)

POR/Brown-Out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack

Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz system clock
- Expanded interrupt handler

Memory

- 1280 bytes data RAM (1024 + 256)
- 16 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 21 port I/O; all are 5 V tolerant
- 1 Enhanced Hardware SMBus™ (I^2C™ compatible) and UART serial port
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 5 general-purpose 16-bit counter/timers
- Dedicated watchdog timer; bidirectional reset
- Real-time clock mode for maximum power saving

Clock Sources

- Internal oscillator: 24.5 MHz, 2% accuracy supports UART operation
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

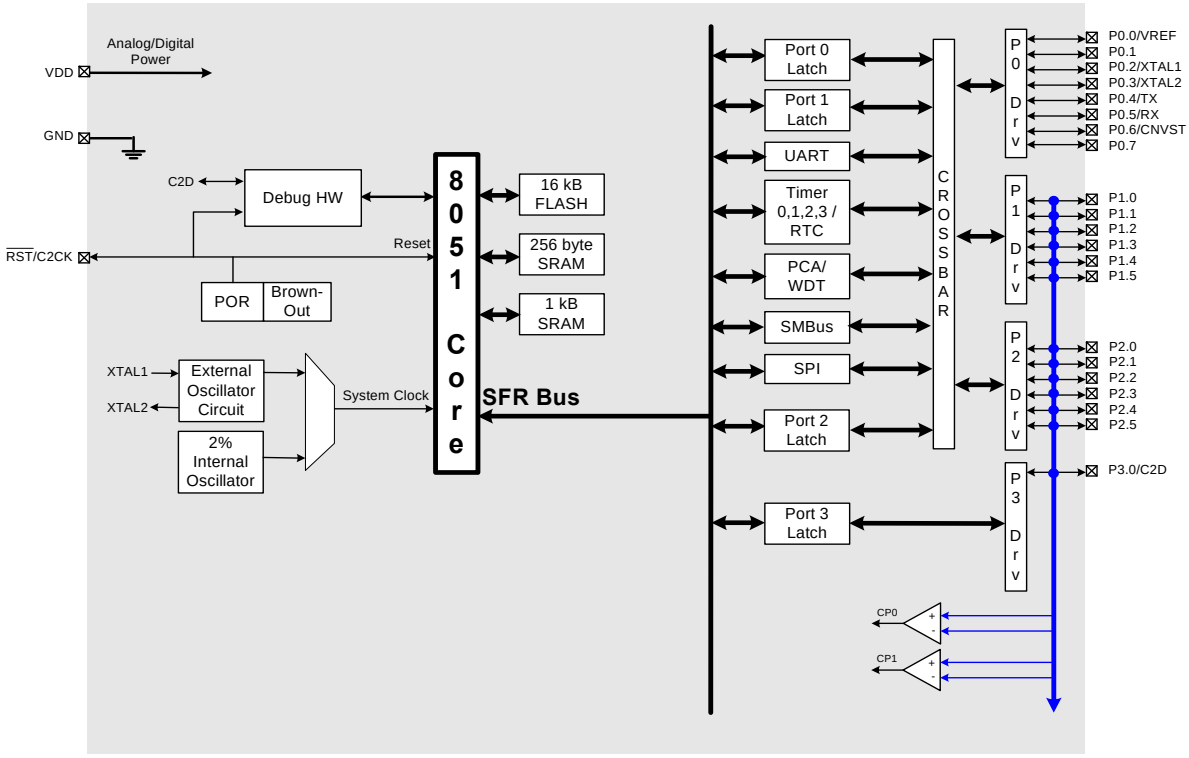
- Typical operating current: 5 mA at 25 MHz
- Typical: 11 µA at 32 kHz
- Target stop mode current: <0.1 µA

Package

- 24-pin QFN (lead-free package)

Ordering Part Number

- C8051F317-GM



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 16 external inputs; programmable as single-ended or differential
- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor (±3 °C)

10-bit DAC (Current Mode)

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Two internal oscillators:
  - 24.5 MHz, 2% accuracy supports UART operation
  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

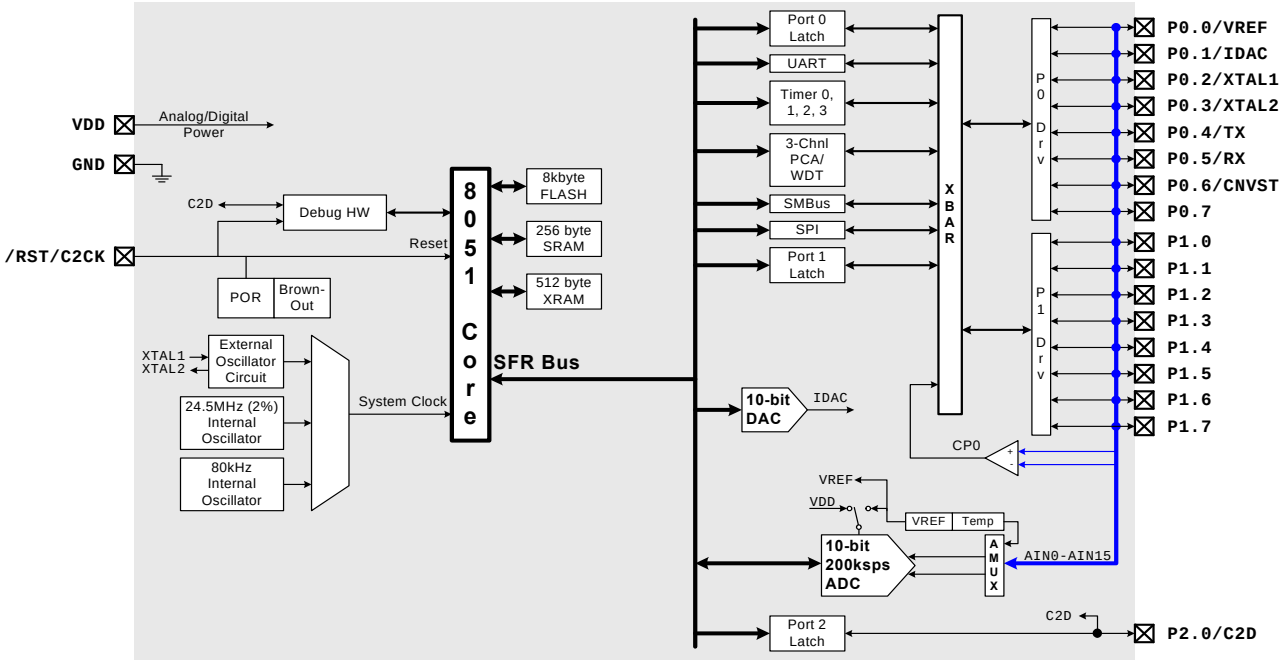
- Typical operating current: 6.4 mA at 25 MHz
  9 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 20-pin QFN (lead-free package)

Ordering Part Number

- C8051F330-GM



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 16 external inputs; programmable as single-ended or differential
- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor (±3 °C)

10-bit DAC (Current Mode)

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Two internal oscillators:
  - 24.5 MHz, 2% accuracy supports UART operation
  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

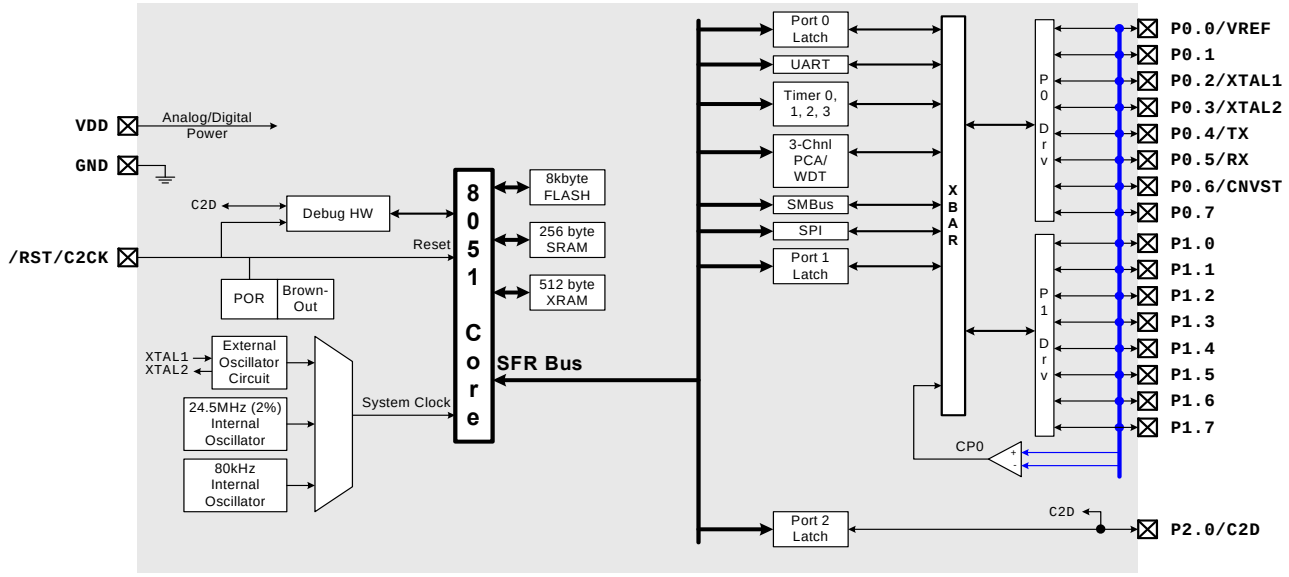
- Typical operating current: 6.4 mA at 25 MHz
  9 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 20-pin DIP (lead-free package)

Ordering Part Number

- C8051F330-GP



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 8 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Two internal oscillators:
  - 25 MHz, 2% accuracy supports UART operation
  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

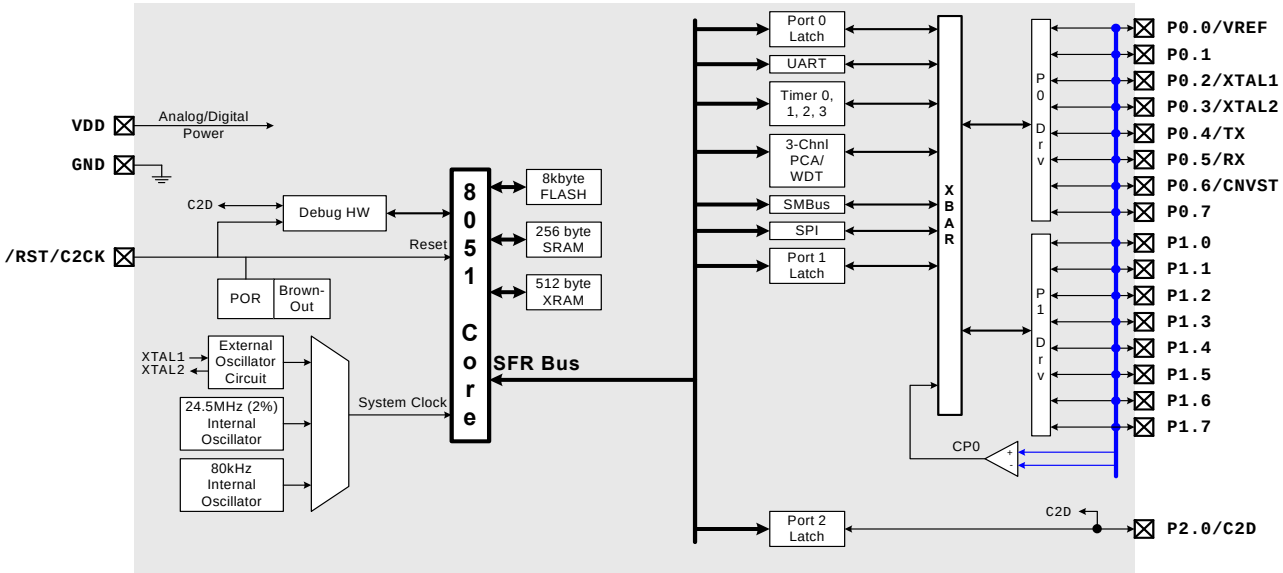
- Typical operating current: 6.4 mA at 25 MHz
  9 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 20-pin QFN (lead-free package)

Ordering Part Number

- C8051F331-GM



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 16 external inputs; programmable as single-ended or differential
- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor (±3 °C)

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 4 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Two internal oscillators:
  - 24.5 MHz, 2% accuracy supports UART operation
  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

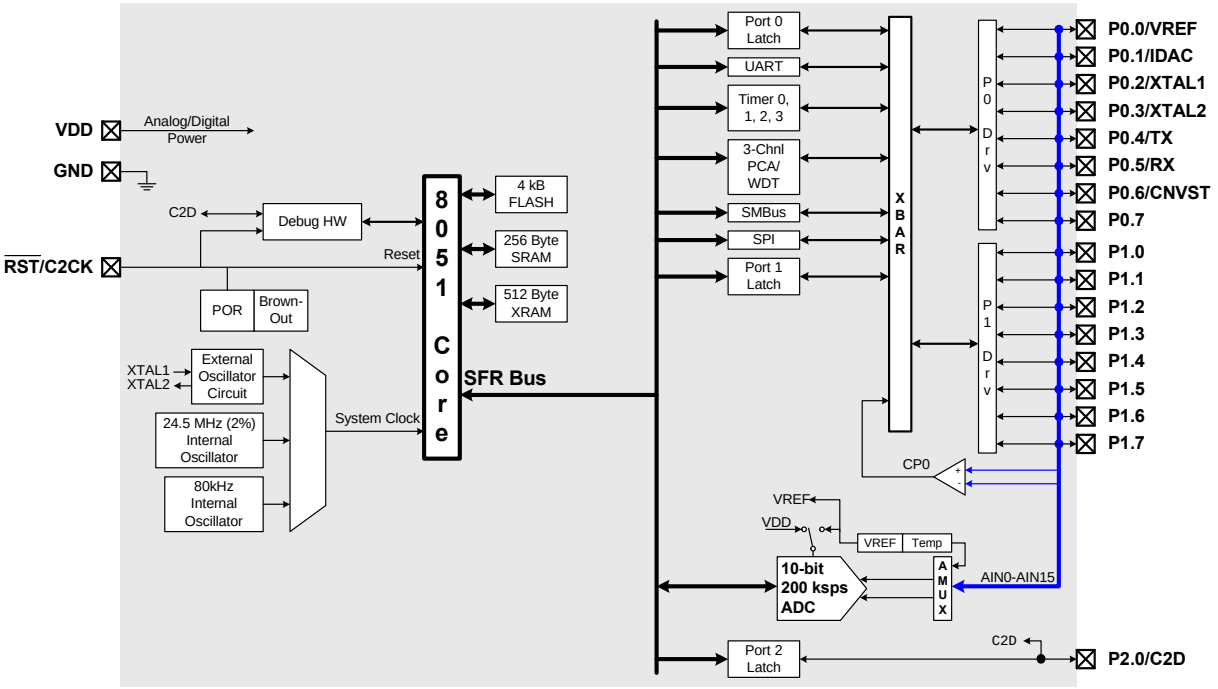
- Typical operating current: 6.4 mA at 25 MHz
  9 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 20-pin QFN (lead-free package)

Ordering Part Number

- C8051F332-GM



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 4 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Two internal oscillators:
  - 24.5 MHz, 2% accuracy supports UART operation
  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

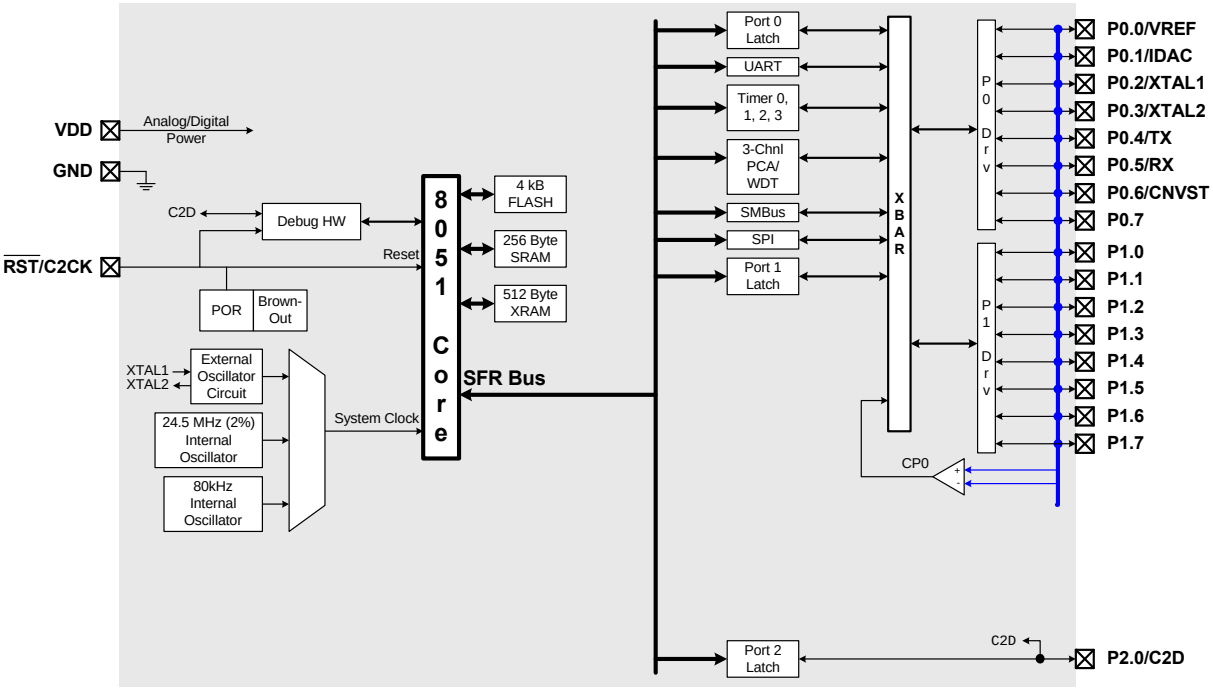
- Typical operating current: 6.4 mA at 25 MHz
  9 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 20-pin QFN (lead-free package)

Ordering Part Number

- C8051F333-GM



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 16 external inputs; programmable as single-ended or differential
- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor (±3 °C)

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 2 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Two internal oscillators:
  - 24.5 MHz, 2% accuracy supports UART operation
  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

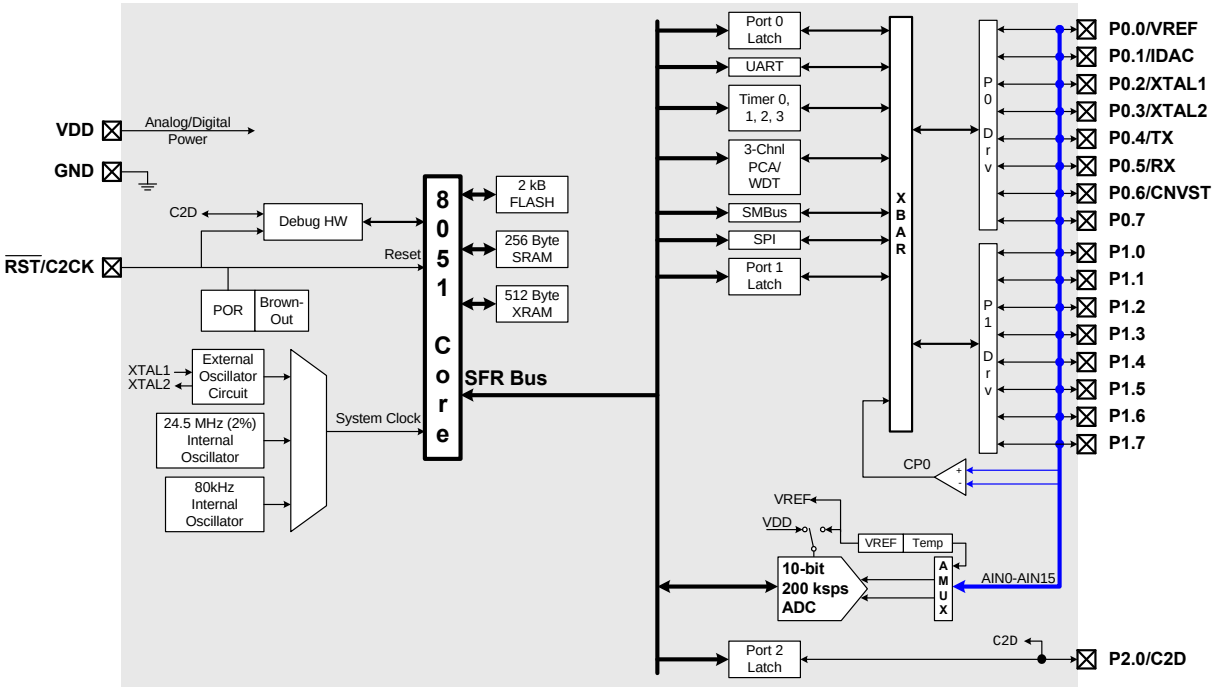
- Typical operating current: 6.4 mA at 25 MHz
  9 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 20-pin QFN (lead-free package)

Ordering Part Number

- C8051F334-GM



Analog Peripherals

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current (0.4 µA)

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 2 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 17 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Two internal oscillators:
  - 24.5 MHz, 2% accuracy supports UART operation
  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly

