

**Description**

The GD74F374 is a high-speed, low-power octal D-type flip-flop featuring separate D-type inputs for each flip-flop and 3-State outputs for bus-oriented applications. A buffered Clock (CK) and Output Control ( $\overline{OC}$ ) are common to all flip-flops.

**Features**

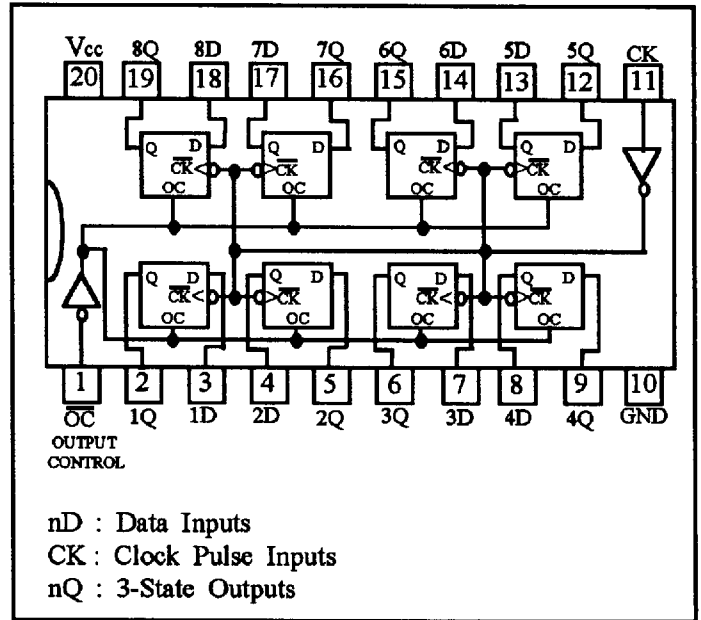
- 8 D-type flip-flops in a single package
- Buffered positive edge-triggered clock
- 3-State Bus Driving outputs.

**Function Table**

Inputs			Outputs
$\overline{OC}$	CLOCK(CK)	D	nQ
L	↑	H	H
L	↑	L	L
L	L	X	$Q_0$
H	X	X	Z

↑ Low-to-High Clock Transition  
 X: Immaterial  
 Z: High Impedance

**Pin Configuration**



**Absolute Maximum Ratings**

Storage Temperature .....	-65 °C ~ 150 °C
Ambient Temperature Under Bias.....	-55 °C ~ 125 °C
Junction Temperature Under Bias .....	-0.5 °C ~ 175 °C
Vcc Voltage .....	-0.5 V ~ 7.0 V
Input Voltage .....	-0.5 V ~ 7.0 V
Input Current .....	-30 mA ~ 5.0 mA
Output Voltage .....	-0.5 V ~ 5.5 V

Note: Absolute Maximum ratings are values beyond which the device maybe damaged or have its useful life impaired. Functional operation under these conditions is not implied.

**Recommended Operating Conditions**

Free Air Ambient Temperature..... : 0 °C ~ 70 °C

Supply Voltage ..... : 4.5 V ~ 5.5 V

**DC Electrical Characteristics** over recommended operating free-air temperature range

SYMBOL	PARAMETER	Min	Typ	Max	UNIT	V <sub>CC</sub>	CONDITION	TEST CIRCUIT
V <sub>IH</sub>	Input High Voltage	2.0			V		-----	
V <sub>IL</sub>	Input Low Voltage			0.8	V		-----	
V <sub>CD</sub>	Input Clamp Diode Voltage			-1.2	V	Min	I <sub>IN</sub> = -18mA	See FIG. 18
V <sub>OH</sub>	Output High Voltage	2.5			V	4.5	I <sub>OH</sub> = -1 mA I <sub>OH</sub> = -3 mA I <sub>OH</sub> = -1 mA I <sub>OH</sub> = -3 mA	See FIG. 19
		2.4				4.5		
		2.7				4.75		
		2.7				4.75		
V <sub>OL</sub>	Output Low Voltage			0.5	V	Min	I <sub>OL</sub> = 24 mA	
I <sub>I</sub>	Input High Current Breakdown Test			7.0	μA	Max	V <sub>IN</sub> = 7.0 V	See FIG. 20
I <sub>IH</sub>	Input High Current			5.0	μA	Max	V <sub>IN</sub> = 2.7 V	
I <sub>IL</sub>	Input Low Current			-0.6	μA	Max	V <sub>IN</sub> = 0.5 V	
I <sub>ILK</sub>	Input Leakage Circuit Current			1.9	μA	0.0	V <sub>IN</sub> = 4.75 V All Other pins grounded	See FIG. 21
I <sub>OLK</sub>	Output Leakage Circuit Current			3.75	μA	0.0	V <sub>OUT</sub> = 150mV All Other pins grounded	See FIG. 22
I <sub>OZH</sub>	Tri-State Output Off Current (High)			50	μA	Max	V <sub>OUT</sub> = 2.7 V	See FIG. 23
I <sub>OZL</sub>	Tri-State Output Off Current (Low)			-50	μA	Max	V <sub>OUT</sub> = 0.5 V	
I <sub>OS</sub>	Output Short Circuit Current	-60		-150	mA	Max	V <sub>OUT</sub> = 0 V	See FIG. 24
I <sub>CCZ</sub>	Supply Current		55	86	mA	Max	V <sub>OUT</sub> = High Z	See FIG. 25

 \* For I<sub>OS</sub>, Not more than one output should be shorted at a time, and duration should not exceed one second.

**AC Characteristics**

SYMBOL	PARAMETER	TEST CONDITION						UNIT
		T <sub>A</sub> = 25 °C			T <sub>A</sub> = 0 ~ 70°C			
		V <sub>CC</sub> = 5.0 V			V <sub>CC</sub> = 5 V ± 10 %			
C <sub>L</sub> = 50 pF			C <sub>L</sub> = 50pF					
		Min	Typ	Max	Min	Yyp	Max	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay CK to Q	4.0	6.5	8.5	4.0	--	10.0	ns ns
t <sub>PZH</sub> t <sub>PZL</sub>	Output Enable Time	2.0	9.0	11.5	2.0	--	12.5	ns ns
t <sub>PHZ</sub> t <sub>PLZ</sub>	Output Disable Time	2.0	5.3	7.0	2.0	--	8.0	ns ns
f <sub>MAX</sub>	Maximum clock frequency	100	140	--	70	--	--	MHz

**RECOMMENDED OPERATING CONDITIONS**

SYMBOL	ITEM	VALUE	UNIT
t <sub>S(H)</sub> t <sub>S(L)</sub>	Setup Time, High or Low Before CK ↑	2.0 (T <sub>a</sub> = 25 °C, V <sub>CC</sub> = 5V) 2.0 (T <sub>a</sub> = 25 °C, V <sub>CC</sub> = 5V)	ns
t <sub>H(H)</sub> t <sub>H(L)</sub>	Hold Time, High or Low After CK ↑	2.0 (T <sub>a</sub> = 25 °C, V <sub>CC</sub> = 5V) 2.0 (T <sub>a</sub> = 25 °C, V <sub>CC</sub> = 5V)	ns
t <sub>W(H)</sub> t <sub>W(L)</sub>	Pulse Width, CK High CK Low	7.0 (T <sub>a</sub> = 25 °C, V <sub>CC</sub> = 5V) 6.0 (T <sub>a</sub> = 25 °C, V <sub>CC</sub> = 5V)	ns

