



The following section contains information about OFC Clock Oscillators



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APPLICATIONS

PCS Base Stations
Cellular Base Stations
Digital Switching
Telecom & Wireless Infrastructure

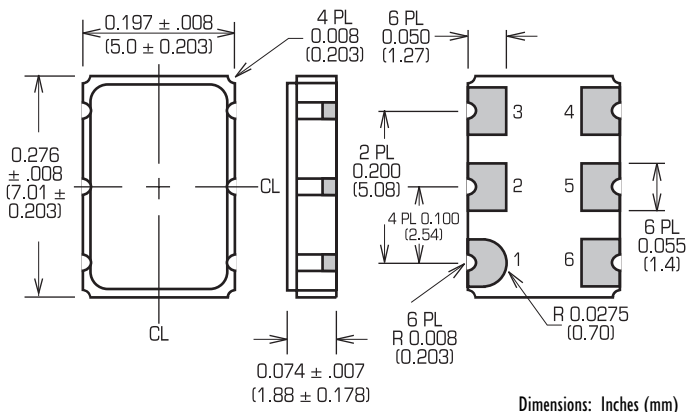
FEATURES

Miniature 5 x 7mm, Surface Mount Package
Tri-state Control
ACMOS
Stable Frequency

032	□	□	□	□ M	□□ □□□□
SERIES NUMBER:	TEMPERATURE STABILITY CODE	ACCURACY @ 25° C	OUTPUT WAVEFORM	OUTPUT ENABLE @ PIN 1	FREQUENCY (MHz)
	1 – 0° C to +70° C ± 100 ppm	A: ± 15 ppm	T: TTL	E: Required	
	2 – 0° C to +70° C ± 50 ppm	B: ± 25 ppm	C: AC MOS	X: Not Required	
	3 – 0° C to +70° C ± 25 ppm	C: ± 50 ppm			
	4 – 0° C to +70° C ± 15 ppm	D: ± 100 ppm			
	5 – -40° C to +85° C ± 100 ppm				
	6 – -40° C to +85° C ± 50 ppm				
	7 – -40° C to +85° C ± 25 ppm				

ADDITIONAL PARAMETERS

Input Voltage: + 5 Vdc ± 10%
Input Current
1.5 to 23.9 MHz: 15 mA max.
24 to 49.9 Mhz: 20 mA max.
50 to 52 Mhz: 30 mA max.
Output: TTL/ACMOS
Duty Cycle: ACMOS: 50% ± 5% @ 50% Vdd
50% ± 5% @ 50% Vdd < 15 MHz
50% ± 10% @ 50% Vdd > 15 MHz
Start-Up Time: 10 msec. max.
Rise & Fall Times for TTL (meas. 0.8 to 2.0 V)
1.0 to 23.9 MHz: 5ns max.
24 to 52 MHz: 3ns max.
Rise & Fall Times for CMOS (meas. 10% to 90%)
1.5 to 23.9 MHz: 10ns max.
24 to 52 MHz: 6ns max.
Load: 50pF max. or 10 TTL
Aging: ± 3 ppm max. Year I
Storage Temperature: -55° C to +125° C



PIN CONNECTIONS

1 – Tri-State Control (Optional)
2 – N/C
3 – GND
4 – Output
5 – N/C
6 – Supply Voltage

MODEL 033

Micro 57™

1 – 52 MHz



APPLICATIONS

PCS Base Stations
Cellular Base Stations
Digital Switching
Telecom & Wireless Infrastructure

FEATURES

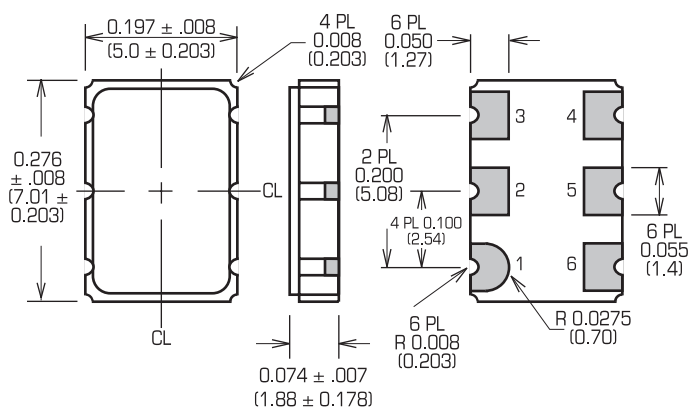
Miniature 5 x 7mm, Surface Mount Package
Tri-state Control
ACMOS
Stable Frequency

033	□	□	□	□ M	□□ □□□□
SERIES NUMBER:	TEMPERATURE STABILITY CODE	ACCURACY @ 25° C	OUTPUT WAVEFORM	OUTPUT ENABLE @ PIN 1	FREQUENCY (MHz)
	1 – 0° C to +70° C ± 100 ppm	A: ±15 ppm	C: ACMOS	E: Required	
	2 – 0° C to +70° C ± 50 ppm	B: ±25 ppm		X: Not Required	
	3 – 0° C to +70° C ± 25 ppm	C: ±50 ppm			
	4 – 0° C to +70° C ± 15 ppm	D: ±100 ppm			
	5 – -40° C to +85° C ± 100 ppm				
	6 – -40° C to +85° C ± 50 ppm				
	7 – -40° C to +85° C ± 25 ppm				

ADDITIONAL PARAMETERS

Input Voltage: + 3.3 Vdc ± 10%
Input Current
1.0 to 15.0 MHz: 6 mA max.
15.1 to 40.0 Mhz: 8 mA max.
40.1 to 52.0 Mhz: 12 mA max.
Output: ACMOS
Start-Up Time: 10 msec. max.
Rise & Fall Times
1.0 to 20 MHz: 10ns max.
20.1 to 52 MHz: 6ns max.
Duty Cycle: 50% ± 5% @ 50% Vdd < 15MHz
50% ± 10% @ 50% Vdd > 15MHz

Load: 50pF max.
Aging: ± 3 ppm max. Year I
Storage Temperature: -55° C to +125° C



PIN CONNECTIONS

- 1 – Tri-State Control (Optional)
- 2 – N/C
- 3 – GND
- 4 – Output
- 5 – N/C
- 6 – Supply Voltage

Dimensions: Inches (mm)

APPLICATIONS

PCS Base Stations
Cellular Base Stations
Synthesizers
Test Equipment
Avionics

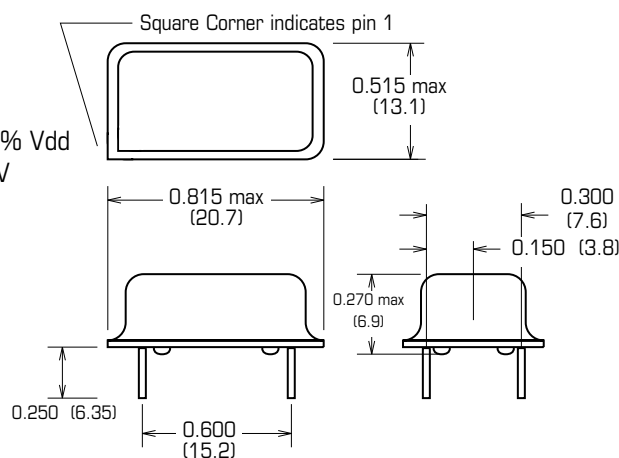
FEATURES

4-Pin DIP Package
Commercial & Industrial Temperature Ranges
Wide Frequency Range

722	□	□	□	□	□□□ M□□□□
SERIES NUMBER:	TEMPERATURE STABILITY CODE	ACCURACY @ 25° C	OUTPUT WAVEFORM	OUTPUT ENABLE @ PIN 1	FREQUENCY (MHz)
	1 – 0° C to +70° C ± 100 ppm	A: ±15 ppm	T: TTL	E: Required	
	2 – 0° C to +70° C ± 50 ppm	B: ±25 ppm	C: CMOS	X: Not Required	
	3 – 0° C to +70° C ± 25 ppm	C: ±50 ppm			
	4 – 0° C to +70° C ± 15 ppm	D: ±100 ppm			
	5 – -40° C to +85° C ± 100 ppm				
	6 – -40° C to +85° C ± 50 ppm				
	7 – -40° C to +85° C ± 25 ppm				

ADDITIONAL PARAMETERS

Input Voltage: + 5 Vdc ± 10%
Input Current: 20 mA max.
1.5 to 23.9 MHz: 40 mA max.
24 to 85.0 Mhz:
Output: CMOS or TTL Compatible
Duty Cycle: CMOS: 50% ± 10% @ 50% Vdd
TTL: 50% ± 10% @ 1.4 V
Start-Up Time: 10 msec. max.
Rise & Fall Times for TTL
(meas. 0.8 to 2.0 V)
1.5 to 23.9 MHz: 10ns max.
24 to 85.0 MHz: 5ns max.
Rise & Fall Times for CMOS
(meas. 20% to 80%)
1.5 to 23.9 MHz: 15ns max.
24 to 85.0 MHz: 10ns max.
Aging: ± 5 ppm max. Year 1;
± 3 ppm max./year thereafter
Storage Temperature: -55° C to +125° C
Options: Tri-State Control



Dimensions: Inches (mm)

PIN CONNECTIONS

1 – Tri-State Control or N/C
7 – GND
8 – Output
14 – Supply Voltage

APPLICATIONS

PCS Base Stations
Cellular Base Stations
Synthesizers
Test Equipment
Avionics

FEATURES

Small SMT Package
Commercial & Industrial Temperature Ranges

042						MM
SERIES NUMBER:	TEMPERATURE STABILITY CODE	ACCURACY @ 25° C	OUTPUT WAVEFORM	OUTPUT ENABLE @ PIN 1	SCREENING	FREQUENCY (MHz)
	1 – 0° C to +70° C ± 100 ppm	A: ±15 ppm	T: TTL	E: Required	B: MIL-0-55310 Class B	
	2 – 0° C to +70° C ± 50 ppm	B: ±25 ppm	C: CMOS	X: Not Required	X: OFC Verification	
	3 – 0° C to +70° C ± 25 ppm	C: ±50 ppm				
	4 – 0° C to +70° C ± 15 ppm	D: ±100 ppm				
	5 – -40° C to +85° C ± 100 ppm					
	6 – -40° C to +85° C ± 50 ppm					
	7 – -40° C to +85° C ± 25 ppm					
	8 – -55° C to +125° C ± 100 ppm					
	9 – -55° C to +125° C ± 50 ppm					

ADDITIONAL PARAMETERS

Input Voltage: + 5 Vdc ± 10%

Input Current

1.0 to 23.9 MHz: 15 mA max.

24 to 49.9 Mhz: 20 mA max.

50 to 85 MHz: 30 mA max.

Output: ACMOS or TTL Compatible

Duty Cycle: CMOS: 50% ± 5% @ 50% Vdd ≤ 15 MHz
50% ± 10% @ 50% Vdd > 15 MHz

TTL: 50% ± 10% @ 1.4 V

Start-Up Time: 10 msec. max.

Rise & Fall Times for TTL
(meas. 0.8 to 2.0 V)

1.0 to 23.9 MHz: 5ns max.

24 to 85 MHz: 3ns max.