Supply Voltage: 2.7 to 3.6 V

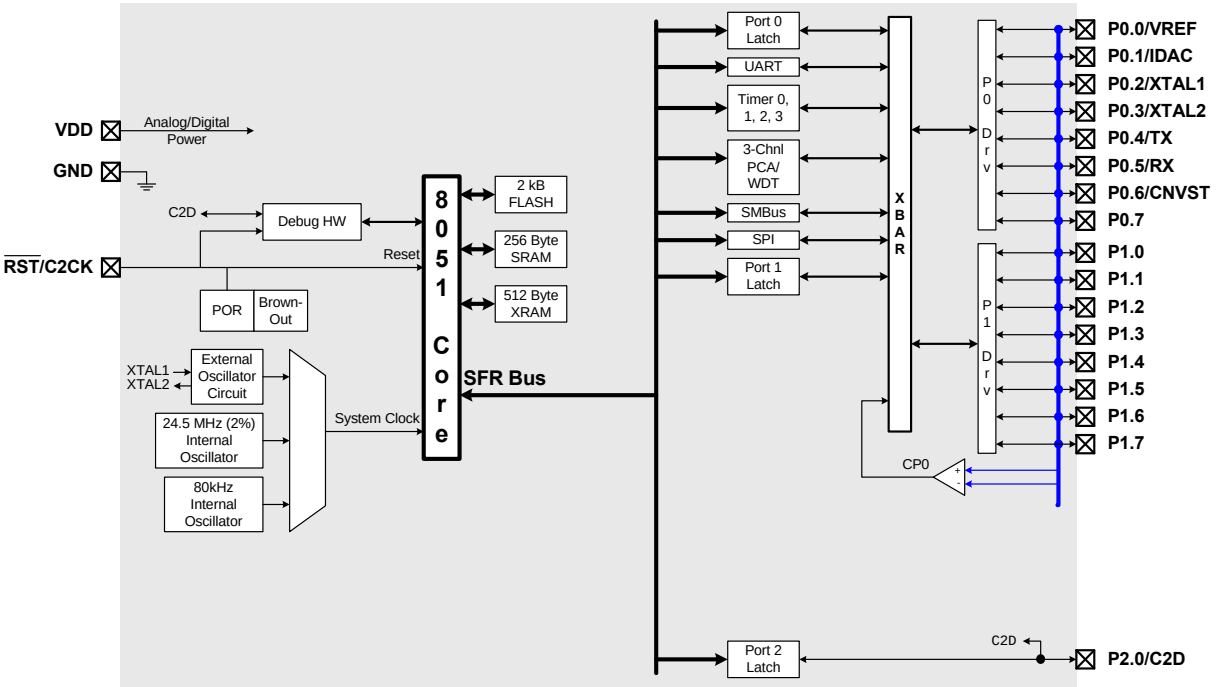
- Typical operating current: 6.4 mA at 25 MHz
  9 µA at 32 kHz
- Typical stop mode current: <0.1 µA

Package

- 20-pin QFN (lead-free package)

Ordering Part Number

- C8051F335-GM



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 16 external inputs; programmable as single-ended or differential
- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor

10-bit DAC (Current Mode)

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 16 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

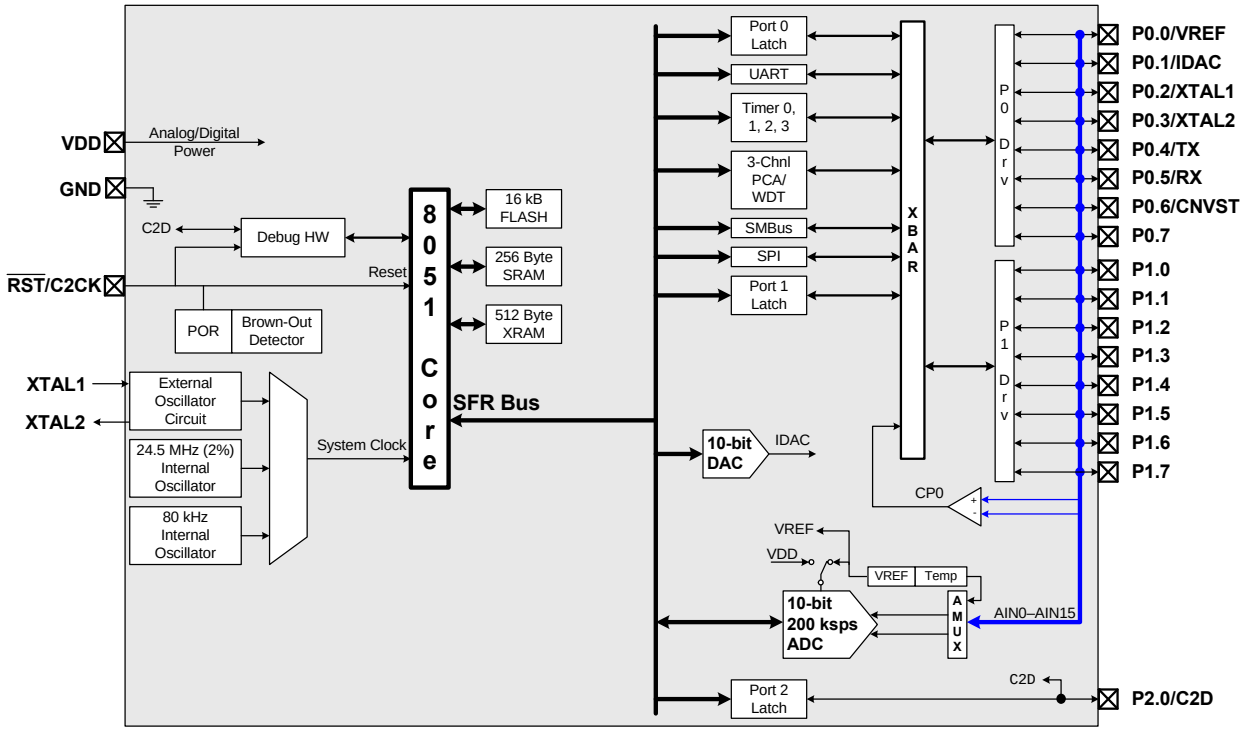
- Up to 21 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and crystaless-UART serial ports available concurrently
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Timer with real-time clock mode
- Clock sources
- Two internal oscillators:
  - Precision 24.5 MHz, 2% accuracy over V_{DD} and temperature
  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly
- Suspend mode for maximum power savings with fast wake-up (<1 us)

Supply Voltage: 2.7 to 3.6 V

Package

- 20-pin QFN

Pin compatible with C8051F33x family of devices



Analog Peripherals

10-bit DAC (Current Mode)

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory

- 768 bytes data RAM
- 16 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

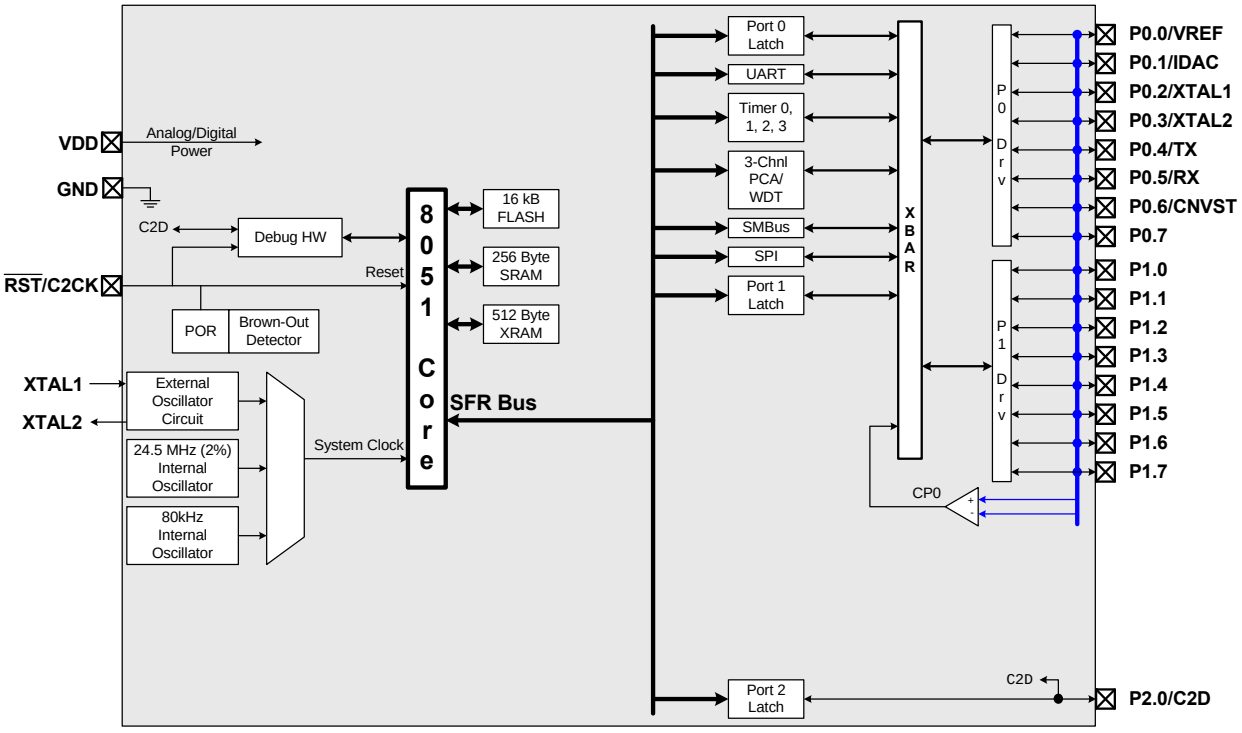
- 17 port I/Os; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and crystaless-UART serial ports available concurrently
- Programmable 16-bit counter/timer array with three capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Timer with real-time clock mode
- Clock sources
- Two internal oscillators:
  - Precision 24.5 MHz, 2% accuracy over V_{DD} and temperature
  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- Can switch between clock sources on-the-fly
- Suspend mode for maximum power savings with fast wake-up (<1 us)

Supply Voltage: 2.7 to 3.6 V

Package

- 20-pin QFN

Pin compatible with C8051F33x family of devices



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 16 external inputs; programmable as single-ended or differential
- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor

10-bit DAC (Current Mode)

Comparator

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
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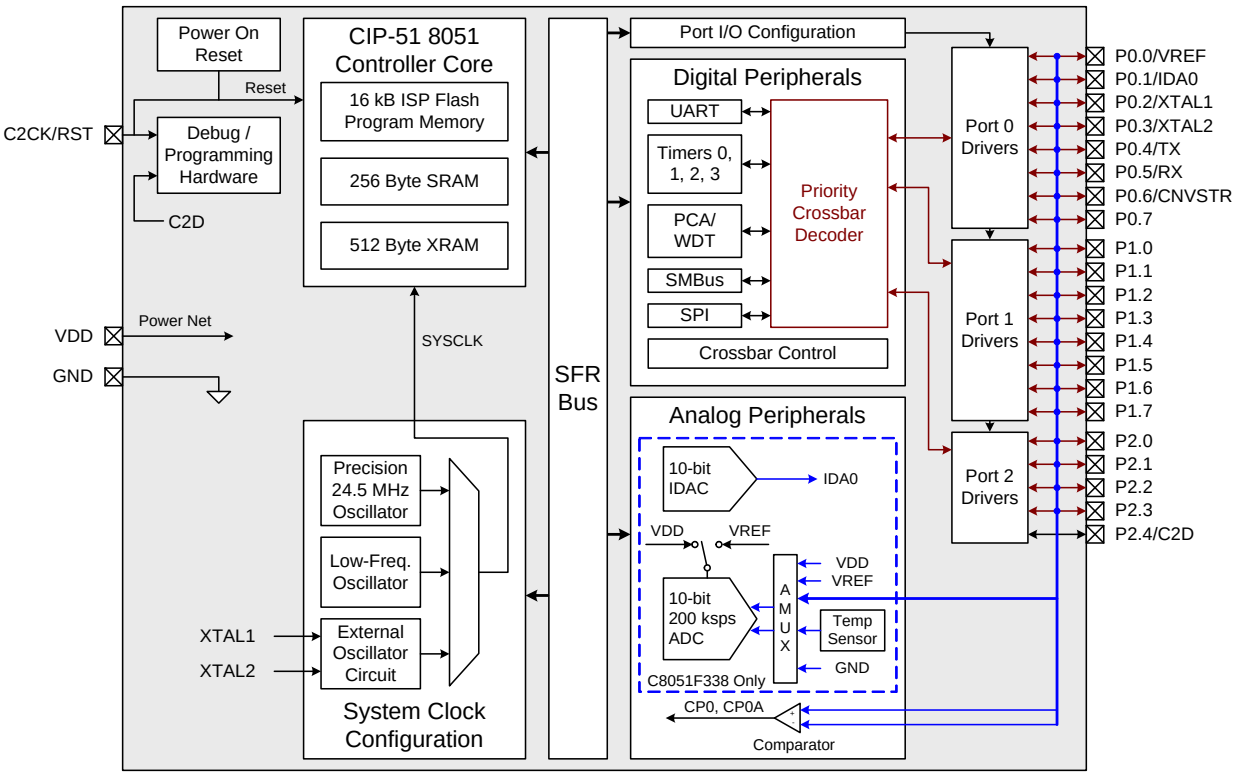
Supply Voltage: 2.7 to 3.6 V

Package

24-pin QFN



Analog Peripherals

10-bit DAC (Current Mode)

Comparator

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- Configurable to generate interrupts or reset
- Low current

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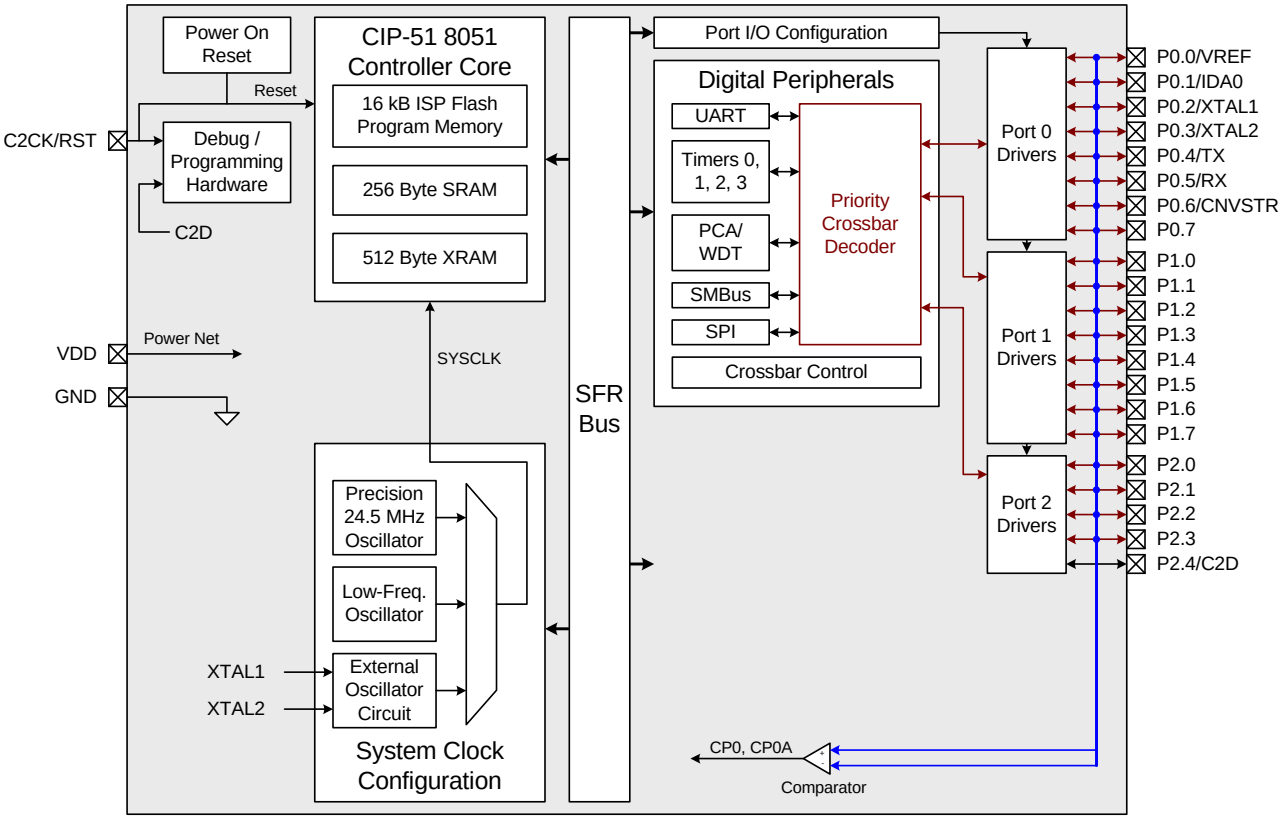
Package

24-pin QFN



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 17 external inputs; programmable as single-ended or differential
- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor (±3 °C)

10-bit DAC (Current Mode)

Two Comparators

- Programmable hysteresis and response time
- Configurable to generate interrupts or reset
- Low current

On-Chip Debug

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High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 1280 bytes data RAM with external memory I/F
- 32 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 39 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with six capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers
- Real-time clock mode using PCA or timer and external clock source

Clock Sources

- Two internal oscillators:
  - 24.5 MHz, 2% accuracy supports UART operation
  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- On-Chip programmable PLL: up to 100 MHz

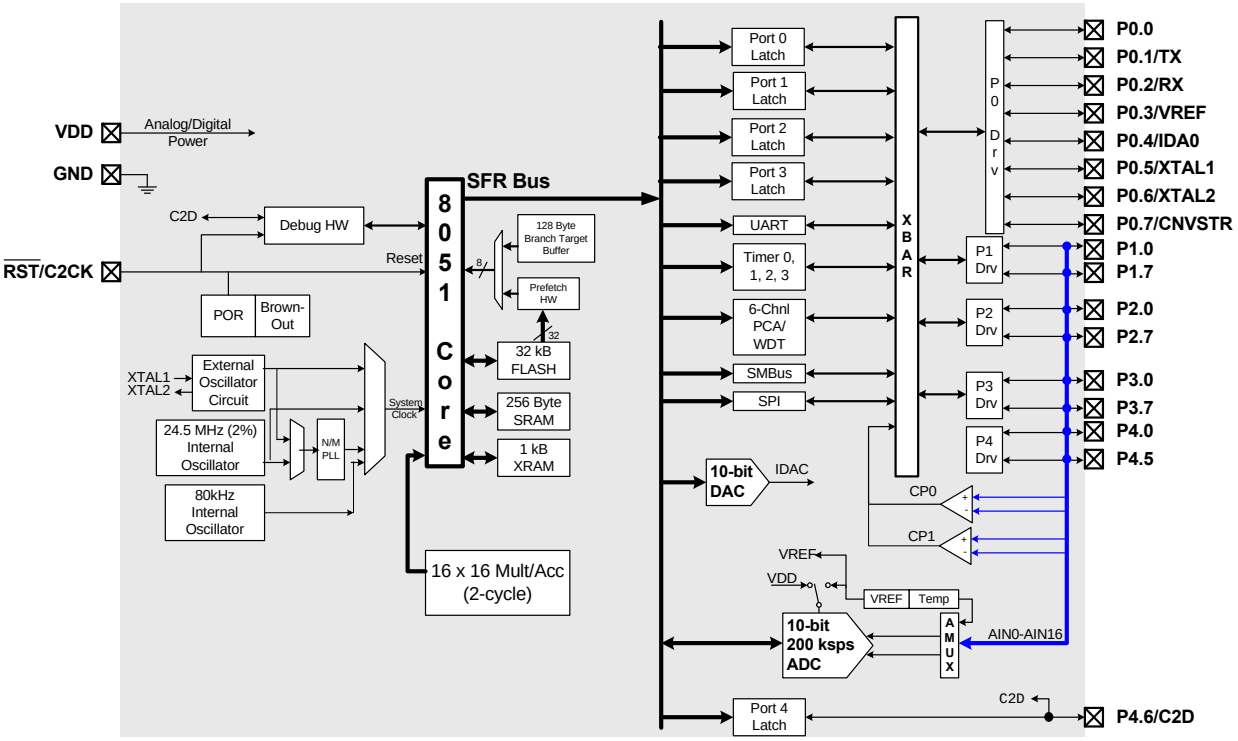
Supply Voltage: 2.7 to 3.6 V

Package

- 48-pin TQFP

Ordering Part Number

- C8051F360-GQ



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 21 external inputs; programmable as single-ended or differential
- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor (±3 °C)

10-bit DAC (Current Mode)

Two Comparators

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- Configurable to generate interrupts or reset
- Low current

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- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
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Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

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- Up to 100 MIPS throughput with 100 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 1280 bytes data RAM
- 32 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

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- 27 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I2C™ compatible), SPI™, and UART serial ports available concurrently
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- Two internal oscillators:
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  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- On-Chip programmable PLL: up to 100 MHz

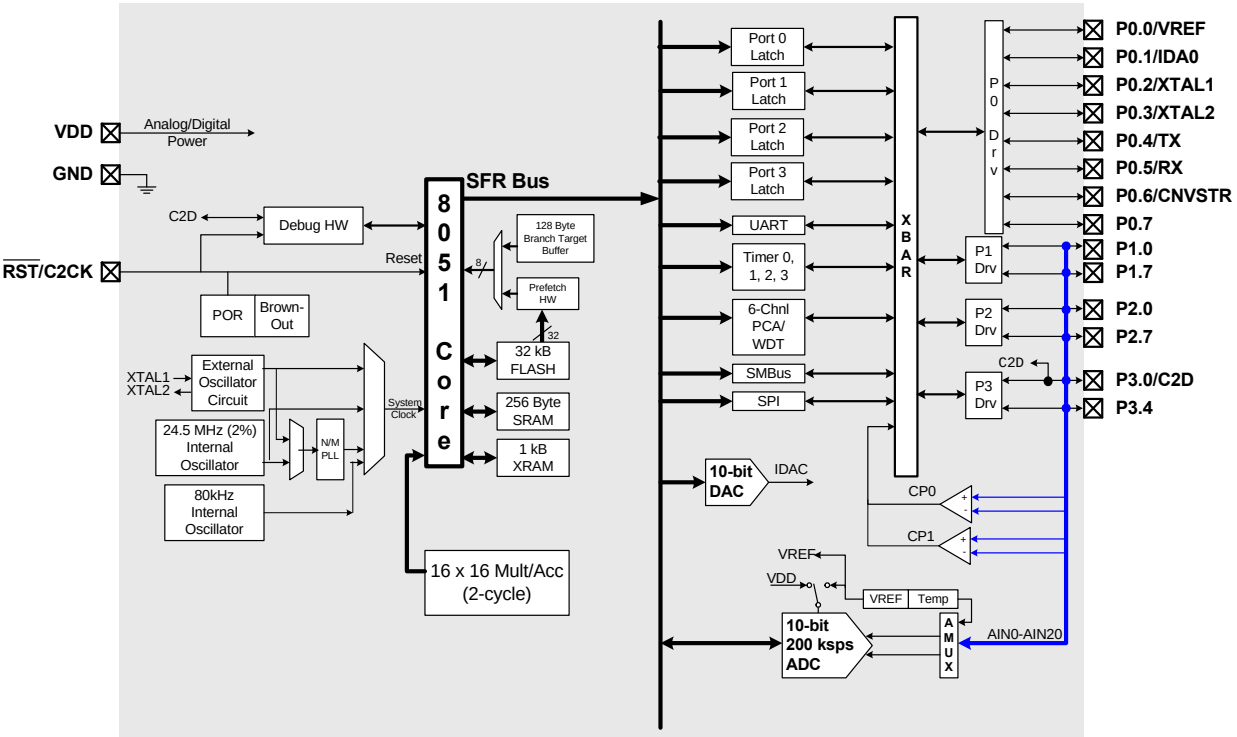
Supply Voltage: 2.7 to 3.6 V

Package

- 32-pin LQFP
- Pin compatible with C8051F310

Ordering Part Number

- C8051F361-GQ



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 17 external inputs; programmable as single-ended or differential
- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor (±3 °C)

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- Configurable to generate interrupts or reset
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- Two internal oscillators:
  - 24.5 MHz, 2% accuracy supports UART operation
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- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- On-Chip programmable PLL: up to 100 MHz

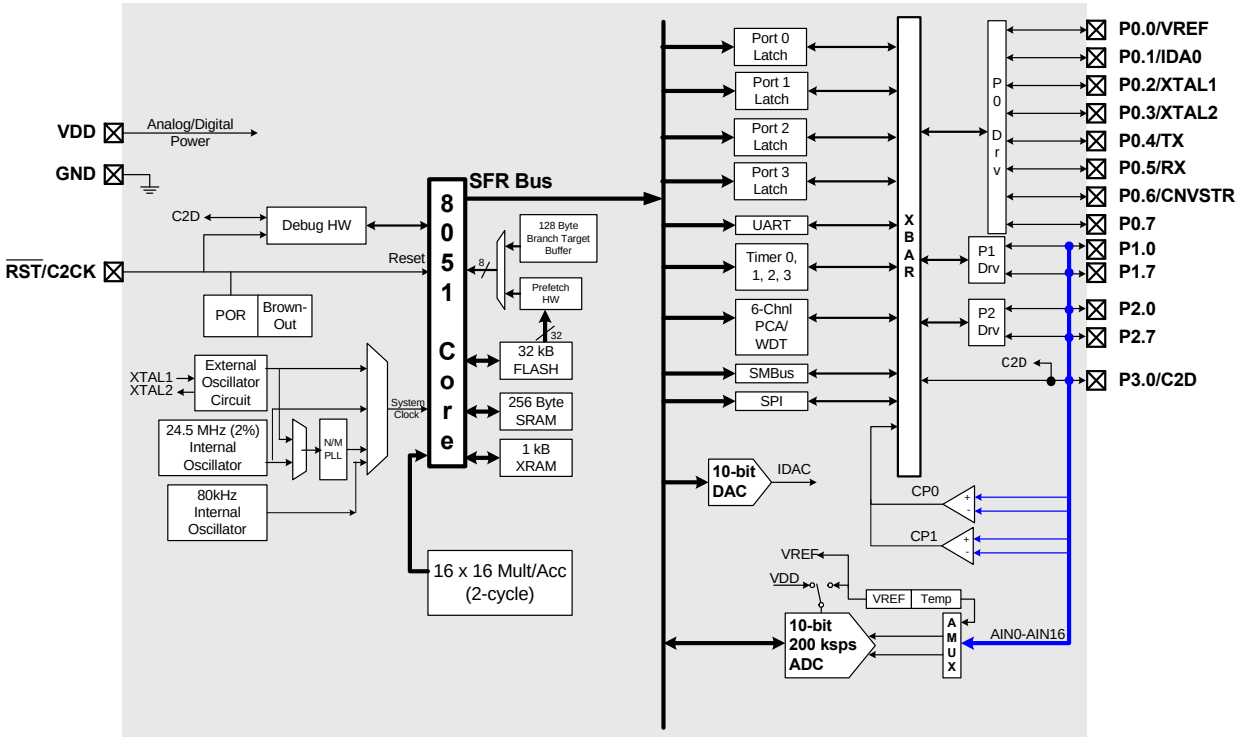
Supply Voltage: 2.7 to 3.6 V

Package

- 28-pin QFN
- Pin compatible with C8051F311

Ordering Part Number

- C8051F362-GM



Analog Peripherals

Two Comparators

- Programmable hysteresis and response time
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On-Chip Debug

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- On-Chip programmable PLL: up to 100 MHz

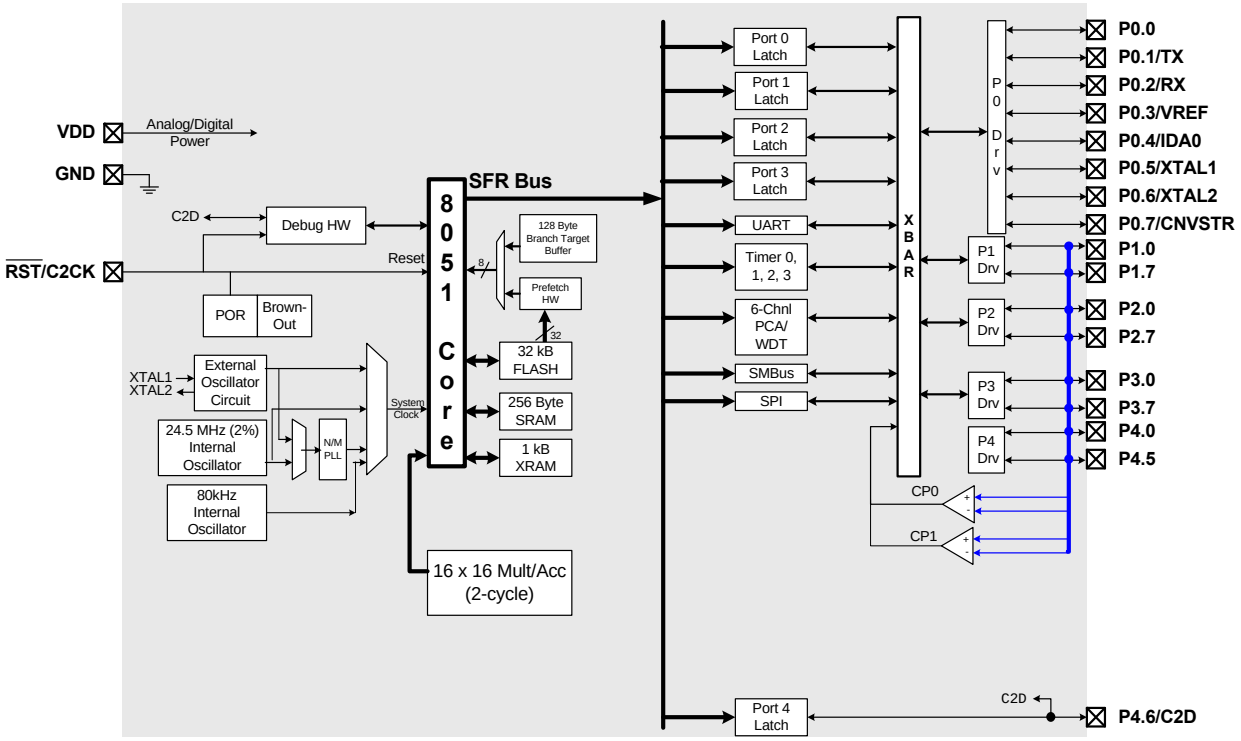
Supply Voltage: 2.7 to 3.6 V

Package

- 48-pin TQFP

Ordering Part Number

- C8051F363-GQ



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- On-Chip programmable PLL: up to 100 MHz

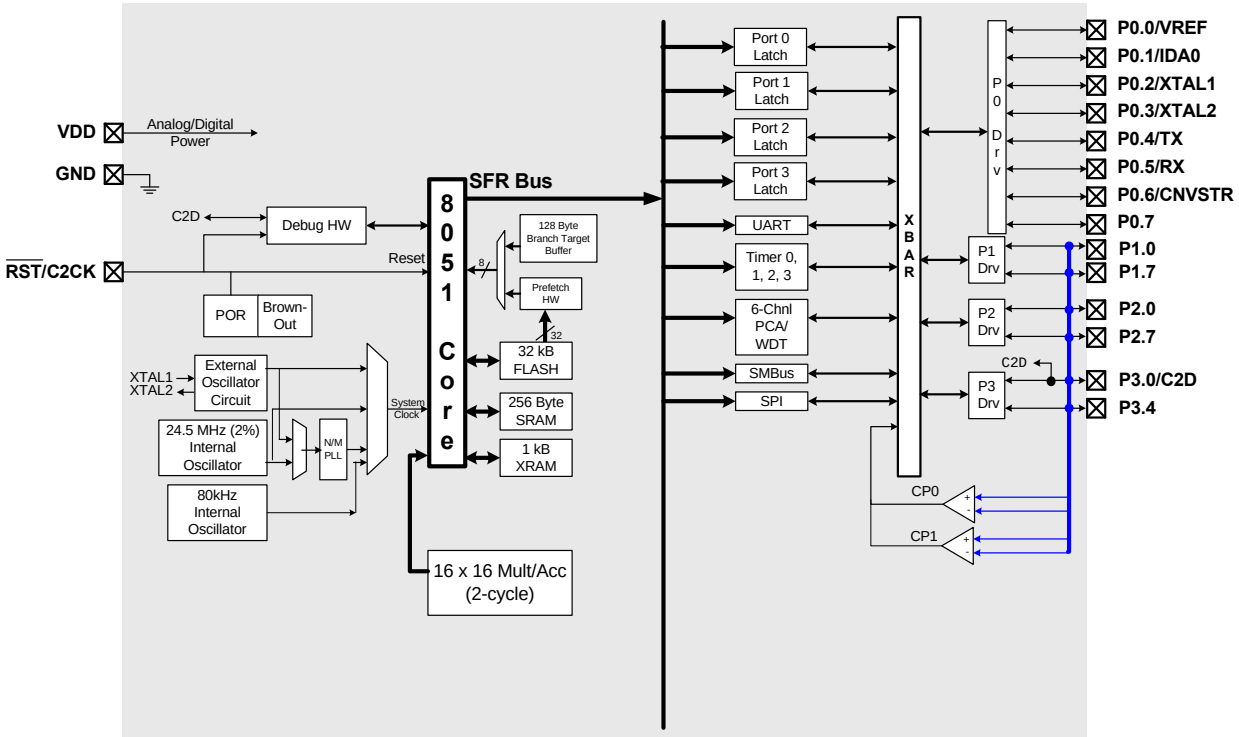
Supply Voltage: 2.7 to 3.6 V

Package

- 32-pin LQFP
- Pin compatible with C8051F310

Ordering Part Number

- C8051F364-GQ



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- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- On-Chip programmable PLL: up to 100 MHz

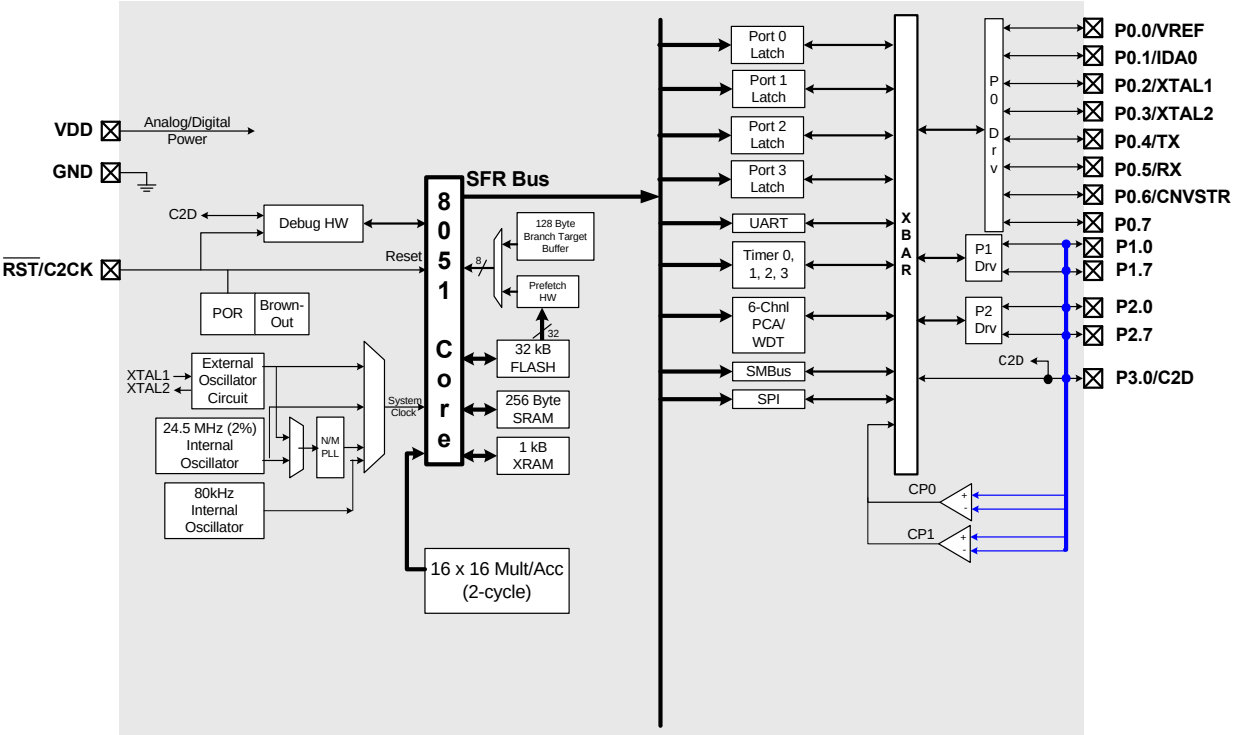
Supply Voltage: 2.7 to 3.6 V

Package

- 28-pin QFN
- Pin compatible with C8051F311

Ordering Part Number

- C8051F365-GM



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
- Up to 21 external inputs; programmable as single-ended or differential
- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor (±3 °C)

10-bit DAC (Current Mode)

Two Comparators

- Programmable hysteresis and response time
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Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 1280 bytes data RAM
- 32 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 29 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I2C™ compatible), SPI™, and UART serial ports available concurrently
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- Two internal oscillators:
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  - 80 kHz low frequency, low-power
- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- On-Chip programmable PLL: up to 50 MHz

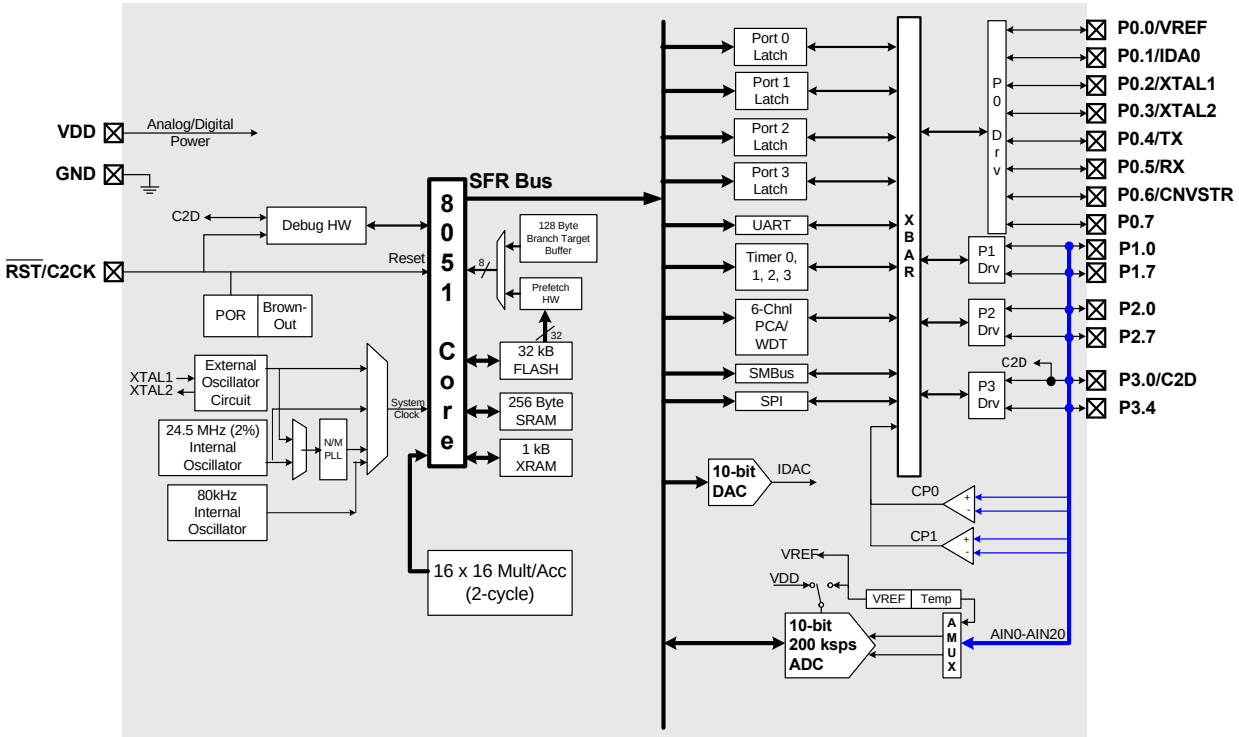
Supply Voltage: 2.7 to 3.6 V

Package

- 32-pin LQFP
- Pin compatible with C8051F310

Ordering Part Number

- C8051F366-GQ



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High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 1280 bytes data RAM
- 32 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 25 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I2C™ compatible), SPI™, and UART serial ports available concurrently
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- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- On-Chip programmable PLL: up to 50 MHz