Rise & Fall Times for CMOS
(meas. 10% to 90%)

1.5 to 23.9 MHz: 10ns max.

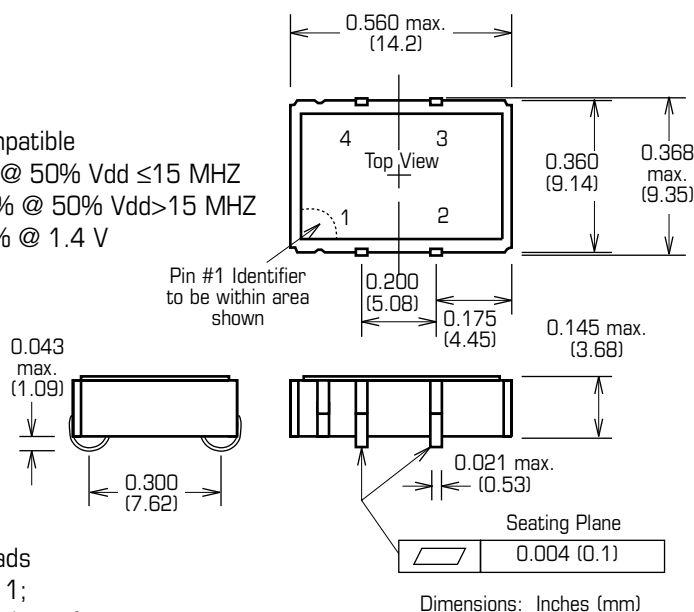
24 to 85 MHz: 6ns max.

Load: 50 pF or 10 TTL loads

Aging: ± 3 ppm max. Year 1;

± 2 ppm max./year thereafter

Storage Temperature: -55° C to +125° C



PIN CONNECTIONS

- 1 – Enable/Disable or N/C
- 2 – GND
- 3 – Output
- 4 – Supply Voltage

APPLICATIONS

PCS Base Stations
Cellular Base Stations
Synthesizers
Test Equipment
Avionics
Portable Instrumentation

FEATURES

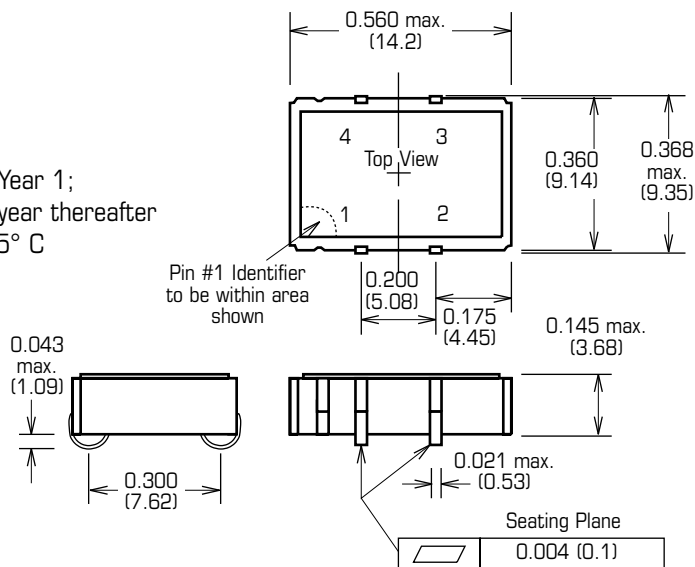
Small SMT Package
Commercial & Industrial Temperature Ranges
+3.3V Compatible

342	□	□	□	□	□	□□ M□□□□
SERIES NUMBER:	TEMPERATURE STABILITY CODE	ACCURACY @ 25° C	OUTPUT WAVEFORM	OUTPUT ENABLE @ PIN 1	SCREENING	FREQUENCY (MHz)
	1 – 0° C to +70° C ± 100 ppm	A: ±15 ppm		E: Required	B: MIL-0-55310 Class B	
	2 – 0° C to +70° C ± 50 ppm	B: ±25 ppm	C: CMOS	X: Not Required	X: OFC Verification	
	3 – 0° C to +70° C ± 25 ppm	C: ±50 ppm				
	4 – 0° C to +70° C ± 15 ppm	D: ±100 ppm				
	5 – -40° C to +85° C ± 100 ppm					
	6 – -40° C to +85° C ± 50 ppm					
	7 – -40° C to +85° C ± 25 ppm					
	8 – -55° C to +125° C ± 100 ppm					
	9 – -55° C to +125° C ± 50 ppm					

ADDITIONAL PARAMETERS

Input Voltage: + 3.3 Vdc ± 10%
Input Current
1.0 to 15.0 MHz: 6 mA max.
15.1 to 40 MHz: 8 mA max.
40.1 to 60 MHz: 12 mA max.
Output: AC MOS
Duty Cycle: 50% ± 5% @ 50% Vdd < 15MHz
50% ± 10% @ 50% Vdd > 15MHz
Start-Up Time: 10 msec. max.
Rise & Fall Times (meas. 10% to 90%)
1.0 to 20 MHz: 10ns max.
20.1 to 60 MHz: 6ns max.
Load: 50 pF
Aging: ± 3 ppm max. Year 1;
± 2 ppm max./year thereafter
Storage Temperature: -55° C to +125° C

Dimensions: Inches (mm)



PIN CONNECTIONS

- 1 – Enable/Disable or N/C
- 2 – GND
- 3 – Output
- 4 – Supply Voltage

CLOCKS



SERIES NUMBER



- ## — SCREENING REQUIREMENTS

ACCURACY AT +25°C

- Example: 741-1AB @ 10.000000 MHz
This is a series 741, 14 Pin DIP Oscillator with an output frequency of 10.000000 MHz, temperature stability of ± 50 over -55°C to +125°C, initial accuracy of ± 15 ppm, and tested to Class B of MIL-PRF-55310.

AGING: OFC Clock Oscillators have typical aging of ± 5 ppm max. Year 1; ± 3 ppm/year thereafter.
 START-UP TIME: 10 msec. max.
 NOTE: OFC can assign a unique part number to meet your special requirements.
 Contact the factory for special requirements and options not found on standard parts.
 For Hybrid Clock and Voltage Control Crystal Oscillators, the number of zeroes marked on a part will depend upon government regulations and available printing space on the part itself.
 The number of zeroes does not reflect the accuracy of the part which is specified elsewhere in the part number.

**ISO-9001
REGISTERED**

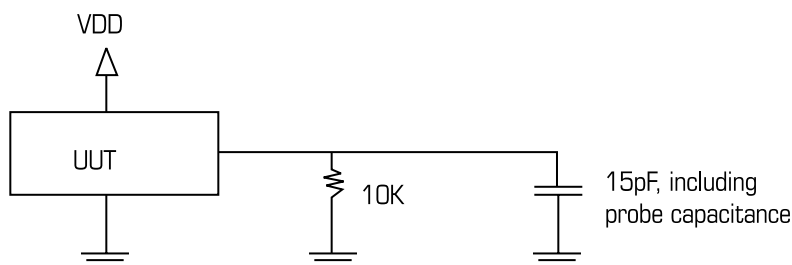
CMOS, ACMOS, HCMOS OSCILLATORS REFERENCE TABLE

MODEL	FREQUENCY	OUTPUT	PACKAGE	QPL EQUIVALENT	PAGE #
040	475 kHz to 85 MHz	ACMOS	20 Pad LCC	N/A	69
063	1 kHz to 70 MHz	ACMOS	12 Lead Flatpack	N/A	69
075	65 kHz to 65 MHz	HCMOS	40 Pad LCC	N/A	70
077	65 kHz to 65 MHz	HCMOS	44 Pad LCC	N/A	70
088	475 kHz to 85 MHz	ACMOS	28 Pad LCC	N/A	71
091	65 kHz to 65 MHz	HCMOS	20 Lead Flatpack	N/A	71
092	375 kHz to 75 MHz	HCMOS	14 Lead Flatpack	N/A	72
094	65 kHz to 65 MHz	HCMOS	16 Lead Flatpack	N/A	72
712	65 kHz to 65 MHz	CMOS	8 Pin TO-5	55310/12	73
721	250 kHz to 65 MHz	ACMOS	4 Pin 1/2 DIP	N/A	73
728	65 kHz to 65 MHz	ACMOS	4 Pin DIP	55310/26	74
745	1 Hz to 15 MHz	CMOS	14 Pin DIP	55310/18	74
748	250 Hz to 65 MHz	ACMOS	14 Pin DIP	55310/26	75

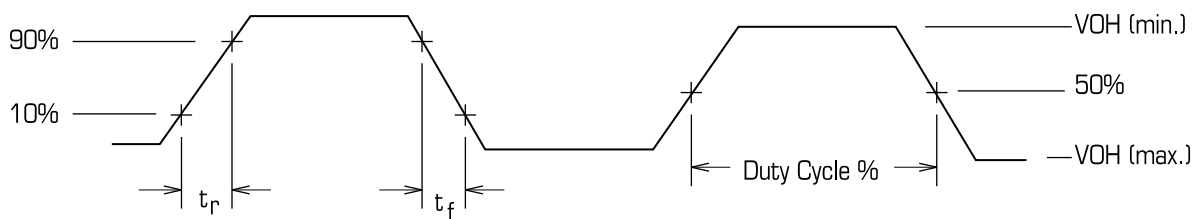
CMOS OSCILLATOR BASIC SPECIFICATION

	CMOS	HCMOS/ACMOS
VDD	See Specifications	5V $\pm$ 10%
Logic "1"	90% of VDD (min.)	4.5V
Logic "0"	10% of VDD (max.)	0.5V

STANDARD TEST CIRCUIT



WAVEFORM SPECIFICATIONS



MODEL 040 475 kHz – 85 MHz AC MOS Oscillator

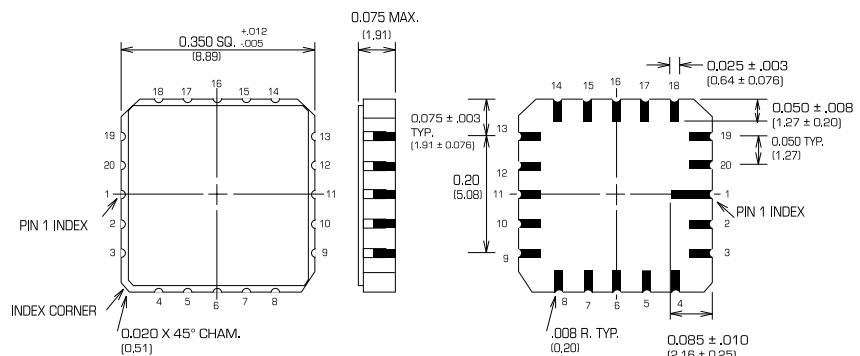
20 Pad LCC

External Input allows output to be gated "On" or "Off."

Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
475 kHz to 14.999 MHz	20	15	45 to 55
15.0 MHz to 29.999MHz	20	10	40 to 60
30.0 MHz to 59.999MHz	35	5	40 to 60
60.0 MHz to 85.000MHz	45	5	40 to 60

PIN CONNECTIONS

- 1 – Tri-State Control or N/C
- 6 – GND
- 11 – Output
- 16 – Supply Voltage
- All Others N/C



MODEL 063 1 kHz – 70 MHz AC MOS Oscillator

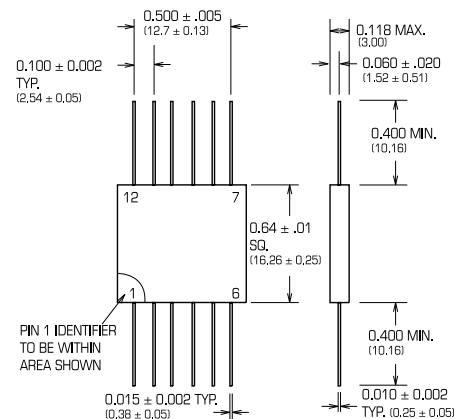
Surface Mount 12-Lead Flatpack

External Input allows output to be gated "On" or "Off."

Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
1.0 kHz to 7.0 MHz	20	15	45 to 55
>7.0 MHz to 30.0 MHz	30	10	40 to 60
>30.0 MHz to 70.0 MHz	60	5	40 to 60

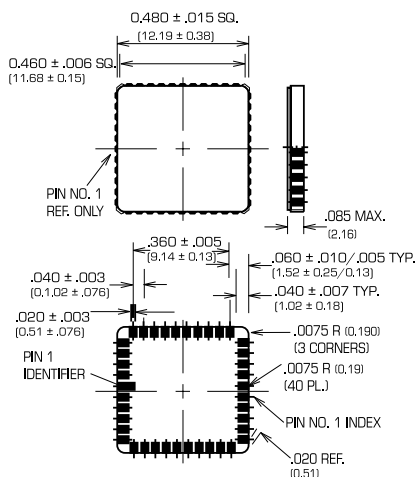
PIN CONNECTIONS

- 1 – Enable
- 6 – GND
- 7 – Output
- 12 – VDD
- All Others N/C



MODEL 075 375 kHz – 65 MHz HCMOS Oscillator

*Surface Mount 40-Pad Leadless Chip Carrier
Package equivalent of MIL-PRF-55310/19*



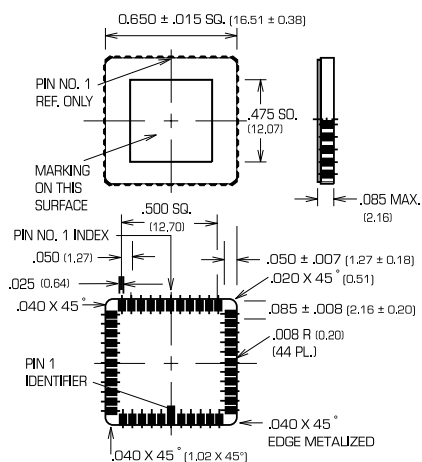
Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
65.0 kHz to 4.0 MHz	20	15	45 to 55
>4.0 MHz to 35.0 MHz	30	10	40 to 60
>35.0 MHz to 65.0 MHz	60	5	40 to 60

PIN CONNECTIONS

4, 10 – VDD
31, 37 – GND
39 – Output
All Others N/C

MODEL 077 375 kHz – 65 MHz HCMOS Oscillator

*Surface Mount 44 Pad Leadless Chip Carrier
Package equivalent of MIL-PRF-55310/20*



Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
65.0 kHz to 4.0 MHz	10	10	45 to 55
>4.0 MHz to 35.0 MHz	20	10	40 to 60
>35.0 MHz to 65.0 MHz	40	5	40 to 60

PIN CONNECTIONS

6, 12 – VDD
34, 40 – GND
42 – Output
All Others N/C

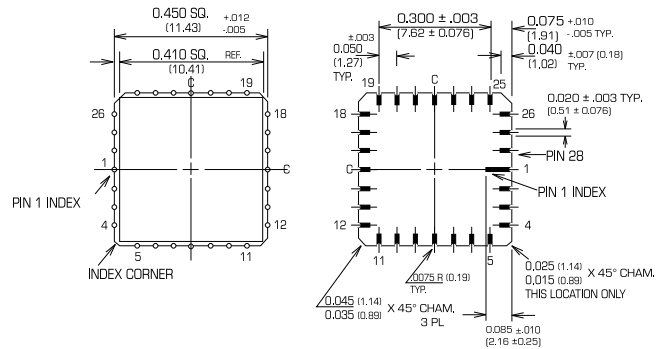
MODEL 088 375 kHz – 85 MHz AC MOS Oscillator

28 Pad LCC Package

Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
475 kHz to 14.999 MHz	20	15	45 to 55
15.0 MHz to 29.999MHz	20	10	40 to 60
30.0 MHz to 59.999MHz	35	5	40 to 60
60.0 MHz to 85.000MHz	45	5	40 to 60

PIN CONNECTIONS

4, 8 – VDD
22, 26 – GND/CASE
28 – Output
All Others N/C



MODEL 091 65 kHz – 65 MHz HCMOS Oscillator

Surface Mount 20-Lead Flatpack

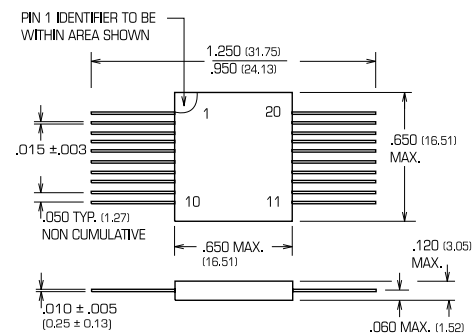
4000 Series CMOS Available

Package equivalent of MIL-PRF-55310/21

Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
65.0 kHz to 4.0 MHz	10	10	45 to 55
>4.0 MHz to 35.0 MHz	20	10	40 to 60
>35.0 MHz to 65.0 MHz	40	5	40 to 60

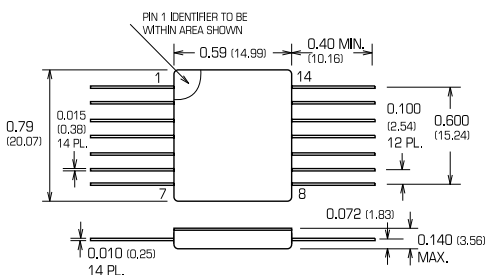
PIN CONNECTIONS

10 – GND
11 – Output
13, 20 – VDD
All Others N/C



MODEL 092 375 kHz – 75 MHz HCMOS Oscillator

14 Lead Flatpack Package



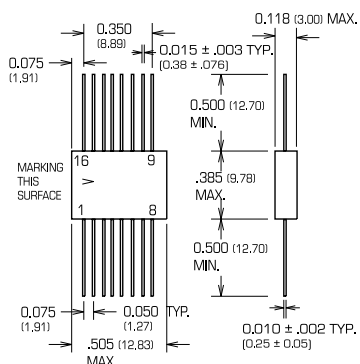
Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
375.0 kHz to 11.999 MHz	20	10	45 to 55
12.0 MHz to 24.999 MHz	20	10	40 to 60
25.0 MHz to 59.999 MHz	35	5	40 to 60
60.0 MHz to 75.000 MHz	45	5	40 to 60

PIN CONNECTIONS

7 – GND/CASE
8 – Output
14 – VDD
All Others N/C

MODEL 094 65 kHz – 65 MHz HCMOS Oscillator

Surface Mount 16-Lead Flatpack



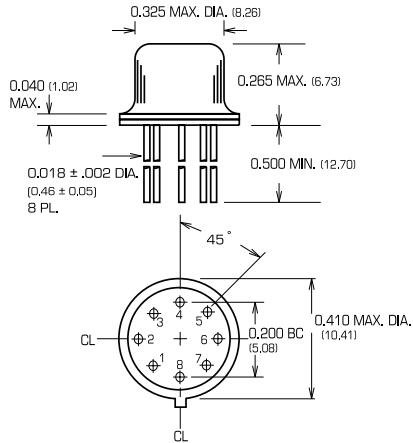
Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
65.0 kHz to 4.0 MHz	10	10	45 to 55
>4.0 MHz to 35.0 MHz	20	10	40 to 60
>35.0 MHz to 65.0 MHz	40	5	40 to 60

PIN CONNECTIONS

8 – VDD
9 – GND/CASE
10 – Output
All Others N/C

MODEL 712 65 kHz – 65 MHz CMOS Oscillator

8 Pin TO-5 Package
Optional Height 0.20 Maximum



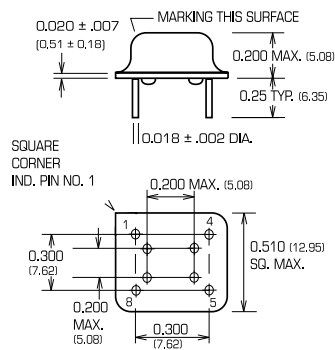
Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
65.0 kHz to 4.0 MHz	10	10	45 to 55
>4.0 MHz to 35.0 MHz	20	10	40 to 60
>35.0 MHz to 65.0 MHz	40	5	40 to 60

PIN CONNECTIONS

4 – GND/CASE
5 – Output
8 – VDD
All Others N/C

MODEL 721 15 kHz – 65 MHz HCMOS Oscillator

4 Pin 1/2 DIP Package
Optional Enable



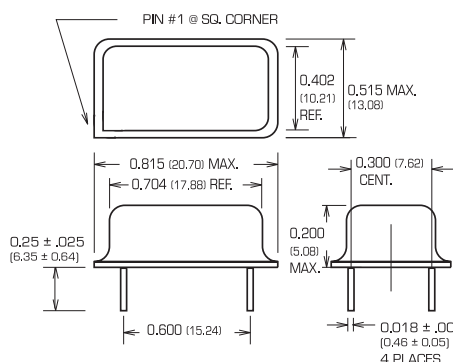
Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
250.0 kHz to 4.0 MHz	10	10	45 to 55
>4.0 MHz to 35.0 MHz	20	5	40 to 60
>35.0 MHz to 65.0 MHz	40	5	40 to 60

PIN CONNECTIONS

1 – Enable/Disable or N/C
4 – GND/CASE
5 – Output
8 – VDD
All Others N/C

MODEL 728 65 kHz – 65 MHz AC MOS Oscillator

4 Pin DIP Package
Generic equivalent of MIL-PRF-55310/26



Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
65.0 kHz to 4.0 MHz	10	10	45 to 55
> 4.0 MHz to 35.0 MHz	20	10	40 to 60
> 35.0 MHz to 65.0 MHz	40	5	40 to 60