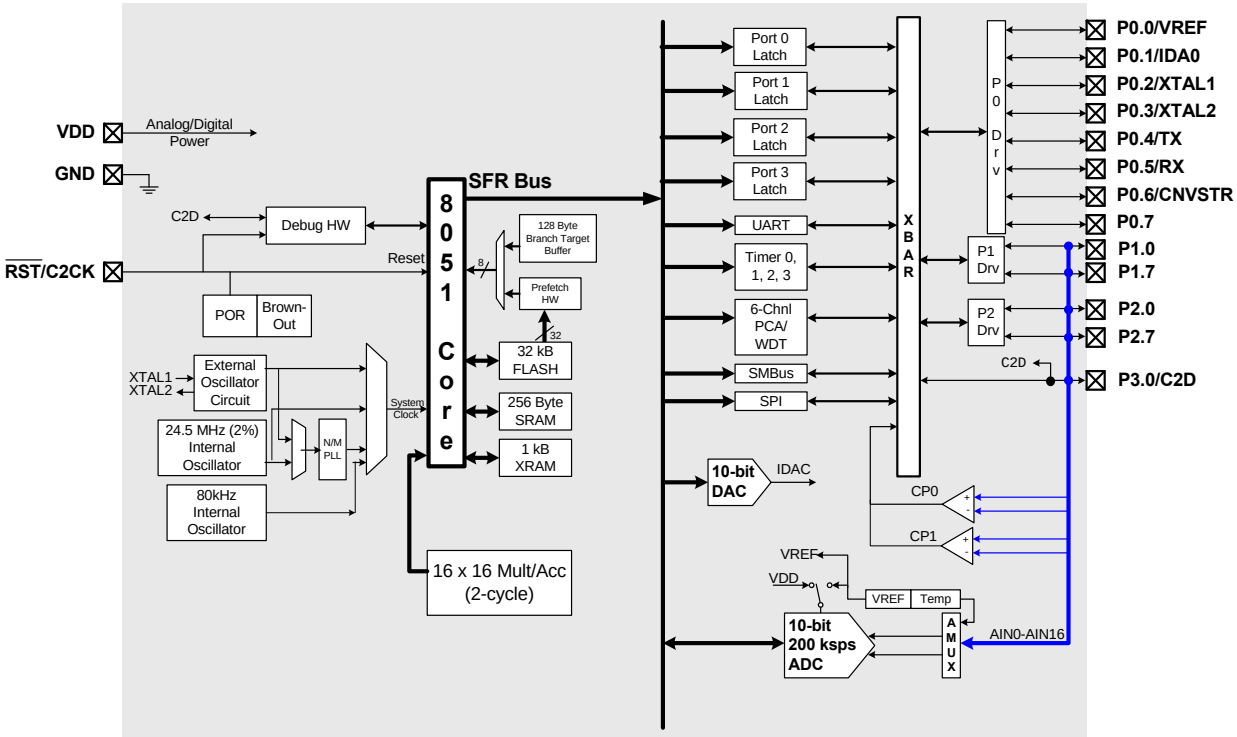
Supply Voltage: 2.7 to 3.6 V

Package

- 28-pin QFN
- Pin compatible with C8051F311

Ordering Part Number

- C8051F367-GM



Analog Peripherals

10-Bit ADC

- Programmable throughput up to 200 ksps
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- Reference from internal V_{REF}, V_{DD}, or external pin
- Internal or external start of conversion sources
- Built-in temperature sensor (±3 °C)

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Memory

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- 16 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

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- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- On-Chip programmable PLL: up to 50 MHz

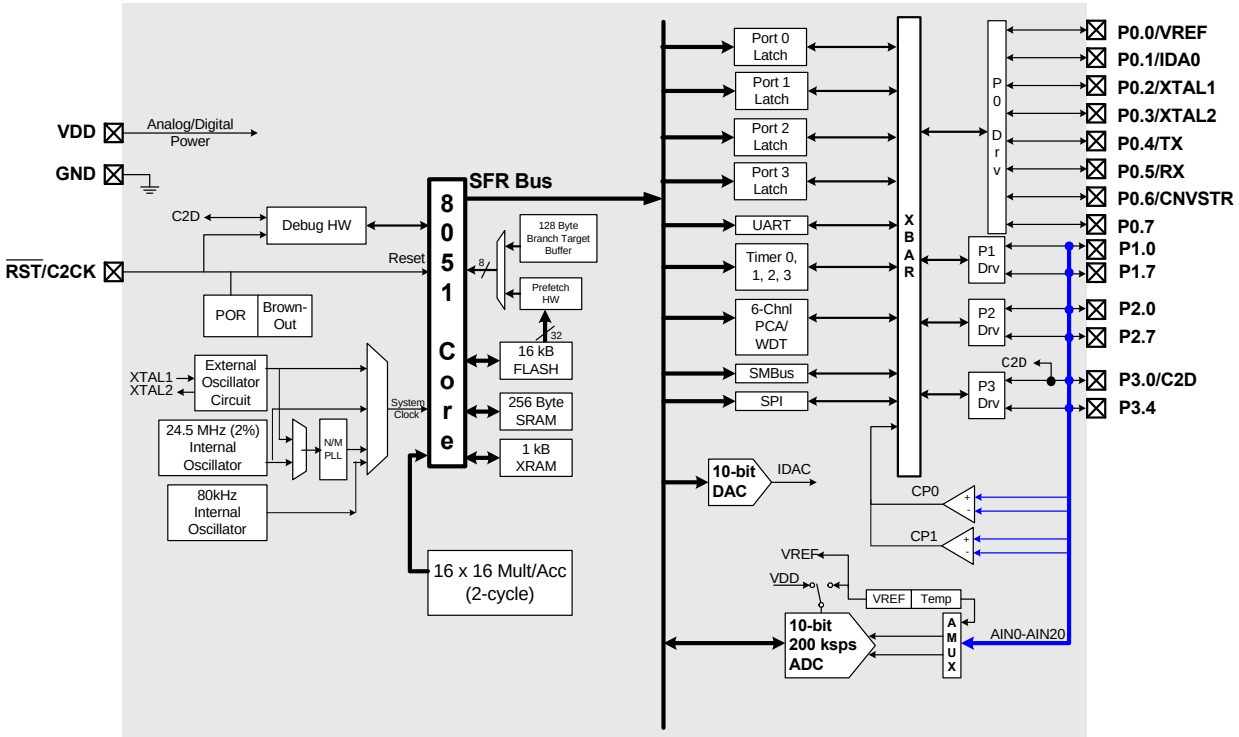
Supply Voltage: 2.7 to 3.6 V

Package

- 32-pin LQFP
- Pin compatible with C8051F310

Ordering Part Number

- C8051F368-GQ



Analog Peripherals

10-Bit ADC

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- Up to 17 external inputs; programmable as single-ended or differential
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- Up to 50 MIPS throughput with 50 MHz system clock
- 16 x 16 multiply/accumulate engine (2-cycle)

Memory

- 1280 bytes data RAM
- 16 kB Flash; in-system programmable in 512 byte sectors (512 bytes are reserved)

Digital Peripherals

- 25 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I2C™ compatible), SPI™, and UART serial ports available concurrently
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- External oscillator: Crystal, RC, C, or Clock (1 or 2 pin modes)
- On-Chip programmable PLL: up to 50 MHz

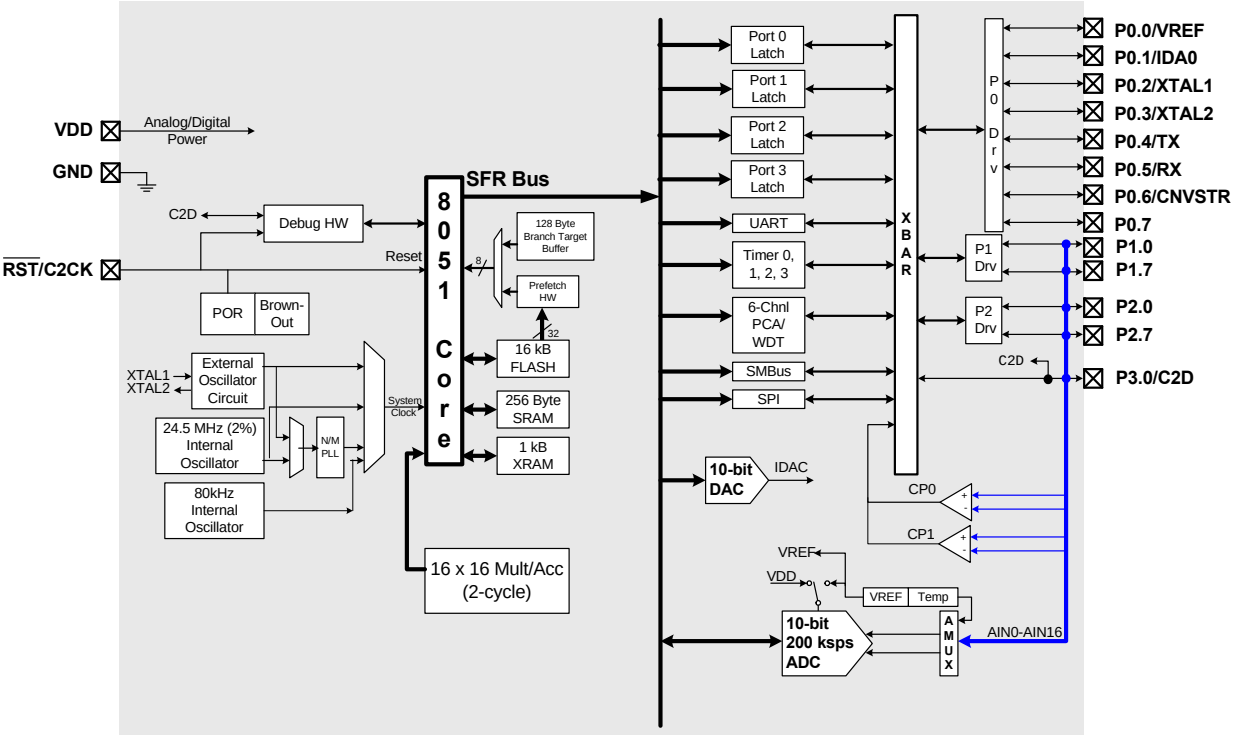
Supply Voltage: 2.7 to 3.6 V

Package

- 28-pin QFN
- Pin compatible with C8051F311

Ordering Part Number

- C8051F369-GM



Analog Peripherals

12-bit ADC

- ±1 LSB INL; no missing codes
- Programmable Throughput up to 200 ksps
- Up to 24 External Inputs; programmable as single-ended or differential
- Data Dependent Windowed Interrupt Generator
- Built-in Temperature Sensor (±3 °C)
- Internal Voltage Reference—1.5 V, 2.2 V (programmable)

Two 12-Bit Current Mode DACs

Two Comparators

- Programmable hysteresis values and response time
- Configurable to generate interrupts or reset

POR/Brown-out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping, watchpoints
- Inspect/modify memory, registers, and stack
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

smaRTClock™

- Battery switchover circuit
- Back-up power supply
- Oscillator failure detect
- Operates down to 1 V

Temperature Range: –40 to +85 °C

High-Speed 8051 CPU

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz system clock
- Expanded interrupt handler

Memory

- 2304 bytes data RAM
- 32 kB Flash; in-system programmable in 512-Byte Sectors; Full Read/Write/Erase Functionality at 2.25 V_{DD}
- 64 bytes battery-backed RAM

Digital Peripherals

- 24 port I/O; up to 5.25 V tolerance
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- 16-bit programmable counter array with six capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers

Clock Sources

- Internal Oscillators: 24.5 MHz, 2% Accuracy Supports UART Operation; Clock Multiplier up to 50 MHz
- External Oscillator1: Crystal, RC, C, or Clock (1 or 2 pin modes)
- External Oscillator2: 32 kHz Crystal or C, 5 µA
- Fast wake up from suspend mode in <1 µs

Supply Voltage: 2.0–5.25 V

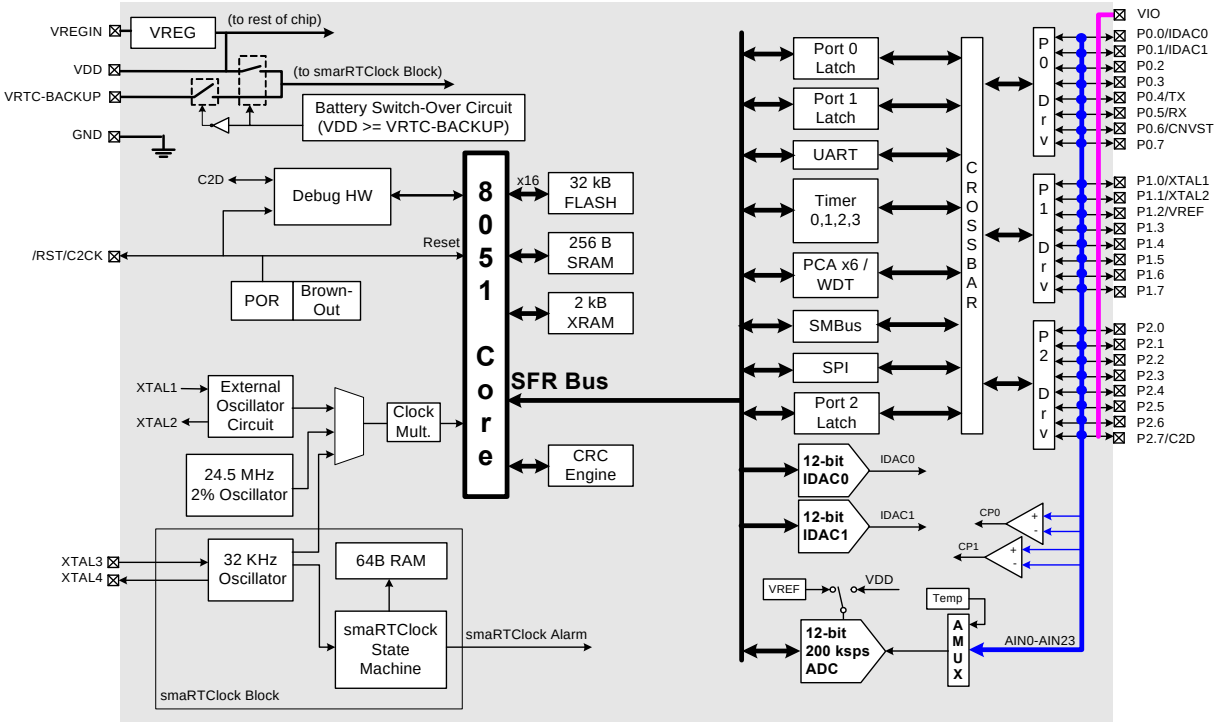
- Built-in LDO regulator: 2.1 V or 2.5 V

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F410-GQ



Analog Peripherals

12-bit ADC

- ±1 LSB INL; no missing codes
- Programmable Throughput up to 200 ksps
- Up to 24 External Inputs; programmable as single-ended or differential
- Data Dependent Windowed Interrupt Generator
- Built-in Temperature Sensor (±3 °C)
- Internal Voltage Reference—1.5 V, 2.2 V (programmable)

Two 12-Bit Current Mode DACs

Two Comparators

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smaRTClock™

- Battery switchover circuit
- Back-up power supply
- Oscillator failure detect
- Operates down to 1 V

Temperature Range: –40 to +85 °C

High-Speed 8051 CPU

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 50 MIPS throughput with 50 MHz system clock
- Expanded interrupt handler

Memory

- 2304 bytes data RAM
- 32 kB Flash; in-system programmable in 512-Byte Sectors; Full Read/Write/Erase Functionality at 2.25 V_{DD}
- 64 bytes battery-backed RAM

Digital Peripherals

- 24 port I/O; up to 5.25 V tolerance
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- 16-bit programmable counter array with six capture/compare modules, WDT
- 4 general-purpose 16-bit counter/timers

Clock Sources

- Internal Oscillators: 24.5 MHz, 2% Accuracy Supports UART Operation; Clock Multiplier up to 50 MHz
- External Oscillator1: Crystal, RC, C, or Clock (1 or 2 pin modes)
- External Oscillator2: 32 kHz Crystal or C, 5 µA
- Fast wake up from suspend mode in <1 µs

Supply Voltage: 2.0–5.25 V

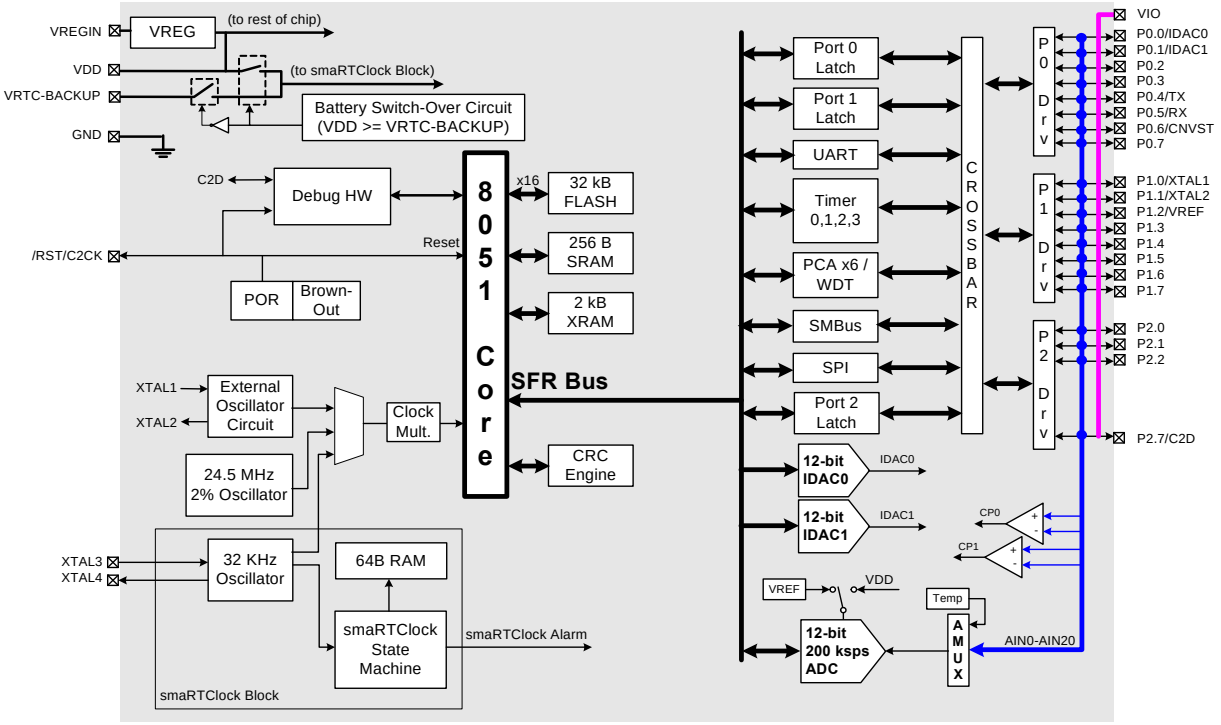
- Built-in LDO regulator: 2.1 V or 2.5 V

Package

- 28-pin QFN (lead-free package)

Ordering Part Number

- C8051F411-GM



Analog Peripherals

12-bit ADC

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- Programmable Throughput up to 200 ksps
- Up to 24 External Inputs; programmable as single-ended or differential
- Data Dependent Windowed Interrupt Generator
- Built-in Temperature Sensor (±3 °C)
- Internal Voltage Reference—1.5 V, 2.2 V (programmable)

Two 12-Bit Current Mode DACs

Two Comparators

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- Oscillator failure detect
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Memory

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- 64 bytes battery-backed RAM

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- External Oscillator2: 32 kHz Crystal or C, 5 µA
- Fast wake up from suspend mode in <1 µs

Supply Voltage: 2.0–5.25 V

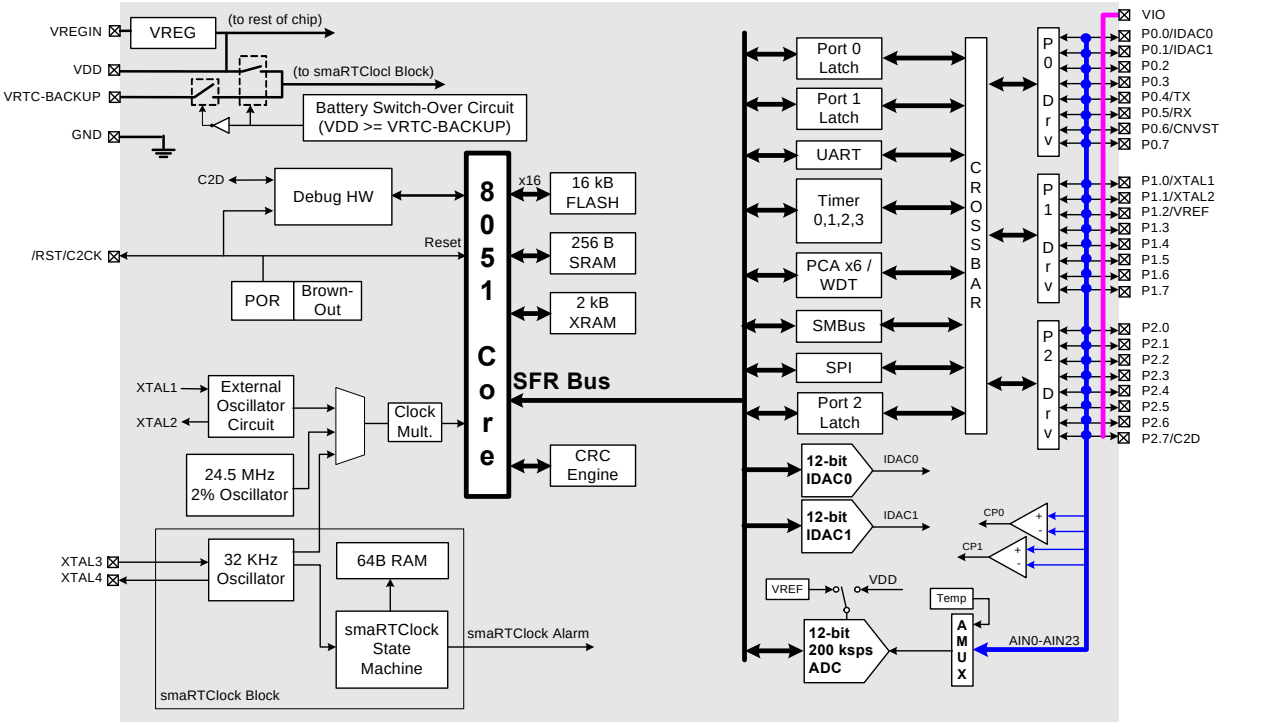
- Built-in LDO regulator: 2.1 V or 2.5 V