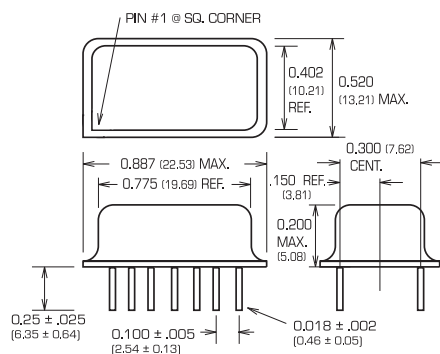
PIN CONNECTIONS

7 — GND/CASE
8 — Output
14 — VDD
All Others N/C

MODEL 745 1 Hz – 15 MHz CMOS Oscillator

14 Pin DIP Package
Generic equivalent of MIL-PRF-55310/18

FREQUENCY RANGE	SUPPLY VOLTAGE Vdc	INPUT CURRENT (max.) mA	RISE & FALL TIME (max.) ns	DUTY CYCLE @ 50% VDD percent
1 Hz to 4 MHz	+15	25	30	45 to 55
> 4 MHz to 15 MHz	+15	25	30	40 to 60
1 Hz to 4 MHz	+12	20	35	45 to 55
> 4 MHz to 12 MHz	+12	20	35	40 to 60
1 Hz to 4 MHz	+10	15	40	45 to 55
> 4 MHz to 10 MHz	+10	15	40	40 to 60
1 Hz to 4 MHz	+8	10	50	45 to 55
> 4 MHz to 8 MHz	+8	10	50	40 to 60
1 Hz to 4 MHz	+5	3	70	45 to 55
> 4 MHz to 5 MHz	+5	3	70	45 to 55



PIN CONNECTIONS

7 — GND/CASE
8 — Output
14 — VDD
All Others N/C

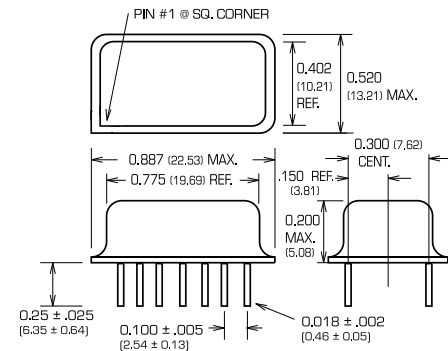
MODEL 748 250 Hz – 65 MHz AC MOS Oscillator

14 Pin DIP Package

High Speed CMOS Output

Generic equivalent of MIL-PRF-55310/26

Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
250.0 Hz to 4.0 MHz	10	10	45 to 55
>4.0 MHz to 35.0 MHz	20	10	40 to 60
>35.0 MHz to 65.0 MHz	40	5	40 to 60



PIN CONNECTIONS

7 – GND/CASE
8 – Output
14 – VDD
All Others N/C

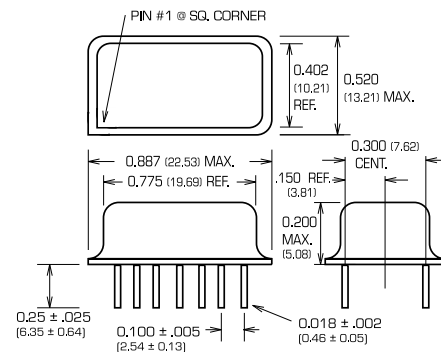
MODEL 755 0.1 Hz – 25 MHz TTL Oscillator

14 Pin DIP Package

Generic equivalent of MIL-PRF-55310/14

PIN CONNECTIONS

4 – B+
5 – Output
7 – B- (GND/Case)
All Others N/C

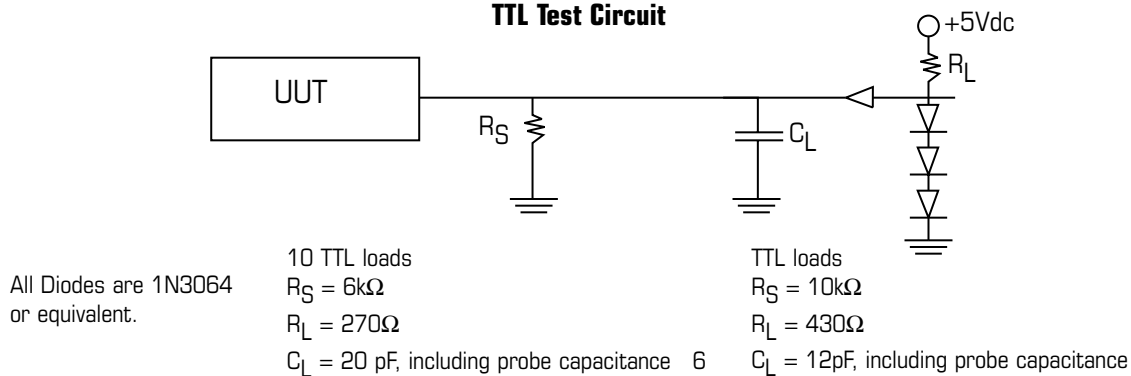


Dash Number Note 1,2	Output Frequency Range	Supply Voltage Vdc	Input Current (max) Note 3 mA	Pulse Characteristics		Frequency Tolerance ppm Note 2		
				Rise & Fall Time (max) ns Note 4	Duty Cycle @1.4V percent	-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
01	.01 Hz to 1 kHz	+5 ± 0.5	158	15	45 to 55	±50	±40	±25
02	1 kHz to 150 kHz	+5 ± 0.5	158	15	45 to 55	±50	±40	±25
03	150 kHz to 300 kHz	+5 ± 0.5	94	15	45 to 55	±50	±40	±25
04	300 kHz to 600 kHz	+5 ± 0.5	94	15	45 to 55	±50	±40	±25
05	600 kHz to 2.5 MHz	+5 ± 0.5	50	15	45 to 55	±50	±40	±25
06	2.5 MHz to 5 MHz	+5 ± 0.5	40	15	45 to 55	±50	±40	±25
07	5 MHz to 10 MHz	+5 ± 0.5	30	15	45 to 55	±50	±40	±25
08	10 MHz to 15 MHz	+5 ± 0.5	20	15	40 to 60	±50	±40	±25
09	15 MHz to 25 MHz	+5 ± 0.5	20	5	40 to 60	±50	±40	±25

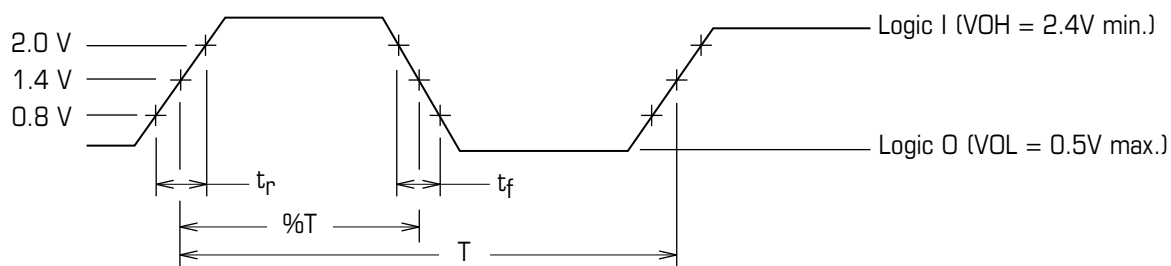
TTL CLOCK OSCILLATORS REFERENCE TABLE

MODEL	FREQUENCY	PACKAGE	QPL EQUIVALENT	PAGE #
041	475 kHz to 85 MHz	20 Pad LCC	N/A	77
061	65 kHz to 65 MHz	20 Lead Flatpack	55310/21	77
066	750 kHz to 65 MHz	14 Lead Flatpack	N/A	77
068	12 MHz to 24 MHz	20 Lead Flatpack	N/A	78
070	40 kHz to 80 MHz	40 Pad LCC	55310/19	79
071	750 kHz to 60 MHz	40 Pad LCC	N/A	79
072	750 kHz to 30 MHz	32 Pad LCC	N/A	80
073	20 MHz to 50 MHz	44 Pad LCC	N/A	80
085	375 kHz to 80 MHz	44 Pad LCC	55310/20	81
095	375 kHz to 65 MHz	16 Lead Flatpack	N/A	81
708	245 Hz to 60 MHz	8 Pin TO-8	55310/10	82
717	375 kHz to 65 MHz	8 Pin TO-5	55310/09	82
720	8 kHz to 65 MHz	4 Pin 1/2 DIP	N/A	83
724	1 Hz to 65 MHz	4 Pin DIP	N/A	83
726	250 kHz to 24 MHz	14 Pin DIP	55310/17	84
741	1 Hz to 80 MHz	14 Pin DIP	55310/16	84

TTL Test Circuit



TTL Waveform Specifications

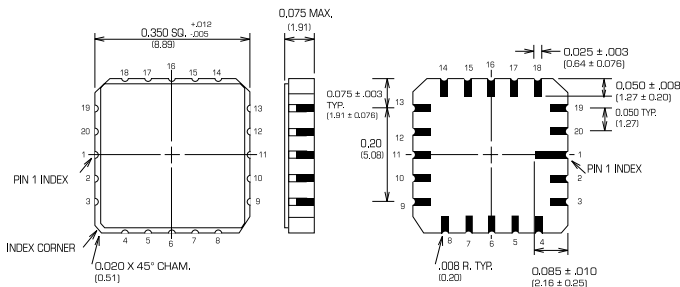


MODEL 041

475 kHz – 85 MHz TTL Oscillator

20 Pad LCC Package

Frequency Range	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VDD percent
475.0 kHz to 14.999 kHz	10	5	45 to 55
15.0 kHz to 29.999 MHz	15	5	40 to 60
30.0 MHz to 59.999 MHz	25	3	40 to 60
60.0 MHz to 70.000 MHz	40	3	40 to 60



PIN CONNECTIONS

- 1 – Tri-state Control or N/C
- 6 – GND/CASE
- 11 – Output
- 16 – Supply Voltage
- All Others N/C

MODEL 061

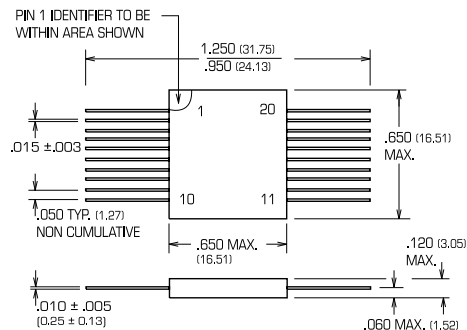
65 kHz – 65 MHz TTL Oscillator

20 Lead Flatpack Package

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
65.0 kHz to 12.0 MHz	35	15	45 to 55	10 TTL
12.1 MHz to 24.0 MHz	30	5	40 to 60	10 TTL
>24.0 MHz to 65.0 MHz	40	5	40 to 60	10 TTL

PIN CONNECTIONS

- 10 – GND/CASE
- 11 – Output
- 20 – VCC
- 13 – VCC
- All Others N/C



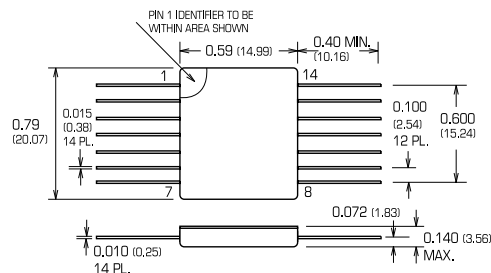
MODEL 066

750 kHz – 65 MHz TTL Oscillator

Surface Mount 14 Lead Flatpack Package

Optional Enable

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
750.0 kHz to 12.0 MHz	30	15	45 to 55	10 TTL
12.1 MHz to 24.0 MHz	30	5	40 to 60	10 TTL
>24.0 MHz to 65.0 MHz	40	5	40 to 60	6 TTL



PIN CONNECTIONS

- 1 – Enable/Disable or N/C
- 7 – GND
- 8 – Output
- 14 – VCC
- All Others N/C

MODEL 068 375 kHz – 65 MHz Oscillator

*Surface Mount 20 Lead Flatpack Package
Ceramic Chip Carrier Construction with Bottom Brazed Leads
Ruggedized 4 Point Crystal Mount*

068						MM
SERIES NUMBER:	TEMPERATURE STABILITY CODE	ACCURACY @ 25° C	OUTPUT WAVEFORM	OUTPUT ENABLE @ PIN 25	SCREENING	FREQUENCY (MHz)
1.	-55° C to +125° C ± 50 ppm	A: ±15 ppm	T: TTL	E: Required	B: MIL-O-55310 Class B	
2.	-55° C to +125° C ± 100 ppm	B: ±25 ppm	C: CMOS	X: Not Required	X: OFC Verification	
3.	-55° C to +105° C ± 40 ppm	C: ±10 ppm				
4.	-55° C to +105° C ± 80 ppm	X: Overall stability incl. in Temp. Stability code. Only avail. with codes 2,4,6,8 and 0.				
5.	-20° C to +70° C ± 25 ppm					
6.	-20° C to +70° C ± 50 ppm					
7.	0° C to +70° C ± 10 ppm					
8.	0° C to +70° C ± 25 ppm					
9.	-40° C to +85° C ± 30 ppm					
0.	-40° C to +85° C ± 70 ppm					

ADDITIONAL PARAMETERS

Input Voltage: + 5 Vdc ± 10%

Input Current
375.0 kHz to 4.0 MHz: 10 mA max.
4.1 to 35.0 MHz: 20 mA max.
35.1 to 65.0 MHz: 40 mA max.