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F412-GQ



Analog Peripherals

12-bit ADC

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- Programmable Throughput up to 200 ksps
- Up to 24 External Inputs; programmable as single-ended or differential
- Data Dependent Windowed Interrupt Generator
- Built-in Temperature Sensor (±3 °C)
- Internal Voltage Reference—1.5 V, 2.2 V (programmable)

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- External Oscillator1: Crystal, RC, C, or Clock (1 or 2 pin modes)
- External Oscillator2: 32 kHz Crystal or C, 5 µA
- Fast wake up from suspend mode in <1 µs

Supply Voltage: 2.0–5.25 V

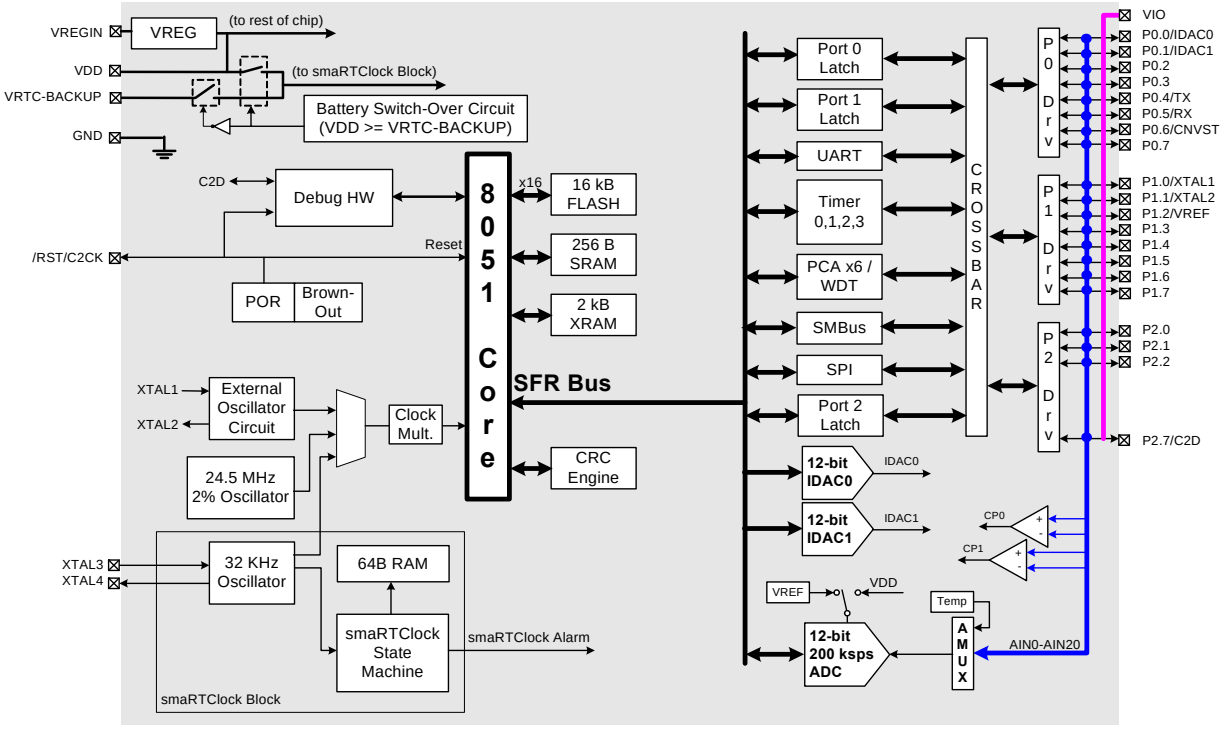
- Built-in LDO regulator: 2.1 V or 2.5 V

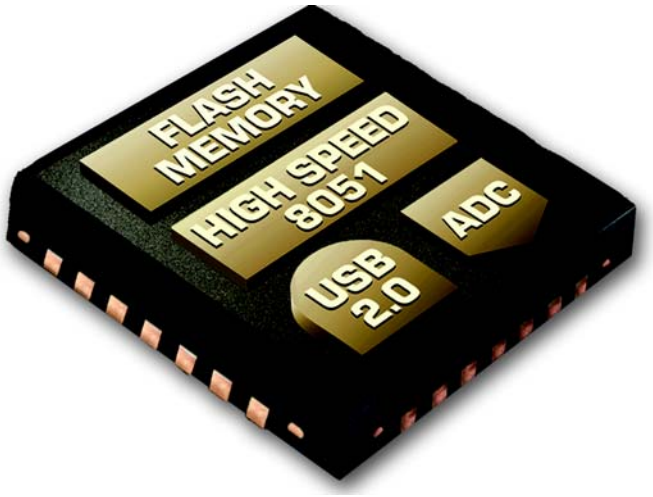
Package

- 28-pin QFN (lead-free package)

Ordering Part Number

- C8051F413-GM





USB MCUs

Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 17 external inputs; programmable as single-ended or differential
- Built-in temperature sensor (±3 °C)

Two Comparators

Internal Voltage Reference: 2.4 V

POR/Brown-out Detector

USB Function Controller

- USB specification 2.0 compliant
- Full-speed (12 Mbps) or low-speed (1.5 Mbps) operation
- Integrated clock recovery; no external crystal required for either full-speed or low-speed operation
- Supports eight flexible endpoints
- Dedicated 1 kB USB buffer memory
- Integrated transceiver; no external resistors required

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory, registers, and USB memory
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz Clock
- Expanded interrupt handler

Memory

- 1280 bytes data RAM
- 16 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 25 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers

Clock Sources

- Internal oscillator: 0.25% accuracy with clock recovery enabled; supports all USB and UART modes
- External oscillator: Crystal, RC, C, or Clock
- On-chip clock multiplier for USB controller

Operating Voltage: 2.7 to 5.25 V

Voltage Regulator

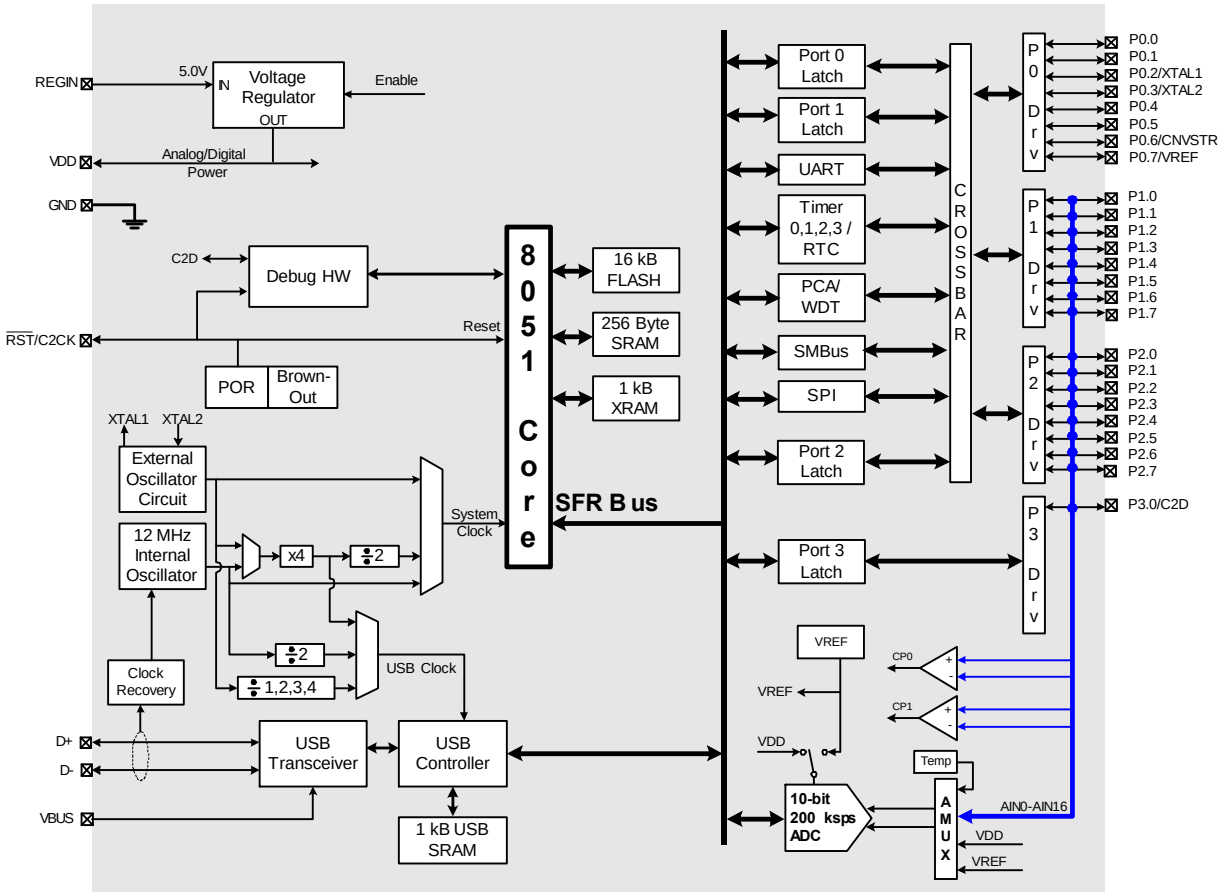
- On-chip voltage regulator supports USB bus-powered operation
- Regulator bypass mode supports USB self-powered operation

Package

- 32-pin LQFP (lead-free package)

Ordering Part Number

- C8051F320-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 13 external inputs; programmable as single-ended or differential
- Built-in temperature sensor (±3 °C)

Two Comparators

Internal Voltage Reference: 2.4 V

POR/Brown-out Detector

USB Function Controller

- USB specification 2.0 compliant
- Full-speed (12 Mbps) or low-speed (1.5 Mbps) operation
- Integrated clock recovery; no external crystal required for either full-speed or low-speed operation
- Supports eight flexible endpoints
- Dedicated 1 kB USB buffer memory
- Integrated transceiver; no external resistors required

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory, registers, and USB memory
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz Clock
- Expanded interrupt handler

Memory

- 1280 bytes data RAM
- 16 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 21 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- Programmable 16-bit counter/timer array with five capture/compare modules
- 4 general-purpose 16-bit counter/timers

Clock Sources

- Internal oscillator: 0.25% accuracy with clock recovery enabled; supports all USB and UART modes
- External oscillator: Crystal, RC, C, or Clock
- On-chip clock multiplier for USB controller

Operating Voltage: 2.7 to 5.25 V

Voltage Regulator

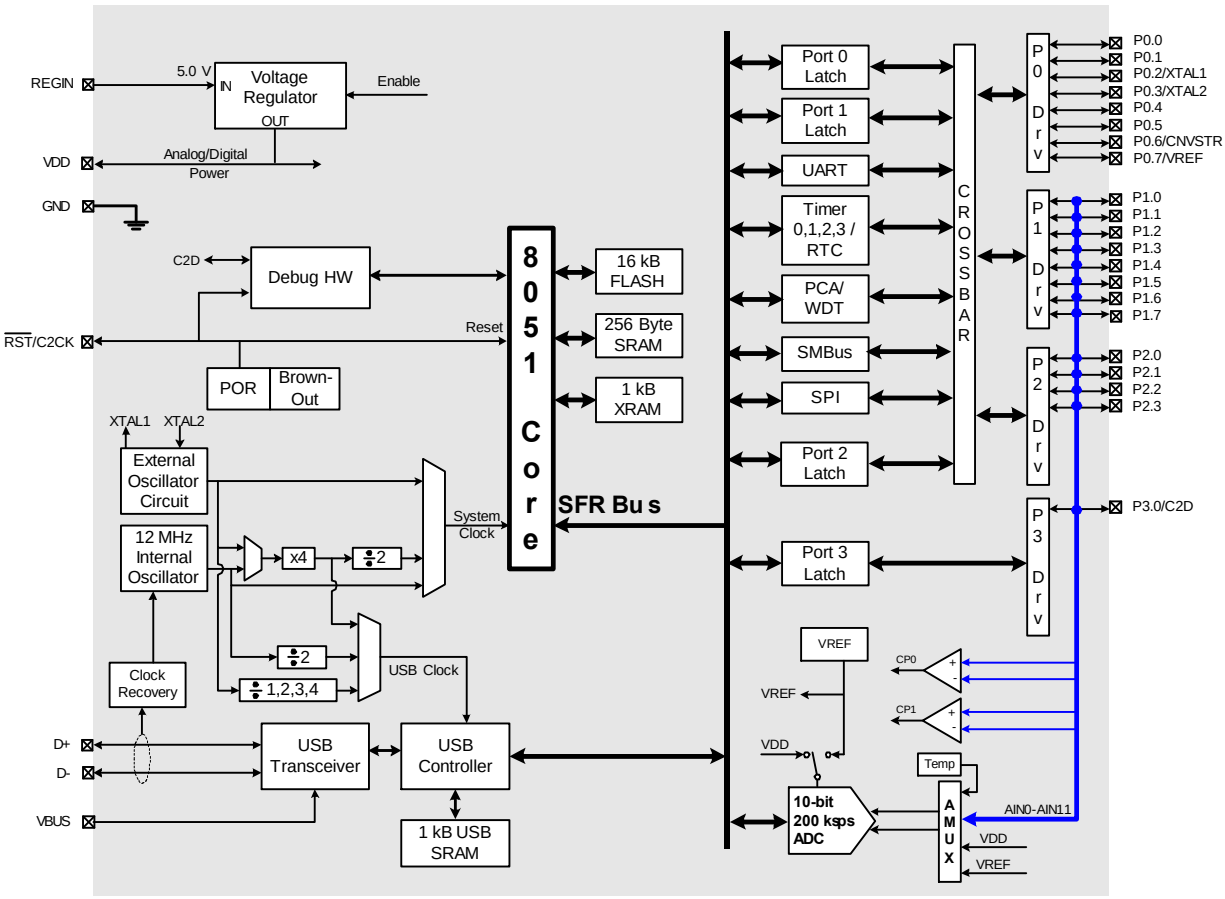
- On-chip voltage regulator supports USB bus-powered operation
- Regulator bypass mode supports USB self-powered operation

Package

- 28-pin QFN (lead-free package)

Ordering Part Number

- C8051F321-GM



USB Function Controller
- USB specification 2.0 compliant
- Full-speed (12 Mbps) or low-speed (1.5 Mbps) operation
- Integrated clock recovery; no external crystal required for either full-speed or low-speed operation
- Supports two fixed-function endpoints
- Dedicated 256 byte USB buffer memory
- Integrated transceiver; no external resistors required

POR/Brown-Out Detector

On-Chip Debug
- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory, registers, and USB memory
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Separate I/O Supply Pin (V_{DDIO})
- Enables interfacing to external logic that operates between 2.0 V and V_{DD} without the need for external circuitry

Temperature Range: –40 to 85 °C

High-Speed 8051 µC Core
- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 25 MIPS throughput with 25 MHz clock
- Expanded interrupt handler

Memory
- 1280 bytes internal data RAM (256 + 1K)
- 16 kB bytes in-system programmable Flash program memory

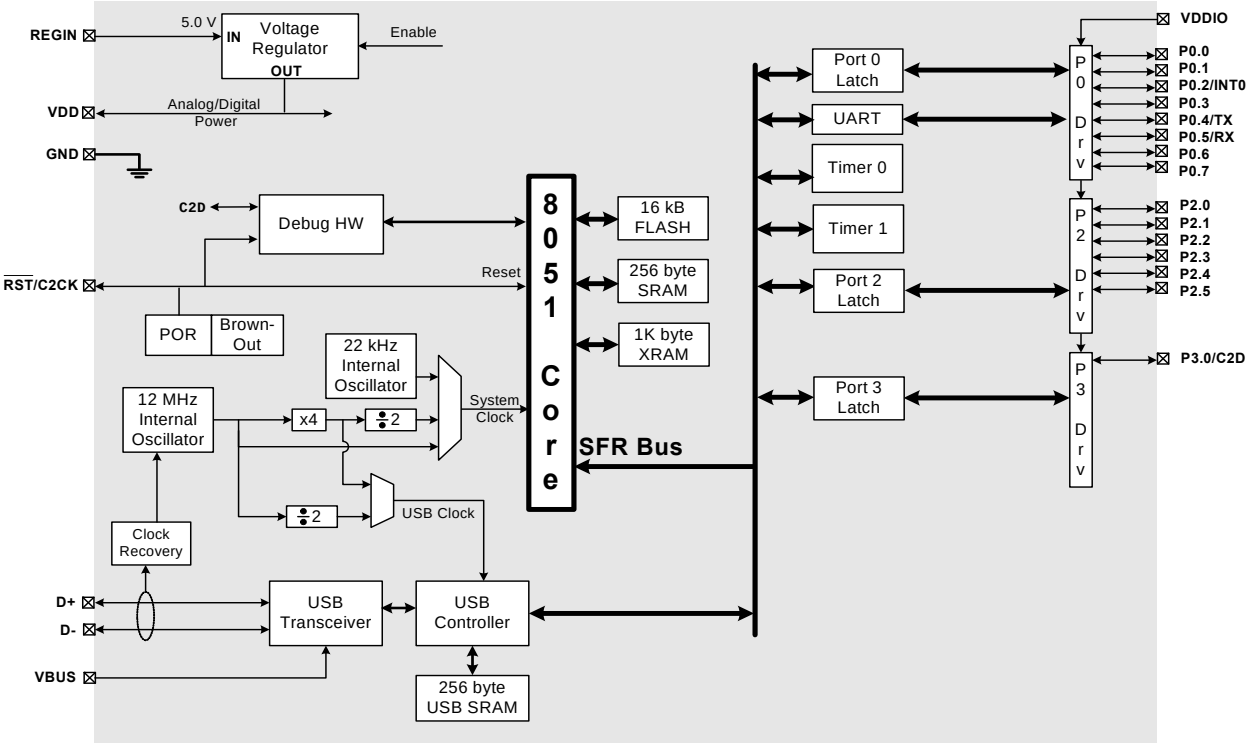
Digital Peripherals
- 15 port I/O; all 5 V tolerant with high sink current
- Hardware enhanced UART (up to 3 Mbps)
- Two general purpose 16-Bit counter/timers

Clock Sources
- Internal clock: 0.25% accuracy with clock recovery enabled. Supports all USB and UART modes
- On-Chip Clock Multiplier for USB Controller
- Internal 22 kHz Clock for low power suspend modes

Operating Voltage: 2.7 to 5.25 V
Voltage Regulator
- On-chip voltage regulator supports USB bus-powered operation
- Regulator bypass mode supports USB self-powered operation

Package
- 28-Pin QFN (lead-free package)

Ordering Part Number
C8051F326-GM



USB Function Controller

- USB specification 2.0 compliant
- Full-speed (12 Mbps) or low-speed (1.5 Mbps) operation
- Integrated clock recovery; no external crystal required for either full-speed or low-speed operation
- Supports two fixed-function endpoints
- Dedicated 256 byte USB buffer memory
- Integrated transceiver; no external resistors required

POR/Brown-Out Detector

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory, registers, and USB memory
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to 85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
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Clock Sources

- Internal clock: 0.25% accuracy with clock recovery enabled. Supports all USB and UART modes
- On-Chip Clock Multiplier for USB Controller
- Internal 22 kHz Clock for low power suspend modes

Operating Voltage: 2.7 to 5.25 V

Voltage Regulator

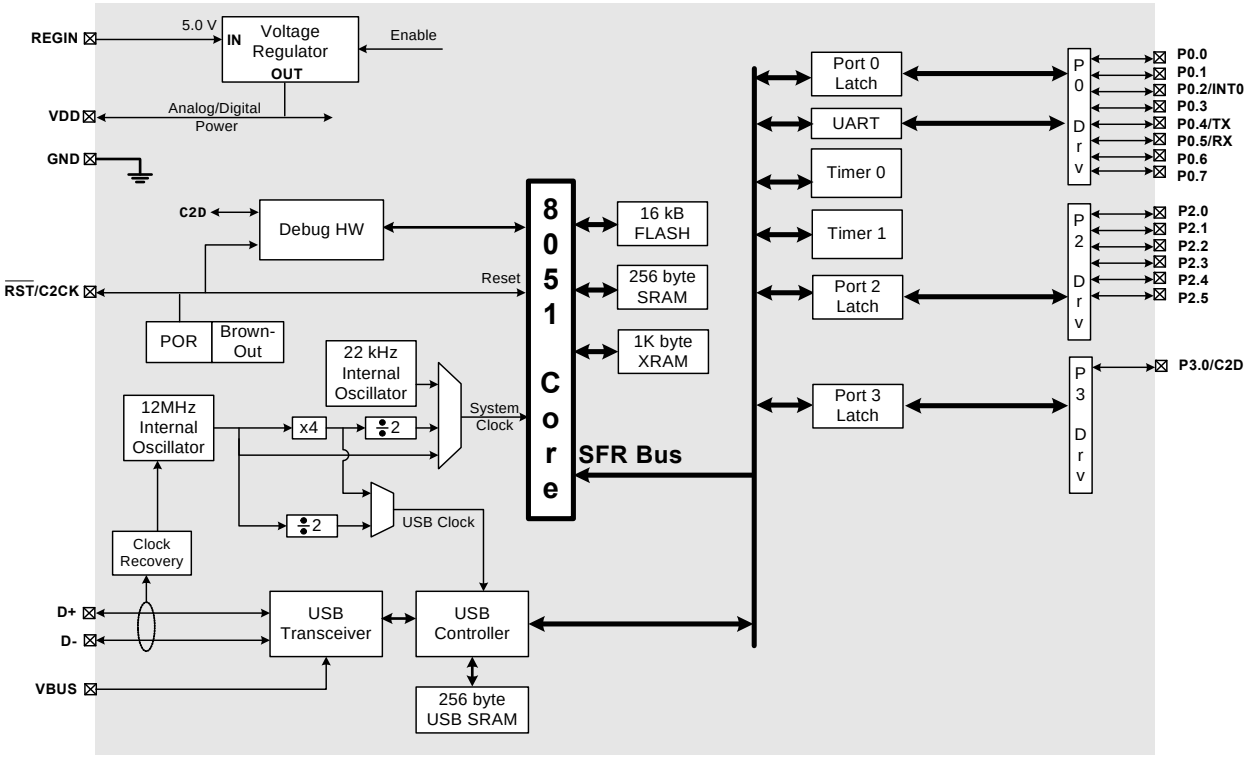
- On-chip voltage regulator supports USB bus-powered operation
- Regulator bypass mode supports USB self-powered operation