Output: CMOS or TTL

Duty Cycle:
CMOS: 40% to 60% @ 50% Vdd
TTL: 40% to 60% @ 50% Vd

Start-Up Time:
375.0 kHz to 4.0 MHz: 10ns
4.1 kHz to 35.0 MHz: 10ns
35.1 kHz to 65.0 MHz: 5ns

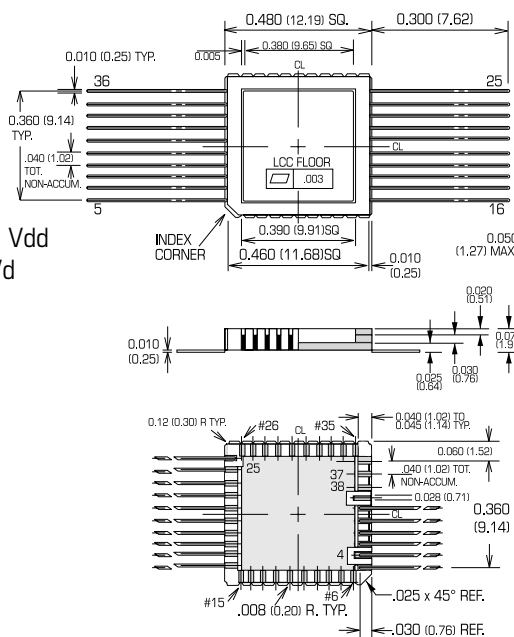
Rise & Fall Times for TTL
(meas. 0.8 to 2.0 V)
375.0 kHz to 35.0 MHz: 10ns max.
35.1 to 65.0 MHz: 5ns max.

Rise & Fall Times for CMOS
(meas. 10% to 90%)
375.0 kHz to 35.0 MHz: 10ns max.
35.1 to 65.0 MHz: 5ns max.

Load
ACMOS: 15 pF/10k
TTL: 10 TTL

Aging: ± 3 ppm max. Year 1;
± 2 ppm max./year thereafter

Storage Temperature: -55° C to +125° C



PIN CONNECTIONS

4 – Supply Voltage
25 – Enable/Disable or N/C
37 – GND
39 – Output
All others are N/C

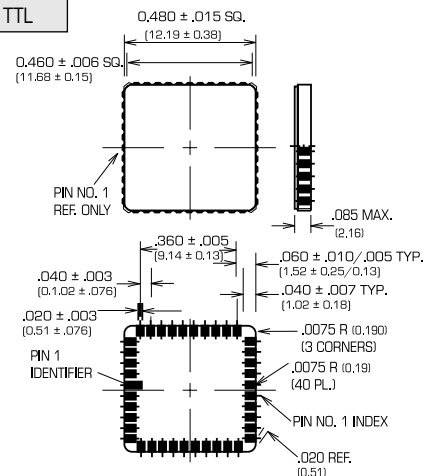
MODEL 070 375 kHz – 80 MHz TTL Oscillator

Surface Mount 40 Pad Leadless Chip Carrier
Generic Equivalent of MIL-PRF-55310/19

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
40.0 kHz to 12.0 MHz	40	15	45 to 55	10 TTL
12.1 MHz to 32.0 MHz	40	5	40 to 60	10 TTL
>32.0 MHz to 80.0 MHz	60	5	40 to 60	10 TTL

PIN CONNECTIONS

4, 10 – VCC
31, 37 – GND
39 – Output
All Others N/C



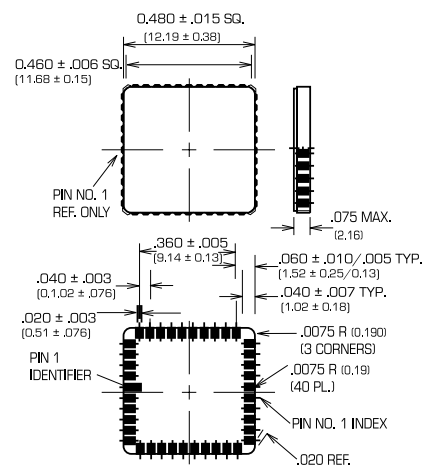
MODEL 071 375 kHz – 60 MHz TTL Oscillator

Surface Mount 40 Pad Leadless Chip Carrier
Maximum Height only 0.075" (1.91 mm)

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
750.0 kHz to 12.0 MHz	40	15	45 to 55	10 TTL
12.1 MHz to 32.0 MHz	40	5	40 to 60	10 TTL
>32.0 MHz to 60.0 MHz	60	5	40 to 60	10 TTL

PIN CONNECTIONS

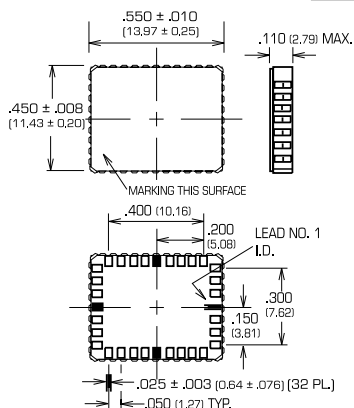
4, 10 – VCC
31, 37 – GND
39 – Output
All Others N/C



MODEL 072 750 kHz – 30 MHz TTL Oscillator

Surface Mount 32 Pad Leadless Chip Carrier

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
750.0 kHz to 12.0 MHz	45	15	45 to 55	10 TTL
12.1 MHz to 30.0 MHz	30	5	40 to 60	10 TTL



PIN CONNECTIONS

12, 16 – GND
8 – Output
26, 32 – VCC
All Others N/C

MODEL 073 20 MHz – 50 MHz TTL Oscillator

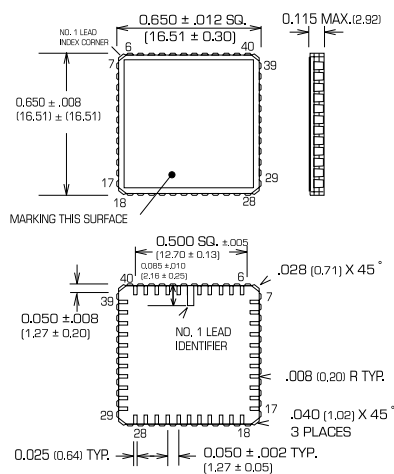
Surface Mount 44 Pad Leadless Chip Carrier

External Enable

External Signal Input

Tighter Duty Cycle Control

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
20.0 MHz to 50.0 MHz	90	5	47.5 to 52.5	10 TTL



PIN CONNECTIONS

1 – External Osc. Input
4 – Enable
6, 12 – VCC
34, 40 – GND
42 – Output
All Others N/C

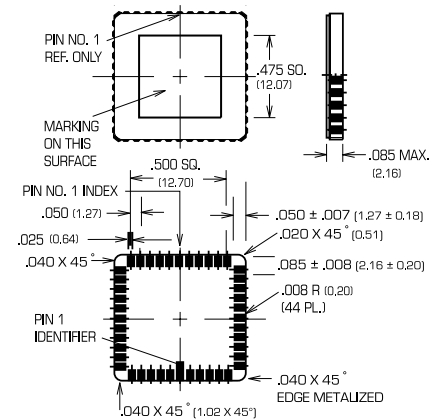
MODEL 085 375 kHz – 80 MHz TTL Oscillator

*Surface Mount 44 Pad Leadless Chip Carrier
Generic Equivalent of MIL-PRF-55310/20*

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
375.0 kHz to 12.0 MHz	40	15	45 to 55	10 TTL
>12.0 MHz to 32.0 MHz	40	5	40 to 60	10 TTL
>32.0 MHz to 80.0 MHz	60	5	40 to 60	10 TTL

PIN CONNECTIONS

6, 12 – VCC
34, 40 – GND
42 – Output
All Others N/C



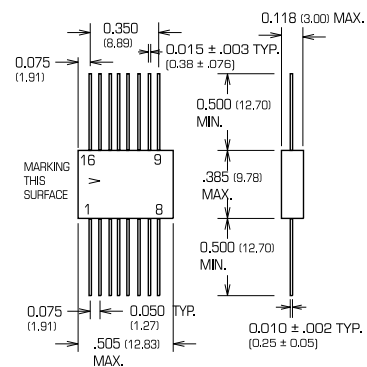
MODEL 095 15 kHz – 80 MHz TTL Oscillator

*Surface Mount 16 Lead Flatpack Package
All Metal Case*

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
375.0 kHz to 11.999 MHz	30	15	40 to 60	10 TTL
12.0 MHz to 65.000 MHz	30	5	40 to 60	10 TTL

PIN CONNECTIONS

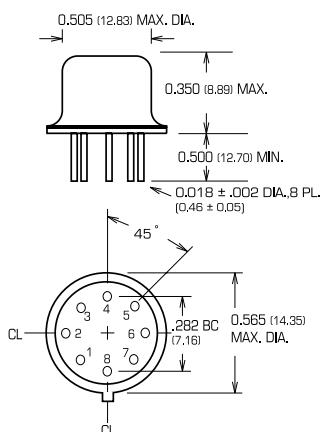
8 – VCC
9 – GND
10 – Output
All Others N/C



MODEL 708 245 Hz – 60 MHz TTL Oscillator

8 Pin TO-8 Style
Generic Equivalent of MIL-PRF-55310/10

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
245.0 Hz to 500.0 kHz	20	15	45 to 55	10 TTL
>500.0 kHz to 12.0 MHz	40	15	45 to 55	10 TTL
>12.0 MHz to 24.0 MHz	20	5	40 to 60	10 TTL
>24.0 MHz to 60.0 MHz	40	5	40 to 60	6 TTL