Package

- 28-Pin QFN (lead-free package)

Ordering Part Number

- C8051F327-GM



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 17 external inputs; programmable as single-ended or differential
- Built-in temperature sensor (±3 °C)

Two Comparators

Internal Voltage Reference: 2.4 V

POR/Brown-out Detector

USB Function Controller

- USB specification 2.0 compliant
- Full-speed (12 Mbps) or low-speed (1.5 Mbps) operation
- Integrated clock recovery; no external crystal required for either full-speed or low-speed operation
- Supports eight flexible endpoints
- Dedicated 1 kB USB buffer memory
- Integrated transceiver; no external resistors required

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory, registers, and USB memory
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 48 MIPS throughput with 48 MHz Clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM (256 + 4 kB)
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 40 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and 2 UART serial ports available concurrently
- 4 general-purpose 16-bit counter/timers
- Programmable 16-bit counter array with 5 capture/compare modules

Clock Sources

- Internal oscillator: 0.25% accuracy with clock recovery enabled; supports all USB and UART modes
- External oscillator: Crystal, RC, C, or Clock
- On-chip clock multiplier: up to 48 MHz

Operating Voltage: 2.7 to 5.25 V

Voltage Regulator

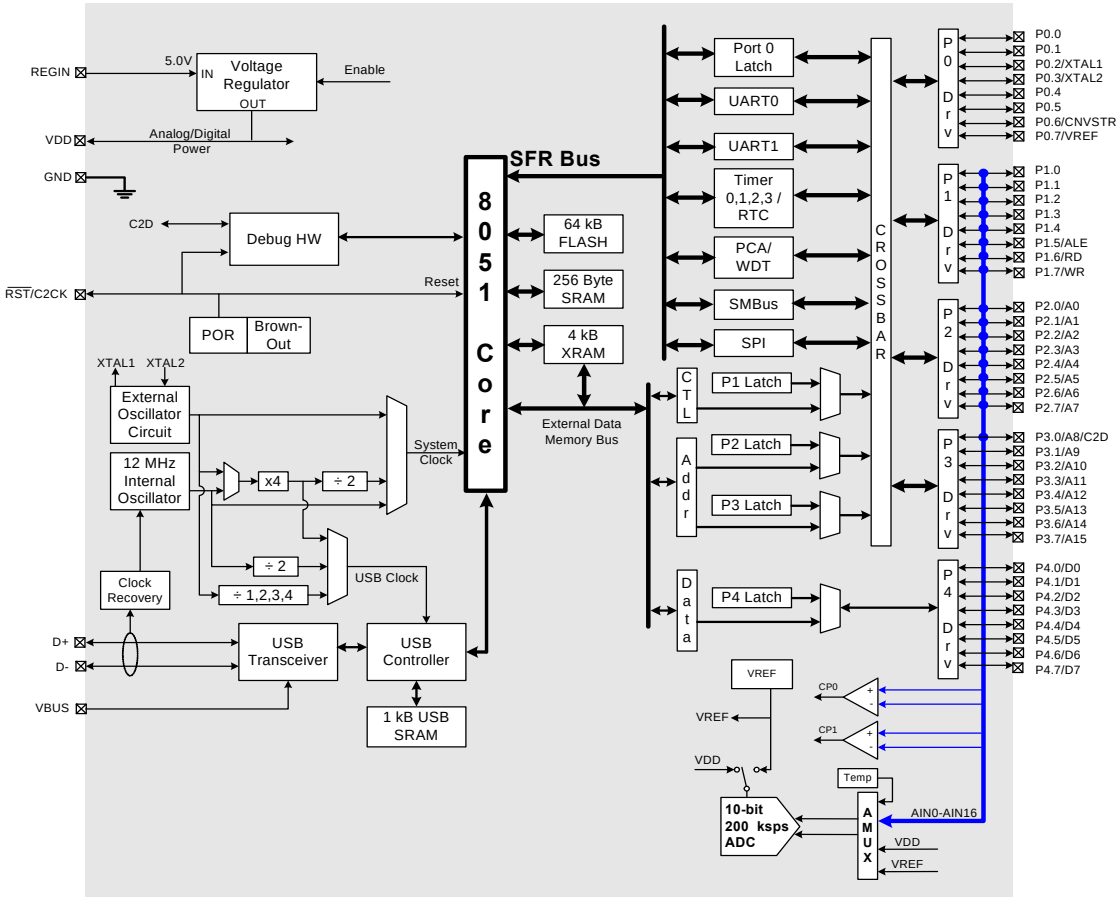
- On-chip voltage regulator supports USB bus-powered operation
- Regulator bypass mode supports USB self-powered operation

Package

- 48-Pin TQFP (lead-free package)

Ordering Part Number

C8051F340-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 17 external inputs; programmable as single-ended or differential
- Built-in temperature sensor (±3 °C)

Two Comparators

Internal Voltage Reference: 2.4 V

POR/Brown-out Detector

USB Function Controller

- USB specification 2.0 compliant
- Full-speed (12 Mbps) or low-speed (1.5 Mbps) operation
- Integrated clock recovery; no external crystal required for either full-speed or low-speed operation
- Supports eight flexible endpoints
- Dedicated 1 kB USB buffer memory
- Integrated transceiver; no external resistors required

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory, registers, and USB memory
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 48 MIPS throughput with 48 MHz Clock
- Expanded interrupt handler

Memory

- 2304 bytes data RAM (256 + 2 kB)
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)
- External parallel data memory interface

Digital Peripherals

- 40 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and 2 UART serial ports available concurrently
- 4 general-purpose 16-bit counter/timers
- Programmable 16-bit counter array with 5 capture/compare modules

Clock Sources

- Internal oscillator: 0.25% accuracy with clock recovery enabled; supports all USB and UART modes
- External oscillator: Crystal, RC, C, or Clock
- On-chip clock multiplier: up to 48 MHz

Operating Voltage: 2.7 to 5.25 V

Voltage Regulator

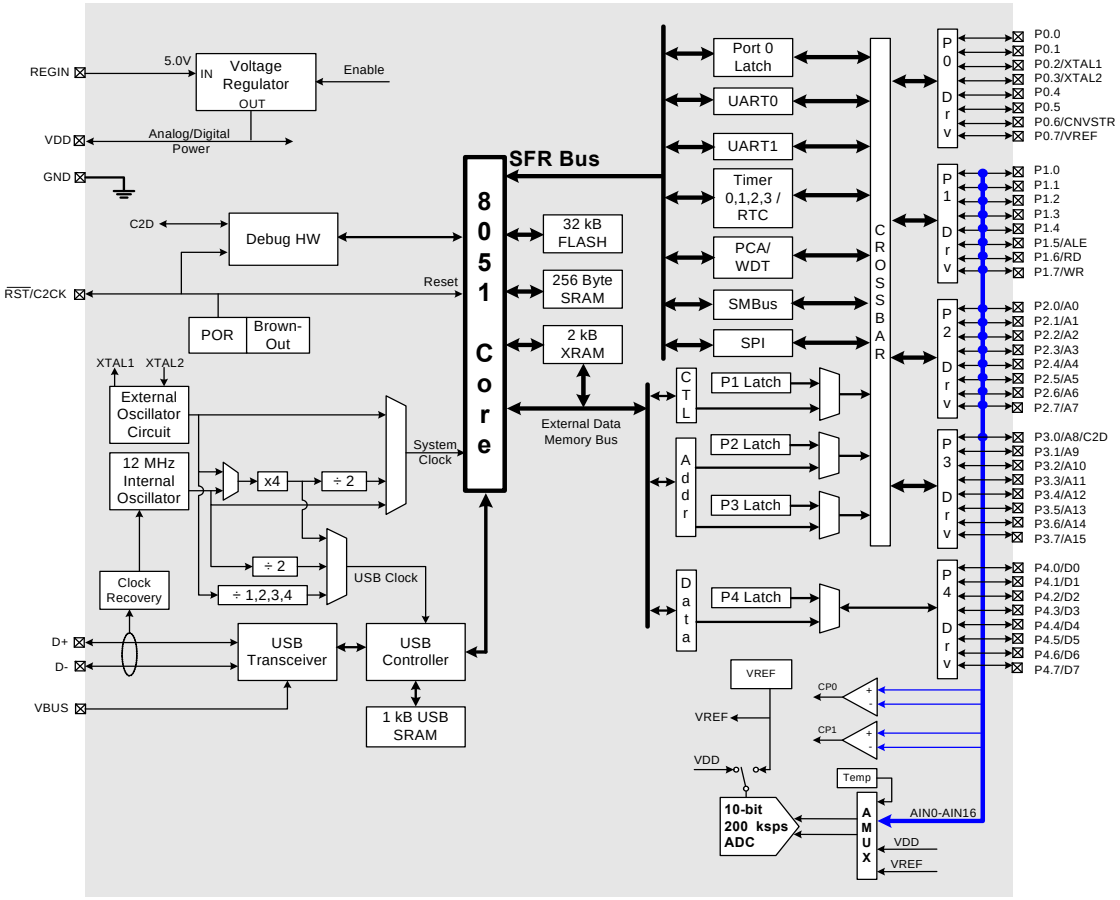
- On-chip voltage regulator supports USB bus-powered operation
- Regulator bypass mode supports USB self-powered operation

Package

- 48-Pin TQFP (lead-free package)

Ordering Part Number

C8051F341-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 17 external inputs; programmable as single-ended or differential
- Built-in temperature sensor (±3 °C)

Two Comparators
Internal Voltage Reference: 2.4 V
POR/Brown-out Detector

USB Function Controller

- USB specification 2.0 compliant
- Full-speed (12 Mbps) or low-speed (1.5 Mbps) operation
- Integrated clock recovery; no external crystal required for either full-speed or low-speed operation
- Supports eight flexible endpoints
- Dedicated 1 kB USB buffer memory
- Integrated transceiver; no external resistors required

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory, registers, and USB memory
- Superior performance to emulation systems using ICE-chips, target pods, and sockets
- **Temperature Range: –40 to +85 °C**

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 48 MIPS throughput with 48 MHz Clock
- Expanded interrupt handler

Memory

- 4352 bytes data RAM (256 + 4 kB)
- 64 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 25 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- 4 general-purpose 16-bit counter/timers
- Programmable 16-bit counter array with 5 capture/compare modules

Clock Sources

- Internal oscillator: 0.25% accuracy with clock recovery enabled; supports all USB and UART modes
- External oscillator: Crystal, RC, C, or Clock
- On-chip clock multiplier: up to 48 MHz

Operating Voltage: 2.7 to 5.25 V

Voltage Regulator

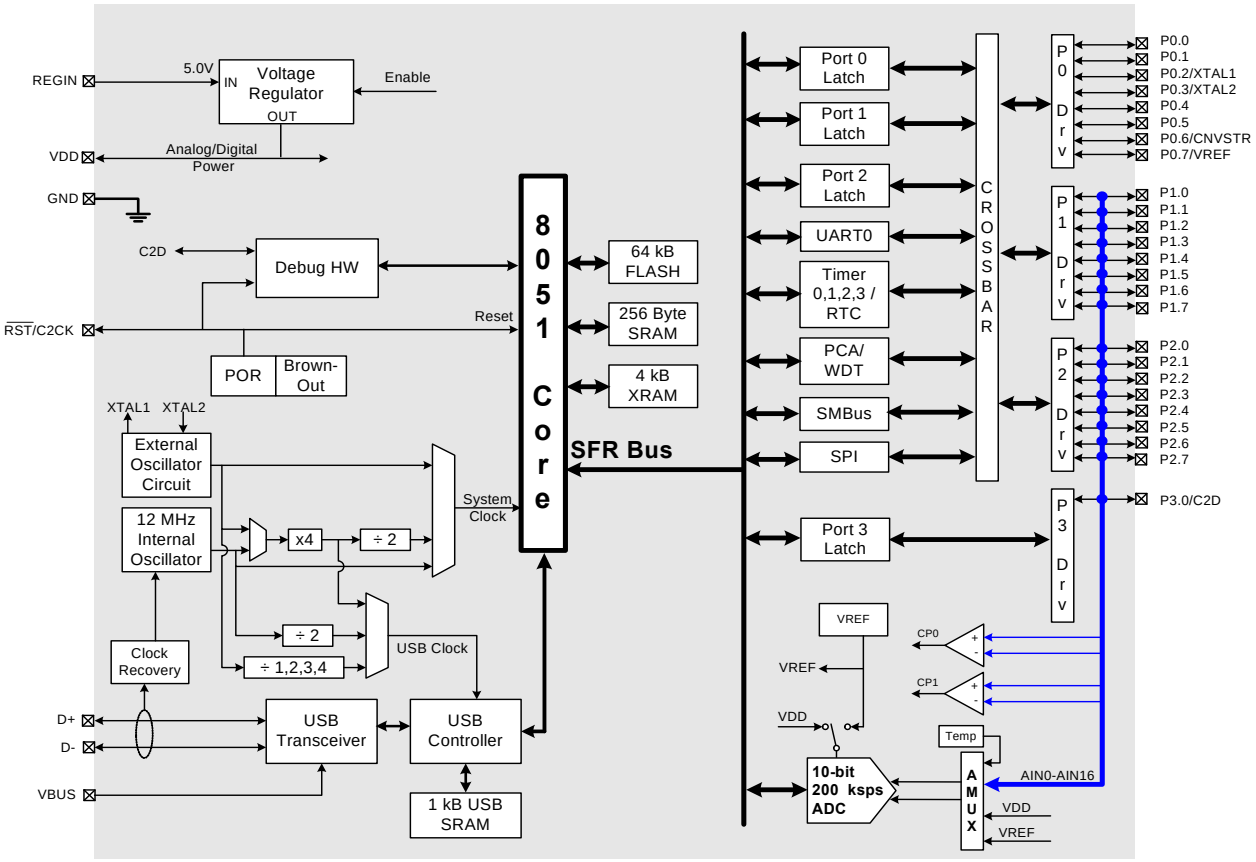
- On-chip voltage regulator supports USB bus-powered operation
- Regulator bypass mode supports USB self-powered operation

Package

- 32-Pin LQFP (lead-free package)

Ordering Part Number

- C8051F342-GQ



Analog Peripherals

10-Bit ADC

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- Up to 17 external inputs; programmable as single-ended or differential
- Built-in temperature sensor (±3 °C)

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Internal Voltage Reference: 2.4 V

POR/Brown-out Detector

USB Function Controller

- USB specification 2.0 compliant
- Full-speed (12 Mbps) or low-speed (1.5 Mbps) operation
- Integrated clock recovery; no external crystal required for either full-speed or low-speed operation
- Supports eight flexible endpoints
- Dedicated 1 kB USB buffer memory
- Integrated transceiver; no external resistors required

On-Chip Debug

- On-chip debug circuitry facilitates full speed, non-intrusive in-system debug (no emulator required)
- Provides breakpoints, single stepping
- Inspect/modify memory, registers, and USB memory
- Superior performance to emulation systems using ICE-chips, target pods, and sockets

Temperature Range: –40 to +85 °C

High-Speed 8051 µC Core

- Pipelined instruction architecture; executes 70% of instructions in 1 or 2 system clocks
- Up to 48 MIPS throughput with 48 MHz Clock
- Expanded interrupt handler

Memory

- 2304 bytes data RAM (256 + 2 kB)
- 32 kB Flash; in-system programmable in 512-byte sectors (512 bytes are reserved)

Digital Peripherals

- 25 port I/O; all are 5 V tolerant
- Hardware SMBus™ (I^2C™ compatible), SPI™, and UART serial ports available concurrently
- 4 general-purpose 16-bit counter/timers
- Programmable 16-bit counter array with 5 capture/compare modules

Clock Sources

- Internal oscillator: 0.25% accuracy with clock recovery enabled; supports all USB and UART modes
- External oscillator: Crystal, RC, C, or Clock
- On-chip clock multiplier: up to 48 MHz

Operating Voltage: 2.7 to 5.25 V

Voltage Regulator

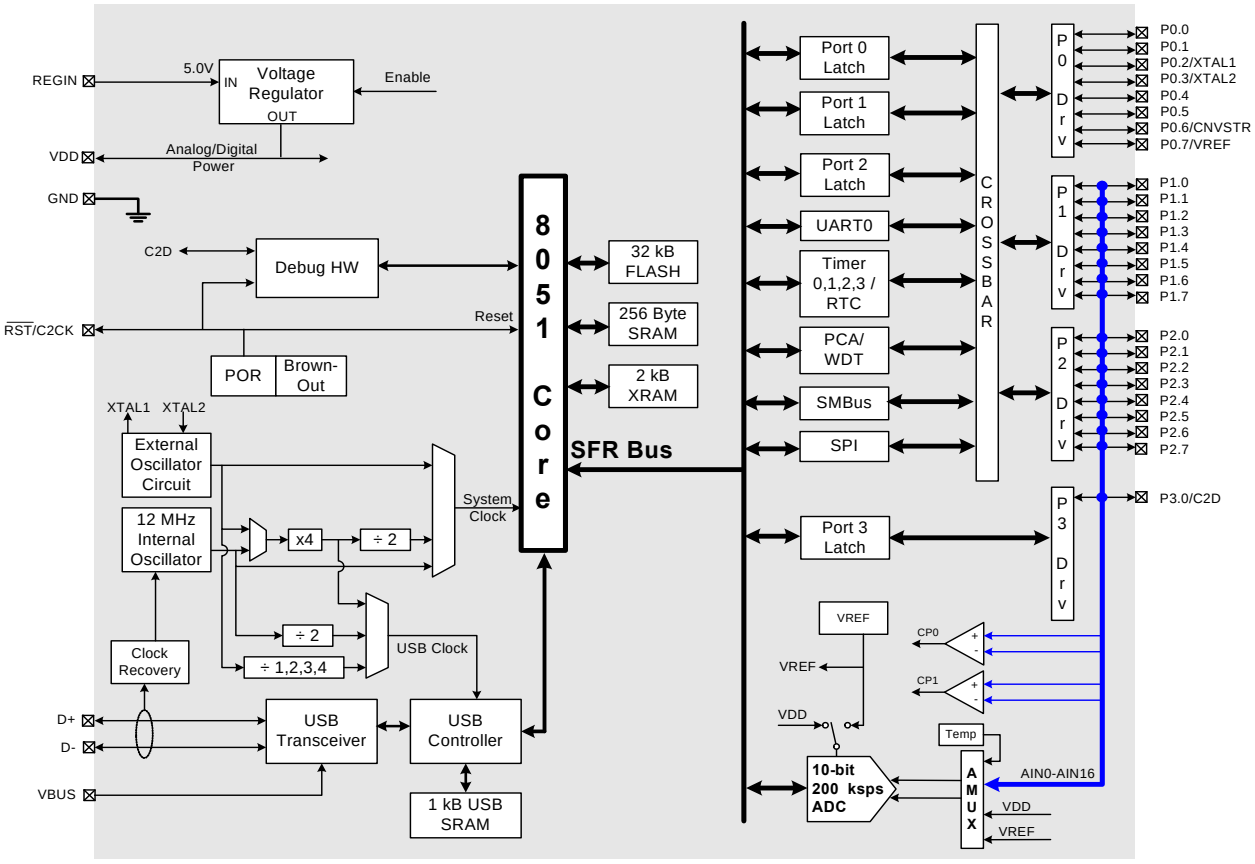
- On-chip voltage regulator supports USB bus-powered operation
- Regulator bypass mode supports USB self-powered operation

Package

- 32-Pin LQFP (lead-free package)

Ordering Part Number

- C8051F343-GQ



Analog Peripherals

10-Bit ADC

- ±1 LSB INL; no missing codes
- Programmable throughput up to 200 ksps
- Up to 17 external inputs; programmable as single-ended or differential
- Built-in temperature sensor (±3 °C)