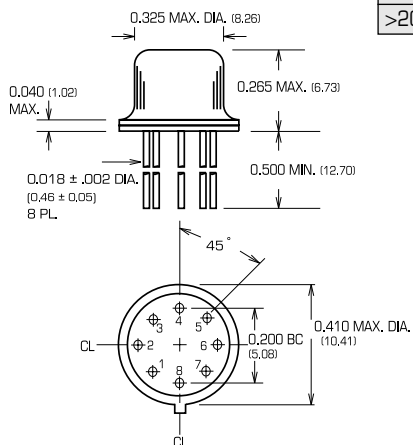
PIN CONNECTIONS

4 – GND/Case
5 – Output
8 – VCC
All Others N/C

MODEL 717 375 kHz – 65 MHz TTL Oscillator

8-Pin TO-5 Package
Generic Equivalent of MIL-PRF-55310/09
Optional Height 0.20" (5.08mm)

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
375.0 kHz to 7.0 MHz	50	15	45 to 55	10 TTL
>7.0 MHz to 20.0 MHz	30	5	40 to 60	10 TTL
>20.0 MHz to 65.0 MHz	50	5	40 to 60	10 TTL



PIN CONNECTIONS

4 – GND/Case
5 – Output
8 – VCC
All Others N/C

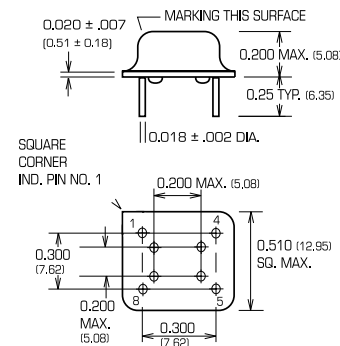
MODEL 720 8 kHz – 65 MHz TTL Oscillator

4 Pin 1/2 DIP Package
Optional Enable

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
8.0 kHz to 12.0 MHz	20	10	45 to 55	10 TTL
>12.0 MHz to 20.0 MHz	20	5	40 to 60	10 TTL
>20.0 MHz to 65.0 MHz	40	5	40 to 60	10 TTL

PIN CONNECTIONS

1 – Enable/Disable or N/C
4 – GND/Case
5 – Output
8 – VCC
All Others N/C



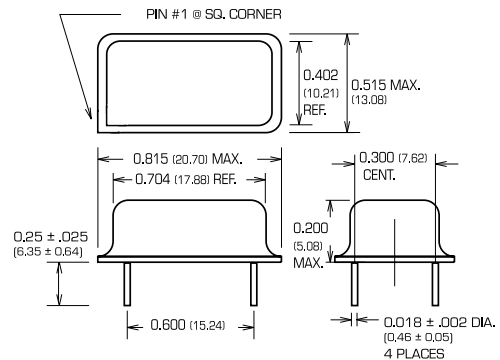
MODEL 724 1 Hz – 65 MHz TTL Oscillator

4 Pin DIP Package

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
1.0 Hz to 12.0 MHz	30	15	45 to 55	10 TTL
>12.0 MHz to 24.0 MHz	30	5	40 to 60	10 TTL
>24.0 MHz to 65.0 MHz	40	5	40 to 60	6 TTL

PIN CONNECTIONS

7 – GND/Case
8 – Output
14 – VCC
All Others N/C



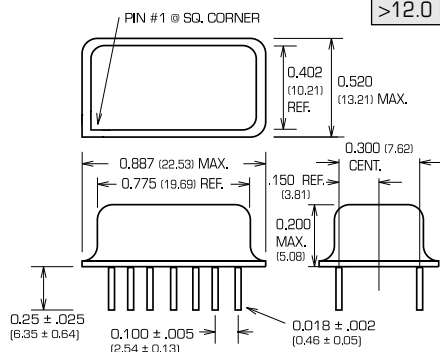
MODEL 726 250 kHz – 24 MHz TTL Oscillator

14 Pin DIP Package

External Input allows output to be gated "On" or "Off."

Generic Equivalent of MIL-PRF-55310/17

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
250.0 kHz to 12.0 MHz	40	15	45 to 55	10 TTL
>12.0 MHz to 24.0 MHz	40	15	40 to 60	10 TTL



PIN CONNECTIONS

- 7 – GND
- 8 – Output
- 9 – Enable
- 14 – VCC
- All Others N/C

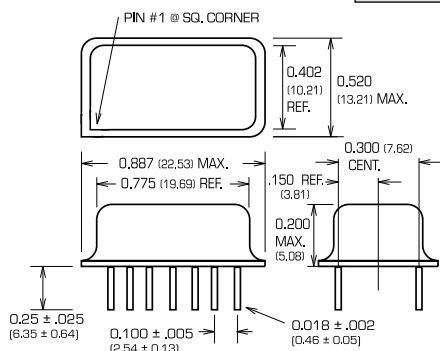
MODEL 741 1 Hz – 80 MHz TTL Oscillator

14-Pin DIP

Most Popular Pin-out

Generic Equivalent of MIL-PRF-55310/16

Frequency Range	Input Current @ 5.25 V mA	Rise & Fall Time (.8 & 2.0 V) ns	Duty Cycle @ 1.4 V	Unit Loads (max.)
1.0 Hz to 12.0 MHz	30	15	45 to 55	10 TTL
>12.0 MHz to 24.0 MHz	30	5	40 to 60	10 TTL
>24.0 MHz to 80.0 MHz	40	5	40 to 60	6 TTL



PIN CONNECTIONS

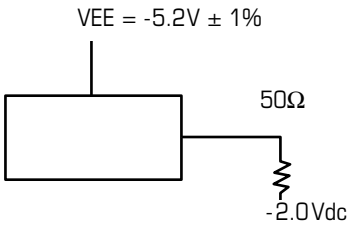
- 7 – GND/Case
- 8 – Output
- 14 – VCC
- All Others N/C

ECL OSCILLATORS REFERENCE TABLE

MODEL	FREQUENCY	PACKAGE	COMPLEMENTARY OUTPUT	PAGE #
069	30 MHz to 130 MHz	14 Lead Flatpack	Yes	86
082	30 MHz to 130 MHz	32 Pad LCC	Yes	86
769	30 MHz to 130 MHz	14 Pin DIP	Yes	87
770	30 MHz to 130 MHz	4 Pin DIP	No	87
771	30 MHz to 130 MHz	14 Pin DIP	No	88

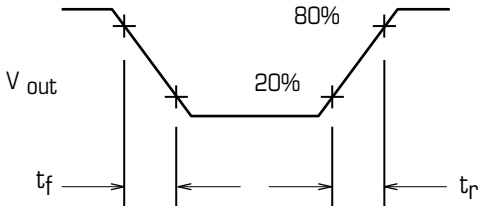
ECL Test Circuit

Supply Voltage: $-5.2\text{V} \pm 1\%$
Outputs: ECL 10K Compatible

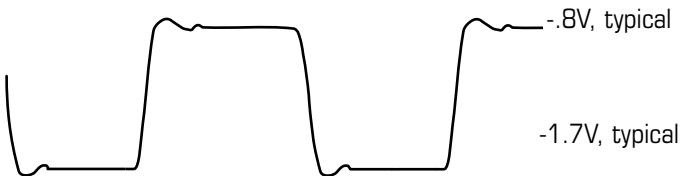


ECL 10k Rise and Fall Times

Duty cycle measured at 50% point



Typical ECL Waveform



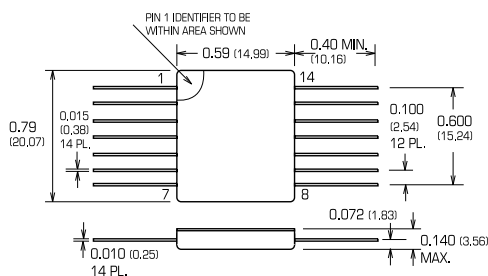
Contact factory for frequencies outside the ranges specified for standard models

C
L
O
C
K
S

MODEL 069 30 MHz – 130 MHz ECL Oscillator

14 Pin Flatpack Package
Complementary 10k ECL Outputs

Frequency Range	Supply Voltage Vdc	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VEE percent
30.0 MHz to 100.0 MHz	-5.2	50	5	40 to 60
>100.0 MHz to 130.0 MHz	-5.2	70	2	40 to 60



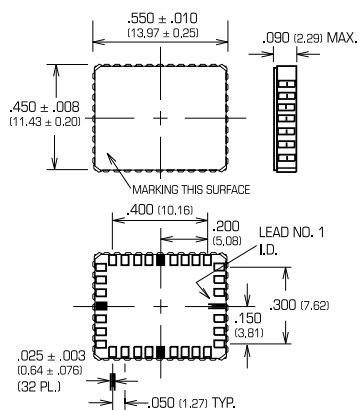
PIN CONNECTIONS

7 – GND
8 – A Output
9 – A Output
14 – VEE (-5.2 V)
All Others N/C

MODEL 082 30 MHz – 130 MHz ECL Oscillator

Surface Mount 32 Pad Leadless Chip Carrier
Complementary 10k ECL Outputs

Frequency Range	Supply Voltage Vdc	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VEE percent
30.0 MHz to 100.0 MHz	-5.2	50	5	40 to 60
>100.0 MHz to 130.0 MHz	-5.2	70	2	40 to 60



PIN CONNECTIONS

4 – A Output
8 – A Output
12, 16 – GND
26, 32 – VEE (-5.2V)
All Others N/C

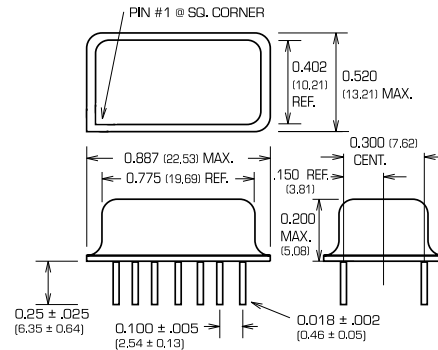
MODEL 769 30 MHz – 130 MHz ECL Oscillator

14 Pin DIP Package
Complementary 10k ECL Outputs

Frequency Range	Supply Voltage Vdc	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VEE percent
30.0 MHz to 100.0 MHz	-5.2	50	5	40 to 60
>100.0 MHz to 130.0 MHz	-5.2	70	2	40 to 60

PIN CONNECTIONS

7 – VEE
8 – A Output
10 – A Output
14 – GND
All Others N/C



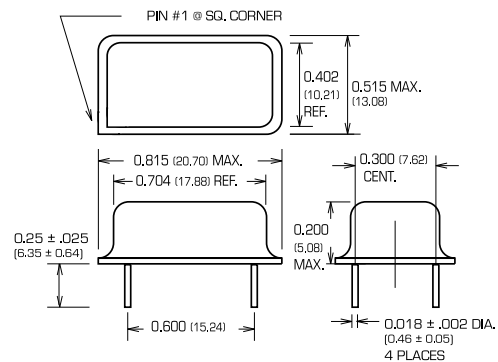
MODEL 770 30 MHz – 200 MHz ECL Oscillator

4 Pin DIP Package
10k ECL Output
Generic Equivalent of MIL-PRF-55310/25

Frequency Range	Supply Voltage Vdc	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VEE percent
30.0 MHz to 100.0 MHz	-5.2	50	5	40 to 60
>100.0 MHz to 130.0 MHz	-5.2	70	2	40 to 60

PIN CONNECTIONS

7 – VEE
8 – Output
14 – GND/Case
All Others N/C



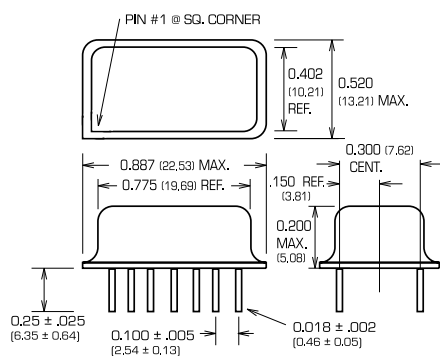
MODEL 771 30 MHz – 200 MHz ECL Oscillator

14 Pin DIP Package

10k ECL Output

Generic Equivalent of MIL-PRF-55310/25

Frequency Range	Supply Voltage Vdc	Input Current (max.) mA	Rise & Fall Time (max.) ns	Duty Cycle @ 50% VEE percent
30.0 MHz to 100.0 MHz	-5.2	50	5	40 to 60
>100.0 MHz to 130.0 MHz	-5.2	70	2	40 to 60



PIN CONNECTIONS

7 – VEE
8 – Output
14 – GND/Case
All Others N/C

MIL-PRF-55310

55310/XX	Frequency	Output	Package	OFC Model ¹
08	375kHz to 50 MHz	TTL	14 Pin DIP	765 ²
09	400kHz to 60 MHz	TTL	8 Pin TO-5	717
10	1kHz to 30 MHz	TTL	8 Pin TO-8	708
14	600kHz to 25 MHz	TTL	14 Pin DIP	755 ³
16	0.1Hz to 80 MHz	TTL	14 Pin DIP	741
17	250kHz to 50 MHz	TTL	14 Pin DIP	726
18	0.1Hz to 15 MHz	CMOS	14 Pin DIP	745
19	1MHz to 60 MHz	TTL	40 Pad LCC	070
20	1MHz to 60 MHz	TTL	44 Pad LCC	085
21	1MHz to 60 MHz	TTL	20 Lead Flatpack	061
25	40MHz to 125 MHz	ECL	14 Pin DIP	771
			4 Pin DIP	770
26	375kHz to 65 MHz	ACMOS	14 Pin DIP	748
			4 Pin DIP	728

¹Commercial/OFC Part Numbers ²Available to 50 Hz ³Available to 0.1Hz

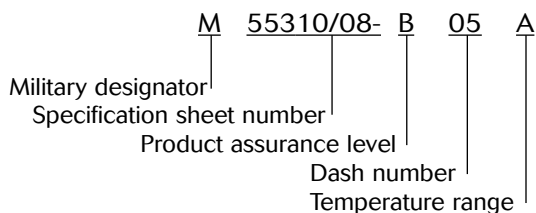
OFC QPL clock oscillators provide a highly reliable clock signal with good frequency stability. Our clock oscillators have been used in applications ranging from ground support equipment to satellites to electronic modules launched from a cannon.

Specifying MIL-PRF-55310 Oscillators

For your convenience, the following are typical specifications for our QPL qualified oscillators. In the case of a conflict between these specs and MIL-PRF-55310, the MIL specification in effect at the time of purchase takes precedence. Since MIL-PRF-55310 may periodically change, the applicable slash sheet should be consulted for detailed information.

Military Part Number

The military part number consists of the letter "M", the basic number of the specification sheet, the product assurance level code, the dash number and the temperature range code. An example of a part number follows:



Frequency Designation

The frequency must also be specified. The following are examples using the 8 characters specified in MIL-PRF-55310 to construct the frequency code.

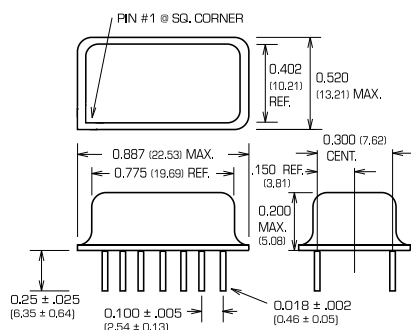
DESIGNATION	FREQUENCY
H0100000 to H9999999	.01 to .9999999 Hz
1H000000 to 9H999999	1.0 to 9.999999 Hz
10H00000 to 99H99999	10 to 99.999999 Hz
100H0000 to 999H9999	100 to 999.9999 Hz
1K000000 to 9K999999	1 to 9.999999 kHz
10K00000 to 99K99999	10 to 99.99999 kHz
100K0000 to 999K9999	100 to 999.9999 kHz
1M000000 to 9M999999	1 to 9.999999 MHz
10M00000 to 99M99999	10 to 99.99999 MHz
100M0000 to 999M9999	100 to 999.9999 MHz

Thus, an M55310/08-B05A 5M000000 would be a 5 MHz/08 fourteen pin DIP oscillator, screened to class B level. The operating temperature would be -55 to 125°C.

Additional information on specifying QPL hybrid oscillators can be found in MIL-PRF-55310. OFC will also gladly assist you in answering any of your questions regarding QPL oscillators.

MIL-PRF-55310/8 375 KHz – 50 MHz TTL Oscillator

Generic Equivalent is McCoy #765



PIN CONNECTIONS

- 1 – Output
- 2 – Case
- 8 – B- (GND)
- 14 – B+
- All Others N/C

Dash Number Note 1,2	Output Frequency Range	Supply Voltage Vdc	Input Current (max) Note 3 mA	Pulse Characteristics			Frequency Tolerance ppm Note 2		
				Rise & Fall Time (max) ns Note 4	Duty Cycle @1.4V percent	Load (max) Note 5	-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
01	1 kHz to 150 kHz	+5 ±0.25	158	15	45 to 55	10 TTL	±50	±40	±25
02	150 kHz to 300 kHz	+5 ±0.25	94	15	45 to 55	10 TTL	±50	±40	±25
03	300 kHz to 600 MHz	+5 ±0.25	94	15	45 to 55	10 TTL	±50	±40	±25
04	600 kHz to 2.5 MHz	+5 ±0.25	50	15	45 to 55	10 TTL	±50	±40	±25
05	2.5 MHz to 5 MHz	+5 ±0.25	50	15	45 to 55	10 TTL	±50	±40	±25
06	5 MHz to 10 MHz	+5 ±0.25	35	15	40 to 60	10 TTL	±50	±40	±25
07	10 MHz to 20 MHz	+5 ±0.25	25	15	40 to 60	10 TTL	±50	±40	±25
08	20 MHz to 30 MHz	+5 ±0.25	35	5	40 to 60	10 TTL	±50	±40	±25
09	30 MHz to 50 MHz	+5 ±0.25	50	5	40 to 60	10 TTL	±50	±40	±25
10	50 Hz to 1 kHz	+5 ±0.25	158	15	40 to 60	10 TTL	±50	±40	±25

SPECIFICATIONS NOTES FOR HYBRID CLOCK OSCILLATORS, PAGES 88 – 100

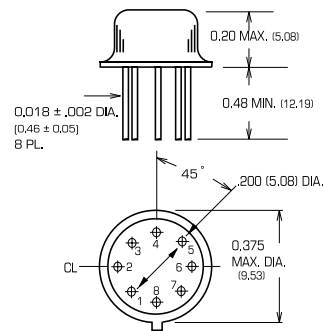
- Temperature Range A applicable for Class B oscillators only.
- A suffix letter A, B, or C shall be inserted following the applicable Dash Number to indicate the Operating Temperature Range.
- Maximum Input Power for no load condition. Actual configuration of loads must be added to determine Power Supply requirements.
- Measurements to be taken between 2.0V and 0.8V.
- A TTL Unit Load is defined as: 1.6mA sink, 0.04mA source and 2pF capacitance.
- Measurements to be taken at 10% and 90% levels.
- Measurements to be taken at 20% and 80% levels.
- Output parameters measured with -5.2Vdc power supply and 50 or 100 ohm load connected to -2.0Vdc per MIL-PRF-55310/25.

MIL-PRF-55310/9 400 kHz – 60 MHz TTL Oscillator

Generic Equivalent is McCoy #717

PIN CONNECTIONS

4 – B- (GND/Case)
5 – Output
8 – B+
All Others N/C



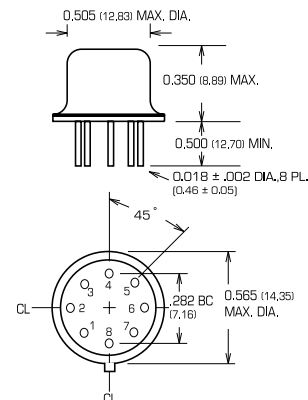
Dash Number Note 1, 2	Output Frequency Range	Input Current (max) @ 5.25 V ±1% mA Note 3	Pulse Characteristics			Initial Accuracy ppm @ 23°C (to 30 days post ship)	Aging ppm/yr (After 30 days)	Frequency Tolerance ppm Note 2		
			Rise & Fall Time (max) ns Note 4	Duty Cycle @1.4V percent	Load (max) Note 5			-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
01	400 kHz	50	15	45 to 55	10 TTL	15	5	±50	±40	±25
05	to 9 MHz	50	15	45 to 55	10 TTL	25	10	±100	±80	±50
11	9 MHz	30	15	40 to 60	10 TTL	15	5	±50	±40	±25
15	to 25 MHz	30	15	40 to 60	10 TTL	25	10	±100	±80	±50
21	25 MHz	50	5	40 to 60	6 TTL	15	5	±50	±40	±25
25	to 60 MHz	50	5	40 to 60	6 TTL	25	10	±100	±80	±50

MIL-PRF-55310/10 1 kHz – 30 MHz TTL Oscillator

Generic Equivalent is McCoy #708

PIN CONNECTIONS

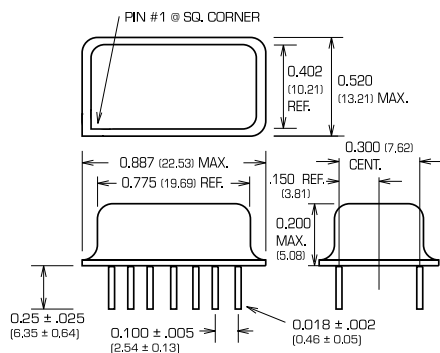
4 – B- (GND/Case)
5 – Output
8 – B+
All Others N/C



Dash Number Note 1, 2	Output Frequency Range	Input Current (max) @ 5.25 V ±1% mA Note 3	Pulse Characteristics			Initial Accuracy ppm @ 23°C (to 30 days post ship)	Aging ppm/yr (After 30 days)	Frequency Tolerance ppm Note 2		
			Rise & Fall Time (max) ns Note 4	Duty Cycle @1.4V percent	Load (max) Note 5			-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
01	1 kHz	80	15	45 to 55	10 TTL	15	5	±50	±40	±25
07	to 400 kHz	80	15	45 to 55	10 TTL	25	10	±100	±80	±50
11	400 kHz	55	15	45 to 55	10 TTL	15	5	±50	±40	±25
17	to 5 MHz	55	15	45 to 55	10 TTL	25	10	±100	±80	±50
21	4 MHz	40	15	40 to 60	10 TTL	15	5	±50	±40	±25
27	to 20 MHz	40	15	40 to 60	10 TTL	25	10	±100	±80	±50
31	20 MHz	65	5	40 to 60	6 TTL	15	5	±50	±40	±25
37	to 60 MHz	65	5	40 to 60	6 TTL	25	10	±100	±80	±50