Two Comparators

Internal Voltage Reference: 2.4 V

POR/Brown-out Detector

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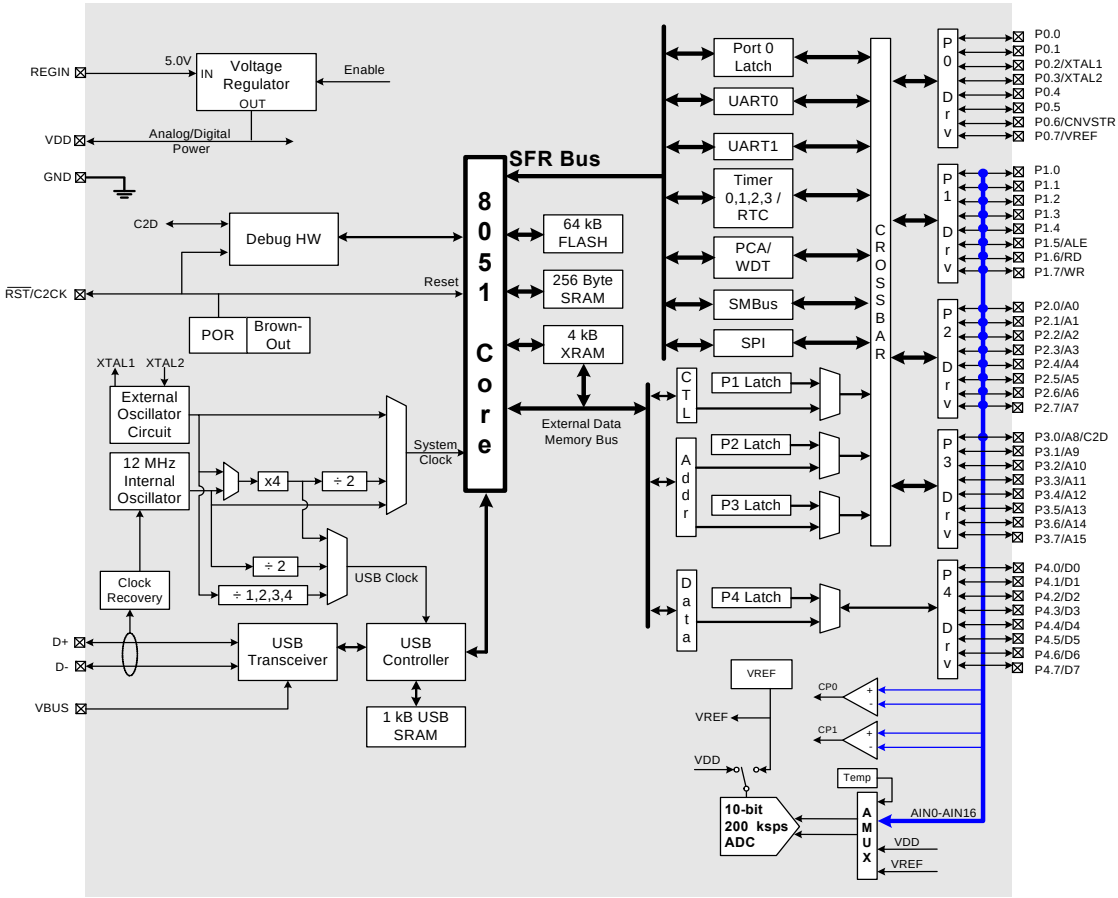

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Voltage Regulator

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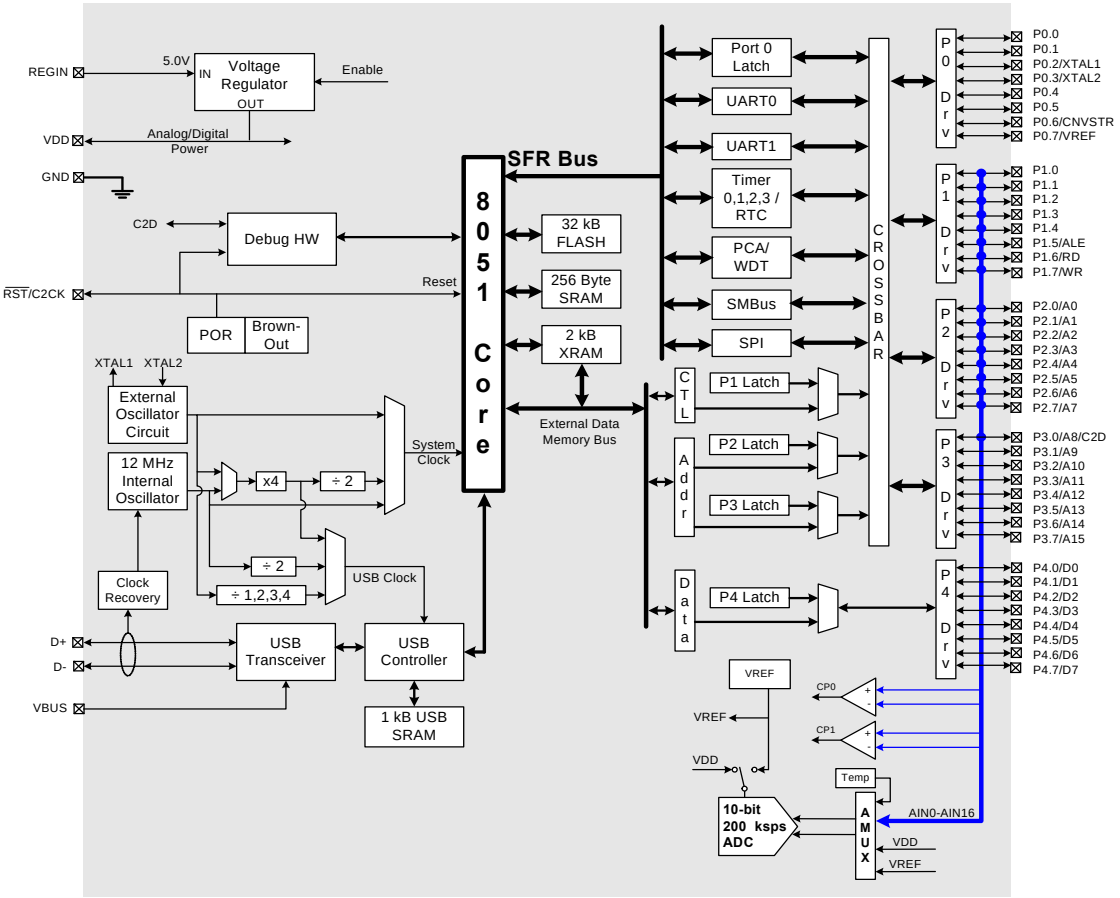
- Regulator bypass mode supports USB self-powered operation

Package

- 48-Pin TQFP (lead-free package)

Ordering Part Number

- C8051F345-GQ



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Package

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Ordering Part Number

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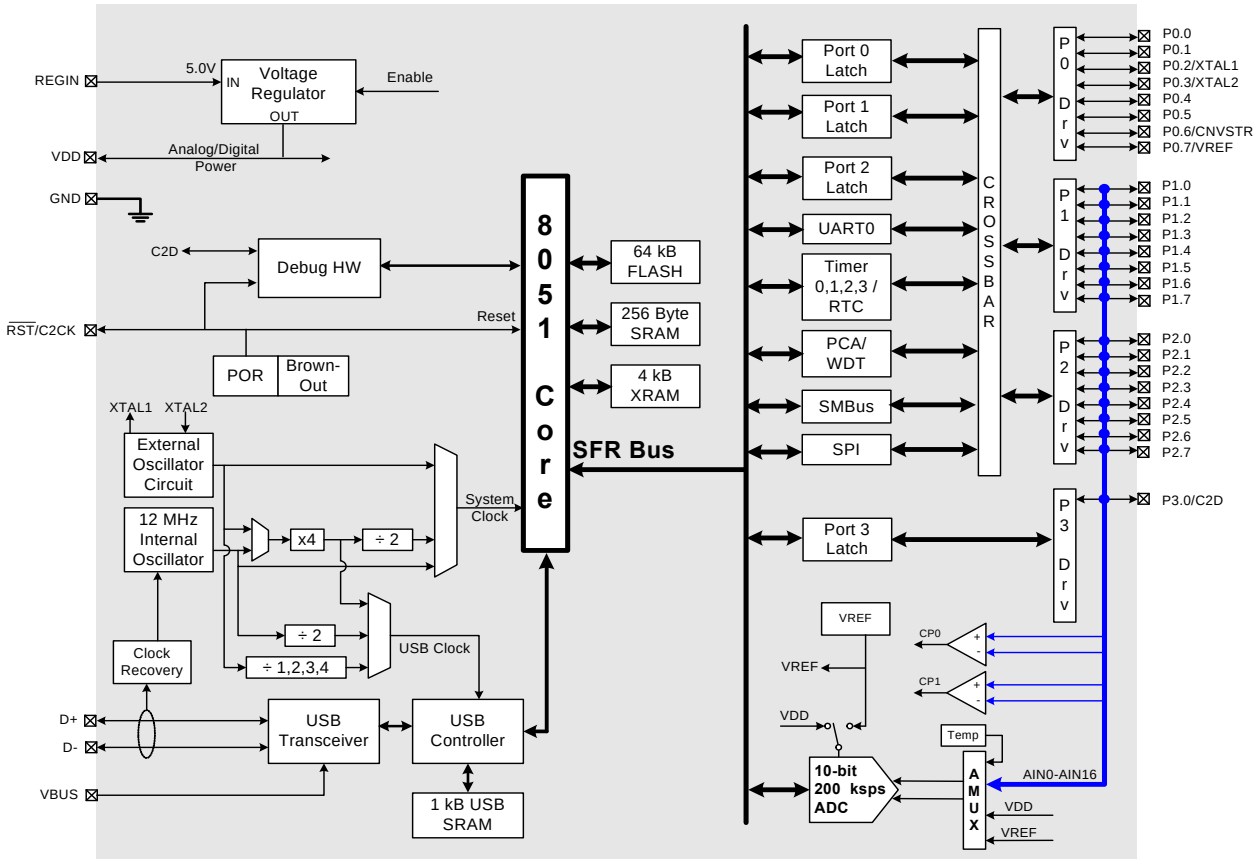

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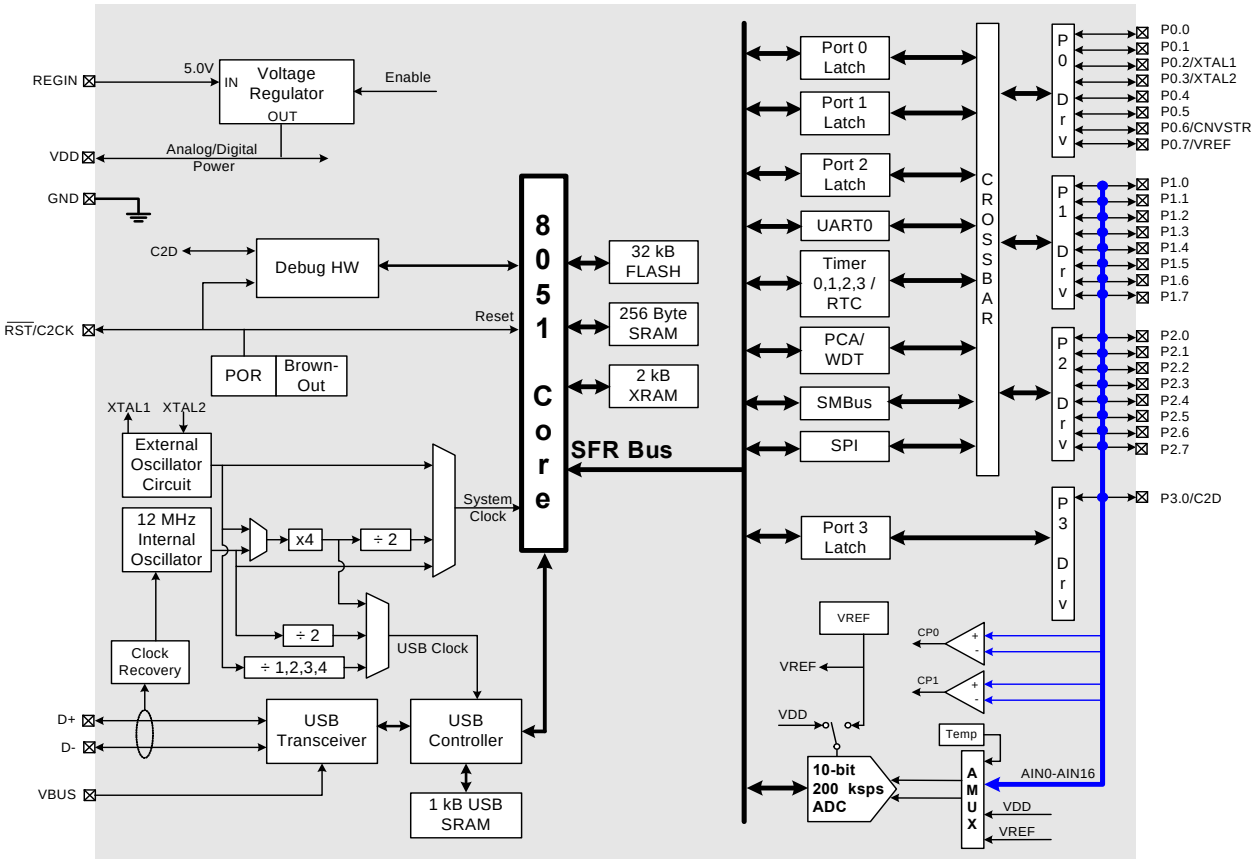

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Development Kit: C8051F340DK

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Voltage Regulator
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Operating Voltage: 2.7 to 5.25 V

Ordering Part Number
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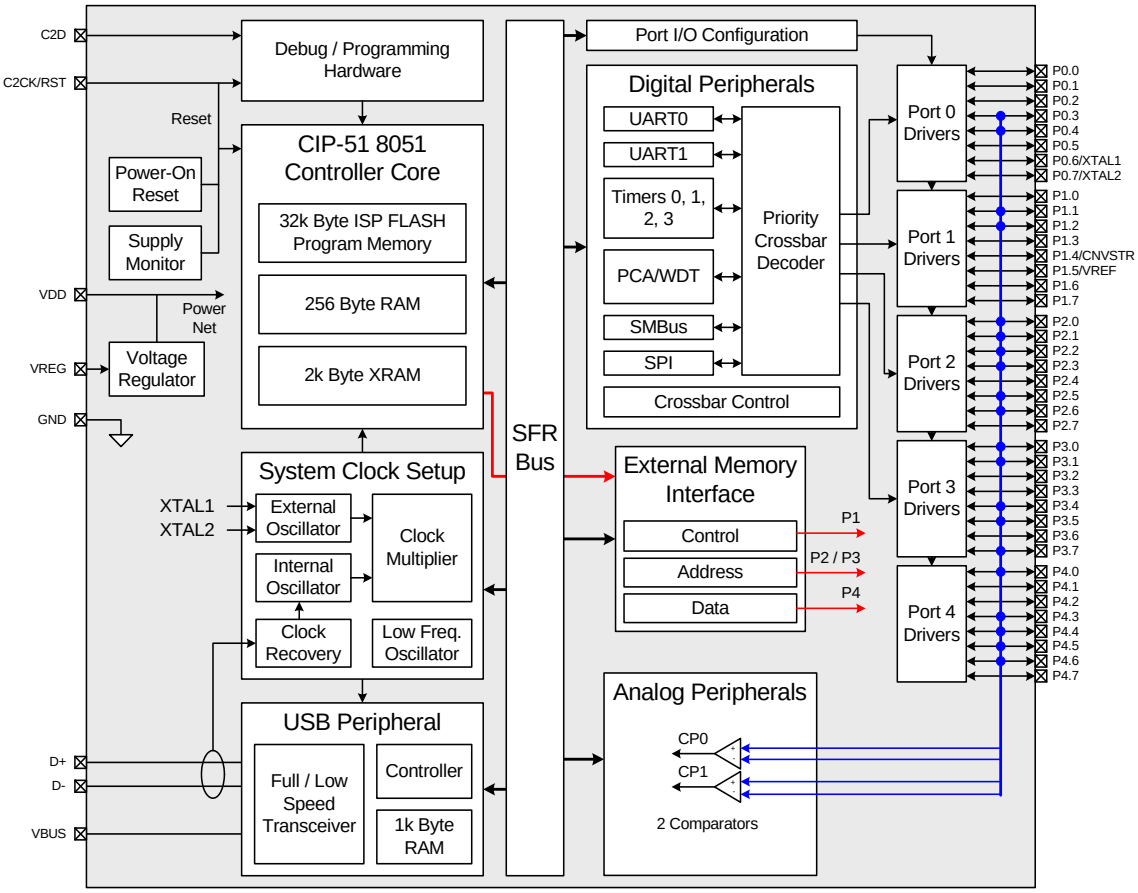

Analog Peripherals

10-Bit ADC
Two Comparators
POR/Brown-out Detector

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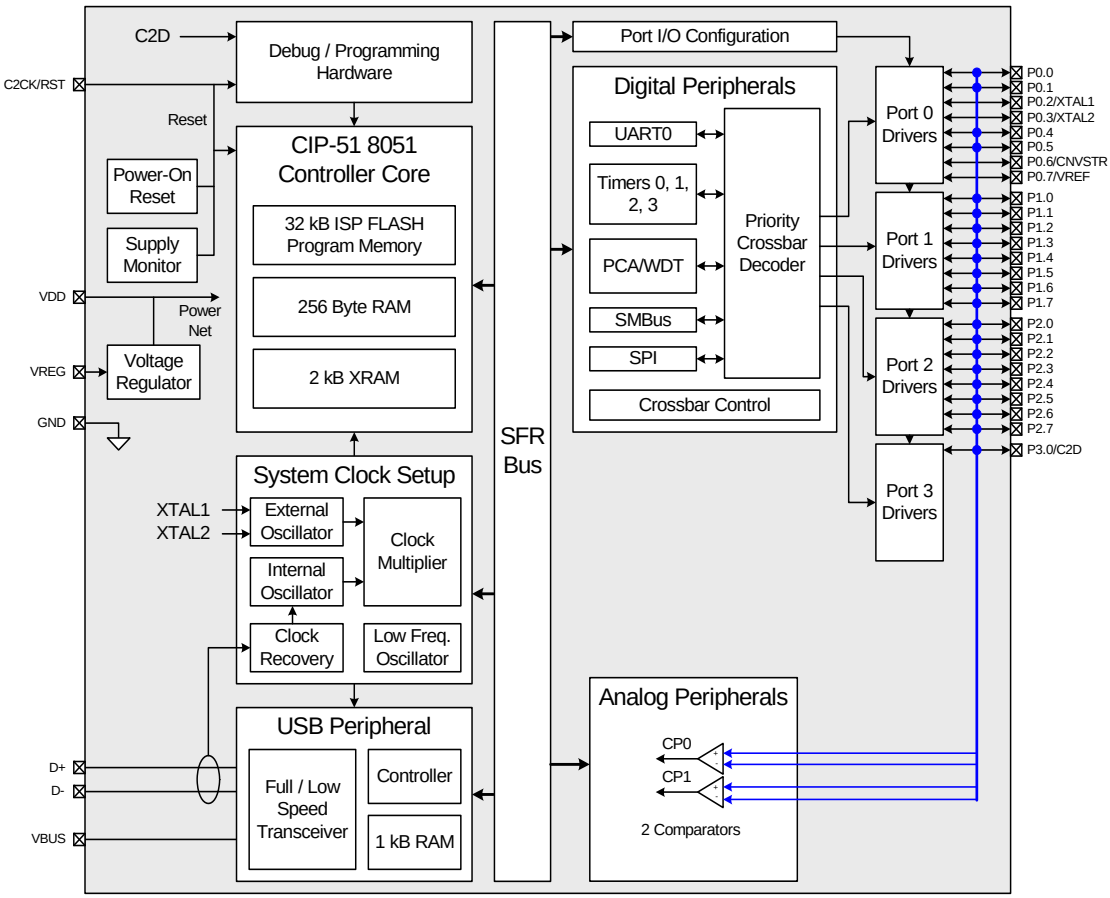

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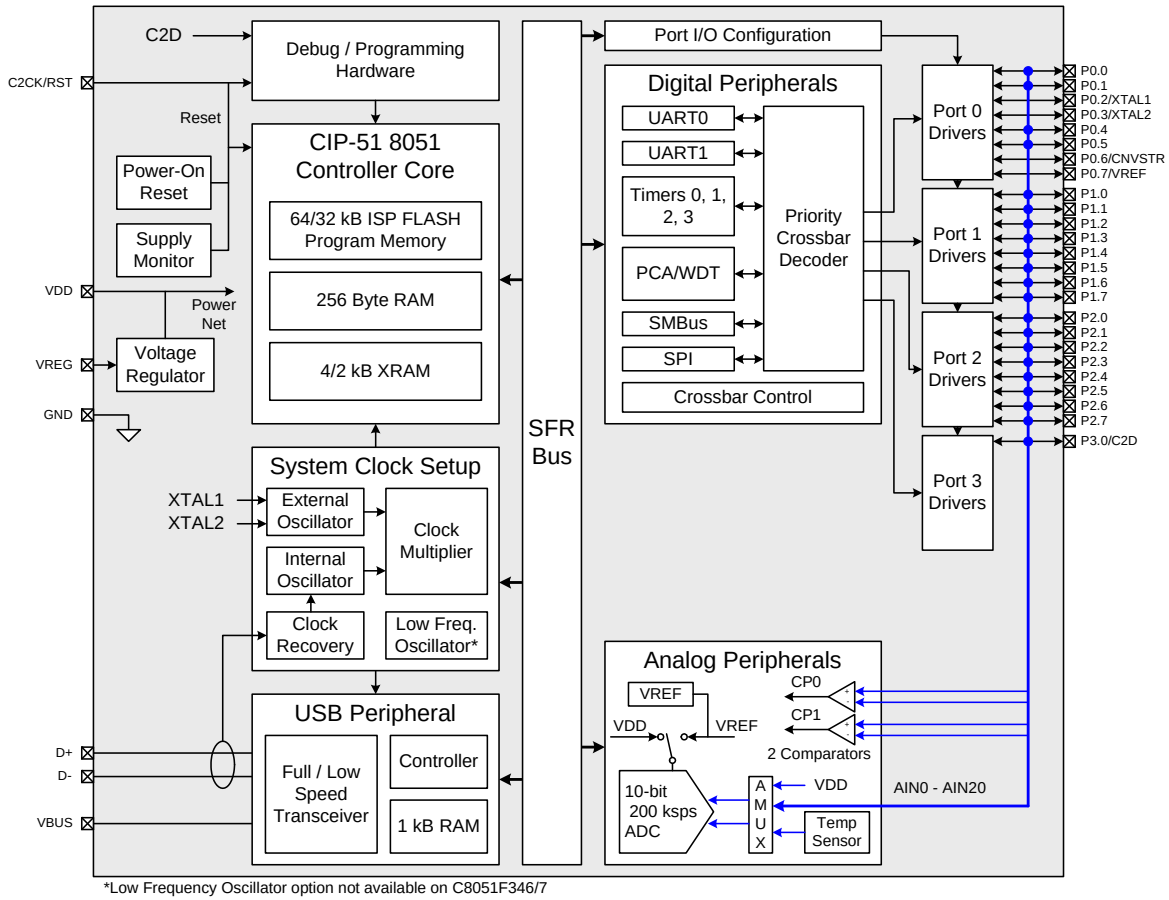

*Low Frequency Oscillator option not available on C8051F346/7

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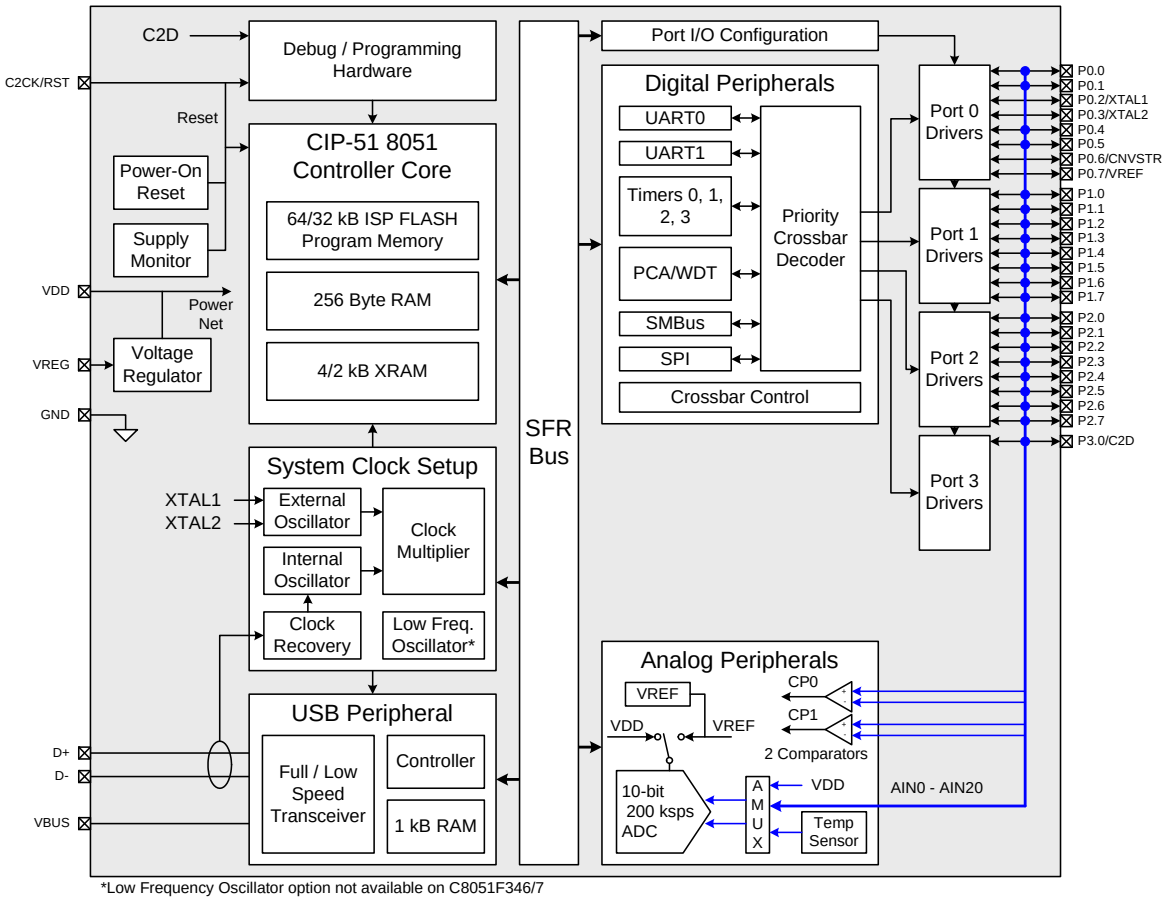

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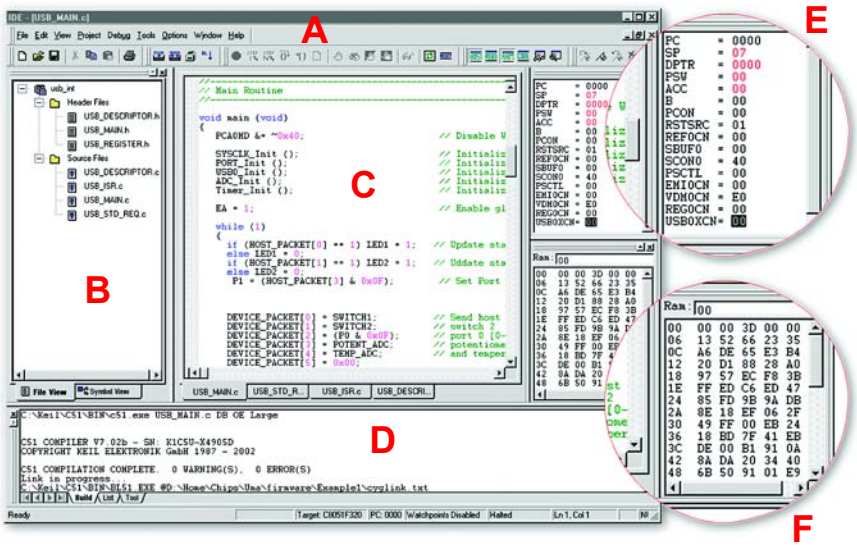
Development Tools

Comprehensive Development Kits

Silicon Laboratories' comprehensive development kits provide everything needed to develop complex electronic systems quickly and easily. These kits come complete with all required hardware and software and outperform traditional "emulators" at a fraction of the cost. Development kits are available for sale at www.silabs.com.

Integrated Development Environment (IDE)

Silicon Laboratories IDE combines an editor, project manager, code development tools, and a debugger into a single intuitive environment for code development and in-system debug. No additional target RAM, program memory, or communications channels are required.



A. Standard Windows® Menus and Toolbars provide optimum access to all IDE features including the editor, debugger, customizable tool menu, and online help.

B. Project Window offers clear visibility and easy management of all files associated with your design project.

C. Edit Source Debugger Window helps create programs using the language-sensitive, full-featured editor (debug assembly or C language programs with the source in full view). Useful debug features, such as breakpoint markers and program counter location, dramatically speed debugging.

D. Output Window conveniently displays the assembler output and listing file.

E, F. Register Window and Memory Window help in examining and directly modifying memory, register, and Flash contents during debugging. These flexible windows are automatically updated each time program execution stops, and changed values are highlighted.

System Requirements:

- A Pentium-class host PC running Windows Operating System
- One available COM port (1-4)
- 64 MB RAM and 40 MB free hard drive space recommended

Built-in Debug

Every microcontroller from Silicon Laboratories includes on-chip debug circuitry that supports non-intrusive, full-speed, in-circuit debugging of the production part installed in the user's end application, eliminating the sockets, external emulation hardware, and performance-degrading cables typical of emulators. Emulators are never required.

Features

Development Kits

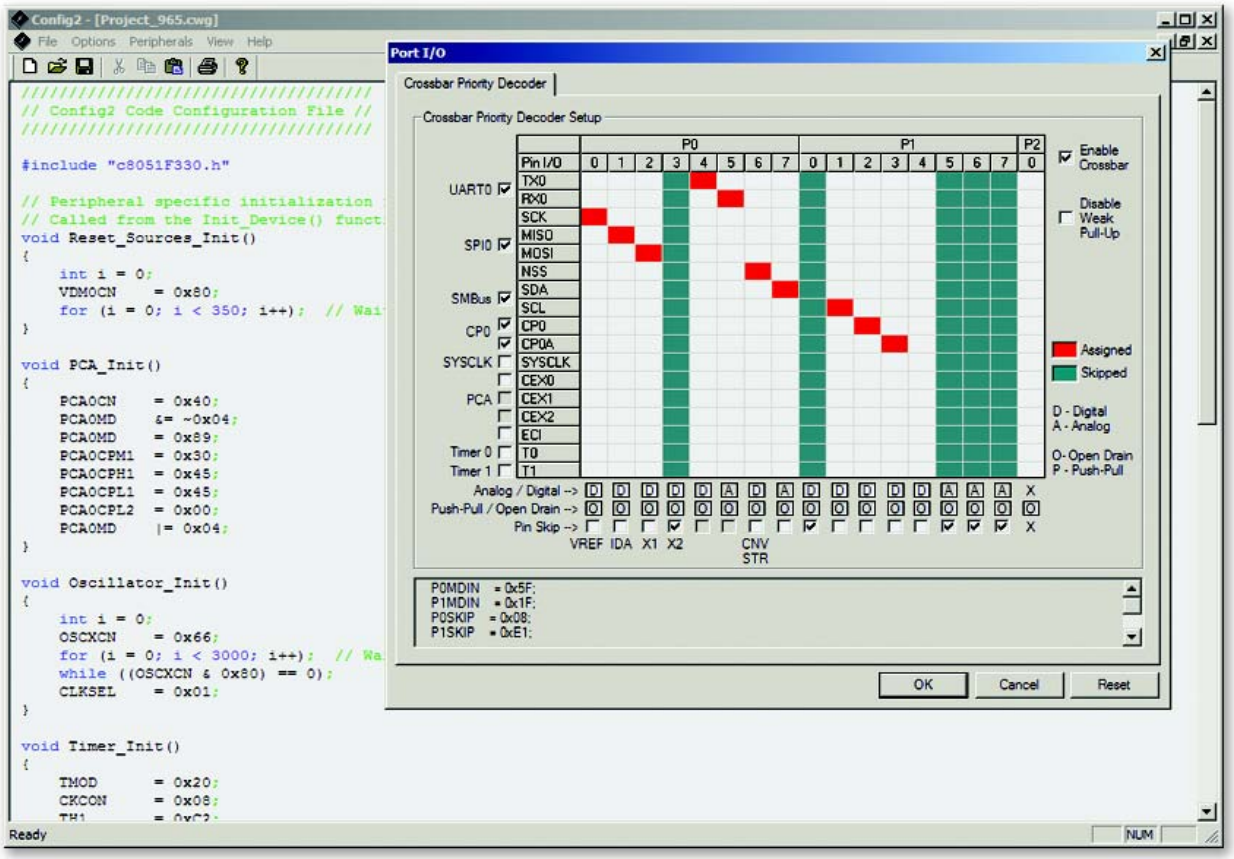
- Complete development/prototyping system
- Prototyping/demonstration board
- In-system Flash programming
- In-circuit debugging
  - Run control
  - Single-stepping
  - Real-time breakpoints
  - Stack monitor
  - Register/memory inspection & modification
- Includes Silicon Laboratories IDE
- MCU configuration wizard

IDE

- Source code editor
- Project manager
- Integrated Keil 8051 macro assembler and linker
- Flash programmer
- Supports full-speed, non-intrusive, in-circuit debug logic
- Real-time breakpoints
- Source-level debug
- Conditional memory watchpoints
- Memory and register inspect/modify
- Single-step and animated execution modes
- Variable watch window
- Supports third-party development tools

Third Party tool support

- Broad range of third-party compilers and development tools available
- Flash programming and source-level debug of OMF-51 object files is fully supported



A configuration wizard automatically generates MCU and on-chip peripheral initialization code. Clicking on checkboxes and entering values in scripted dialogs generates fully-commented assembly or C language code needed to enable and configure peripherals, assign functions to I/O pins, and specify MCU operation.

Development Kit and Evaluation Kit Part Numbers

Development Kits	
Part Number	**Description**
C8051F005DK	Development Kit for C8051F000, F001, F002, F003, F004, F005, F006, F007, F010, F011, F012, F015, F016, F017, F018 and F019 MCUs
C8051F020DK	Development Kit for C8051F020, F021, F022 and F023 MCUs
C8051F040DK	Development Kit for C8051F040, F041, F042, F043, F044, F045, F046 and F047 MCUs
C8051F060DK	Development Kit for C8051F060, F061, F062, F063, F064, F065, F066 and F067 MCUs
C8051F120DK	Development Kit for C8051F120, F121, F122, F123, F124, F125, F126, F127, F130, F131, F132 and F133 MCUs
C8051F206DK	Development Kit for C8051F206 MCU
C8051F226DK	Development Kit for C8051F220, F221, F226, F230, F231, and F236 MCUs
C8051F300DK	Development Kit for C8051F300, F301, F302, F303, F304, and F305 MCUs
C8051F310DK	Development Kit for C8051F310, F311, F312, F313, F314, F315, F316, and F317 MCUs
C8051F320DK	Development Kit for C8051F320 and F321 MCUs
C8051F326DK	Development Kit for C8051F326 and F327 MCUs
C8051F330DK	Development Kit for C8051F330, F330D, F331, F332, F333, F334, and F335 MCUs
C8051F340DK	Development Kit for C8051F340, F341, F342, F343, F344, F345, F346, F347, F348, F349, F34A, and F34B MCUs
C8051F350DK	Development Kit for C8051F350, F351, F352 and F353 MCUs
C8051F360DK	Development Kit for C8051F360, F361, F362, F363, F364, F365, F366, F367, F368 and F369 MCUs
C8051F500DK	Development Kit for C8051F500, F501, F502, F503, F504, F505, F506, and F507 MCUs
C8051F530DK	Development Kit for C8051F520, F521, F523, F524, F526, F527, F530, F531, F533, F534, F536, and F537 MCUs
C8051F930DK	Development Kit for C8051F920, F921, F930 and F931 MCUs
C8051T600DK	Development Kit for C8051T600, T601, T602, T603, T604 and T605 MCUs
C8051T610DK	Development Kit for C8051T610, T611, T612, T613, T614, T615, T616 and T617 MCUs
C8051T630DK	Development Kit for C8051T630, T631, T632, T633, T634 and T635 MCUs
F350-COMPASS-RD	Digital Compass Reference Design
C8051F410DK	Development Kit for C8051F410, F411, F412, and F413 MCUs
ETHERNETDK	Embedded Ethernet Development Kit
MODEM-DK	Embedded Modem Development Kit
ZigBee-2.4-DK	2.4 GHz ZigBee Development Kit
802.15.4-2.4-DK	2.4 GHz 802.15.4 Development Kit

Evaluation Kits	
Part Number	**Description**
C8051F064EK	Evaluation Kit for C8051F064 MCU
C8051F411EK	Evaluation Kit for C8051F411 MCU
CP2102EK	Evaluation Kit for CP2102 USB-to-UART Bridge Chip
CP2103EK	Evaluation Kit for CP2103 USB-to-UART Bridge Chip
CP2201EK	Evaluation Kit for CP2201 Embedded Ethernet Controller
ToolStick	Fully Contained Evaluation System in a USB Stick

Reference Design		
Description	**Reference Designs**	**Software**
USB Firmware Programmer's Guide	AN139	AN139SW
Three-Channel Power Sequencer	AN145	AN145SW
High-Speed Lithium Ion Battery Charger	AN146	AN146SW
Magnetic Stripe Reader	AN148	AN148SW
Stepper Motor	AN155	AN155SW
Motor Control Software Examples	AN191	AN191SW
Human Interface Device Tutorials	AN249	AN249SW

Application Notes			
Category	**Description**	**App Note**	**Software**
ADC and DAC	Calculating Settling Time For Switched Capacitor ADCs	AN119	
	Improving ADC Resolution by Oversampling and Averaging	AN118	AN118SW
	Using the DAC as a Function Generator	AN123	AN123SW
	Using the On-Chip Temperature Sensor	AN103	AN103SW
	C8051F35x Delta-Sigma ADC User's Guide	AN217	
Commercial Applications	Digital Counting Scale	AN184	
	Lithium Ion Battery Charger Using C8051F300	AN137	AN137SW
Flash	Flash Securities User's Guide	AN120	
	Writing to Flash from Application Code	AN129	AN129SW
	Writing to Flash from Firmware	AN201	AN201SW
Hardware Development	Hand Soldering Tutorial for the Fine Pitch QFP Devices	AN114	
	Configuring the Port I/O Crossbar Decoder	AN101	AN101SW
Interfacing	Interfacing an External SRAM to the C8051Fxxx	AN106	AN106SW
	Using C8051Fxxx in 5 Volt Systems	AN111	
	Low Pin-Count LCD Interface	AN202	AN202SW
	C8051F32x and CP210x USB Driver Customization	AN220	AN220SW
	Port Configuration and GPIO for CP210x	AN223	AN223SW
Motor Control	Motor Control Software Examples	AN191	AN191SW
	Stepper Motor Reference Design	AN155	AN155SW
Optimization or Performance	Cache Optimizations for C8051F12x	AN135	AN135SW
Oscillator	Configuring the Internal and External Oscillators	AN102	AN102SW
	Implementing a Real-Time Clock	AN108	AN108SW
Power Management	Power Management Techniques and Calculation	AN116	
	Power Management Techniques for the 'F30x and 'F31x	AN138	AN138SW
Programming your MCU	FLASH Programming via the C2 Interface	AN127	AN127SW
	Multiple-Device JTAG Configuration in the Silicon Labs IDE	AN134	
	Pin Sharing Techniques for the C2 Interface	AN124	
	Production Programming Options for Silicon Labs Devices	AN136	
	Using C8051Fxxx On-Chip Interface Utilities DLL	AN117	AN117SW
	Programming Flash through the JTAG Interface	AN105	AN105SW
Serial Communications	Serial Communication with the SMBus	AN113	AN113SW
	SMBus Communication for the 'F30x and 'F31x	AN141	AN141SW
	Software SPI Examples for the C8051F30x Family	AN128	AN128SW
	Software UART Examples	AN115	AN115SW
	UART In-Application Code Loading Examples	AN112	AN112SW
	CP2101 Customization Guide	AN144	AN144SW
	USBXpress Development Kit User's Guide	AN169	AN169SW
	MMC Data Logger Example	AN189	AN189SW
	Serial Communications Guide for CP210x	AN197	AN197SW
	CP210x Baud Rate Support	AN205	AN205SW
Signal Processing	FFT Routines for the C8051F12x Family	AN142	AN142SW
Software Development	Annotated ' C' examples for the 'F02x Family	AN122	AN122SW
	Code Banking Using the Keil 8051 Tools	AN130	AN130SW
	Code Banking Using the Tasking 8051 Tools	AN143	AN143SW
	Converting from the Metalink ASM51 Assembler to the Keil A51 Assembler	AN121	
	Integrating Dunfield 8051 Tools into the Silicon Labs IDE	AN132	AN132SW
	Integrating HI-TECH 8051 Tools into the Silicon Labs IDE	AN140	AN140SW
	Integrating Keil 8051 Tools into the Silicon Labs IDE	AN104	
	Integrating Raisonance 8051 Tools into the Silicon Labs IDE	AN125	
	Integrating Tasking 8051 Tools into the Silicon Labs IDE	AN126	AN126SW
	Integrating IAR 8051 Tools into the Silicon Labs IDE	AN236	AN236SW
	Multiple-Device JTAG Configuration in the Silicon Labs IDE	AN134	
	Pin Sharing Techniques for the C2 Interface	AN124	
	Porting Considerations from 'F02x to 'F12x	AN131	AN131SW
	Integrating SDCC 8051 Tools Into The Silicon Labs IDE	AN198	AN198SW
	TCP/IP Library Programmer's Guide	AN237	AN237SW
	Human Interface Device Tutorials	AN249	AN249SW
Temerature Sensor	Using the On-Chip Temperature Sensor	AN103	AN103SW
Timer Functions	16-Bit PWM Using an On-Chip Timer	AN110	AN110SW