MIL-PRF-55310/14 375 KHz – 25 MHz TTL Oscillator

Generic Equivalent is McCoy #755



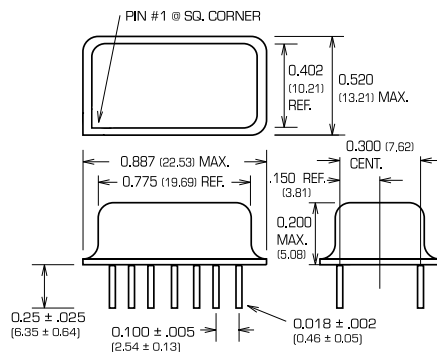
PIN CONNECTIONS

4 – B+
5 – Output
7 – B- (GND/Case)
All Others N/C

Dash Number Note 1,2	Output Frequency Range	Supply Voltage Vdc	Input Current (max) Note 3 mA	Pulse Characteristics		Frequency Tolerance ppm Note 2		
				Rise & Fall Time (max) ns Note 4	Duty Cycle @1.4V percent	-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
01	.01 Hz to 1 kHz	+5 ± 0.5	158	15	45 to 55	±50	±40	±25
02	1 kHz to 150 kHz	+5 ± 0.5	158	15	45 to 55	±50	±40	±25
03	150 kHz to 300 kHz	+5 ± 0.5	94	15	45 to 55	±50	±40	±25
04	300 kHz to 600 kHz	+5 ± 0.5	94	15	45 to 55	±50	±40	±25
05	600 kHz to 2.5 MHz	+5 ± 0.5	50	15	45 to 55	±50	±40	±25
06	2.5 MHz to 5 MHz	+5 ± 0.5	40	15	45 to 55	±50	±40	±25
07	5 MHz to 10 MHz	+5 ± 0.5	30	15	45 to 55	±50	±40	±25
08	10 MHz to 15 MHz	+5 ± 0.5	20	15	40 to 60	±50	±40	±25
09	15 MHz to 25 MHz	+5 ± 0.5	20	5	40 to 60	±50	±40	±25

MIL-PRF-55310/16 .01 Hz – 80 MHz TTL Oscillator

Generic Equivalent is McCoy #741



PIN CONNECTIONS
 7 – B- (GND/Case)
 8 – Output
 14 – B+
 All Others N/C

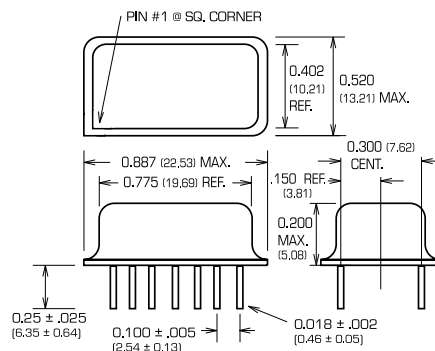
Dash Number Note 1, 2	Output Frequency Range	Input Current (max) @ 5.25 V ±1% mA Note 3	Pulse Characteristics			Initial Accuracy ppm @ 23°C (to 30 days post ship)	Aging ppm/yr (After 30 days)	Frequency Tolerance ppm Note 2		
			Rise & Fall Time (max) ns Note 4	Duty Cycle @1.4V percent	Load (max) Note 5			-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
01	0.1 Hz	158	15	45 to 55	10 TTL	15	5	±50	±40	±25
04	to 250 Hz	158	15	45 to 55	10 TTL	25	10	±100	±80	±50
11	250 Hz	94	15	45 to 55	10 TTL	15	5	±50	±40	±25
14	to 150 kHz	94	15	45 to 55	10 TTL	25	10	±100	±80	±50
21	150 kHz	70	15	45 to 55	10 TTL	15	5	±50	±40	±25
24	to 5 MHz	70	15	45 to 55	10 TTL	25	10	±100	±80	±50
31	4 MHz	30	15	40 to 60	10 TTL	15	5	±50	±40	±25
34	to 20 MHz	30	15	40 to 60	10 TTL	25	10	±100	±80	±50
41	20 MHz	65	5	40 to 60	6 TTL	15	5	±50	±40	±25
44	to 80 MHz	65	5	40 to 60	6 TTL	25	10	±100	±80	±50

MIL-PRF-55310/17 250 kHz – 50 MHz TTL Oscillator

Generic Equivalent is McCoy #726

PIN CONNECTIONS

7 – B- (GND/Case)
8 – Output
9 – Gate Input
14 – B+
All Others N/C



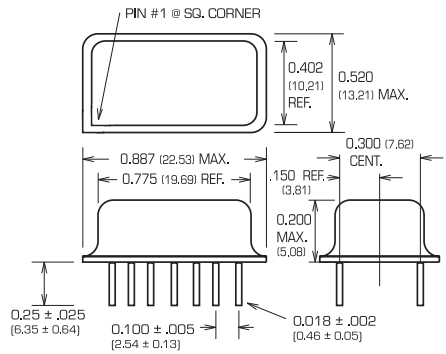
Dash Number Note 1, 2	Output Frequency Range	Input Current (max) @ 5.25 V ±1% mA Note 3	Pulse Characteristics			Initial Accuracy ppm @ 23°C (to 30 days post ship)	Aging ppm/yr (After 30 days)	Frequency Tolerance ppm Note 2		
			Rise & Fall Time (max) ns Note 4	Duty Cycle @1.4V percent	Load (max) Note 5			-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
01	250 kHz	65	15	45 to 55	10 TTL	10	5	±50	±40	±25
04	to 5 MHz	65	15	45 to 55	10 TTL	25	10	±100		
11	4 MHz	55	15	40 to 60	10 TTL	15	5	±50	±40	±25
14	to 20 MHz	55	15	40 to 60	10 TTL	25	10	±100		
21	20 MHz	55	5	40 to 60	6 TTL	15	5	±50	±40	±25
24	to 50 MHz	55	5	40 to 60	6 TTL	25	10	±100		

HYBRID CLOCK OSCILLATORS



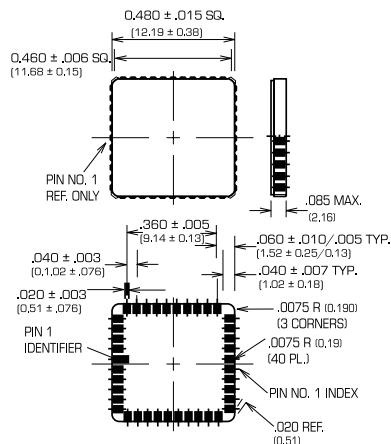
MIL-PRF-55310/18 0.1 Hz – 15 MHz CMOS Oscillator

Generic Equivalent is McCoy #745



PIN CONNECTIONS
 7 — B- (GND/Case)
 8 — Output
 14 — B+
 All Others N/C

Dash Number Note 1, 2	Output Frequency Range	Supply Voltage ± 10% Vdc	Max. Input Current @ Max. Supply Voltage mA	Output Voltage		Rise & Fall Time (max) ns Note 6	Duty Cycle @ 50% percent	Initial Accuracy ppm @ 23°C (to 30 days post ship)	Aging ppm/yr (After 30 days)	Frequency Tolerance ppm Note 2		
				Logic: 1 (min.) .9 Vdd V	Logic: 0 (min.) .1 Vdd V					-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
41	0.01 Hz	+5	3	4.2	.5	70	40 to 60	15	5	± 50	± 40	± 25
42	to 5 MHz					70	40 to 60	25	10	± 100	± 80	± 50



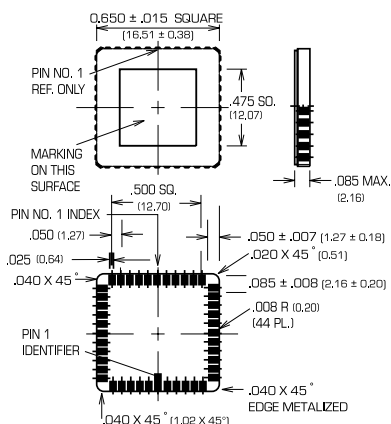
MIL-PRF-55310/19 1 MHz – 60 MHz TTL Oscillator

Generic Equivalent is OFC #070

PIN CONNECTIONS

4, 10 – B+
31, 37 – GND
39 – Input
All Others N/C

Dash Number Note 1, 2	Output Frequency Range	Input Current (max) @ 5.25 V ±1% mA Note 3	Pulse Characteristics			Aging ppm/yr (After 30 days)	Frequency Tolerance ppm Note 2		
			Rise & Fall Time (max) ns Note 4	Duty Cycle @1.4V percent	Load (max) Note 5		-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
01	1.0 MHz	75	15	40 to 60	10 TTL	10	±100	±75	±50
02	to 16 MHz	75	15	40 to 60	10 TTL	10	±200	±150	±100
11	16 MHz	40	5	40 to 60	10 TTL	10	±100	±75	±50
12	to 40 MHz	40	5	40 to 60	10 TTL	10	±200	±150	±100
21	40 MHz	70	5	40 to 60	10 TTL	10	±100	±75	±50
22	to 60 MHz	70	5	40 to 60	10 TTL	10	±200	±150	±100



MIL-PRF-55310/20 1 MHz – 60 MHz TTL Oscillator

Generic Equivalent is OFC #085

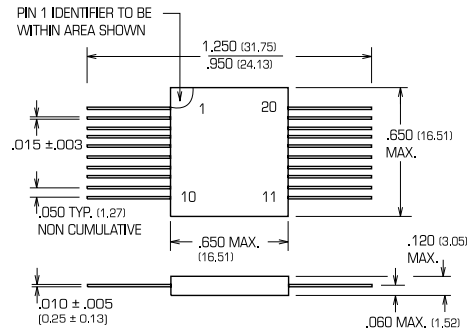
PIN CONNECTIONS

6, 12 – B+
34, 40 – GND
42 – Input
All Others N/C

Dash Number Note 1, 2	Output Frequency Range	Input Current (max) @ 5.25 V ±1% mA Note 3	Pulse Characteristics			Initial Accuracy ppm @ 23°C (to 30 days post ship)	Aging ppm/yr (After 30 days)	Frequency Tolerance ppm Note 2		
			Rise & Fall Time (max) ns Note 4	Duty Cycle @1.4V percent	Load (max) Note 5			-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
01	1 MHz	75	15	40 to 60	10 TTL	15	10	±50	±40	±25
02	to	75	15	40 to 60	10 TTL	25	10	±100	±80	±50
03	14.0 MHz	75	15	40 to 60	10 TTL	25	10	±200	±150	±100
11	14.0 MHz	30	5	40 to 60	10 TTL	15	10	±50	±40	±25
12	to	30	5	40 to 60	10 TTL	25	10	±100	±80	±50
13	30.0 MHz	30	5	40 to 60	10 TTL	25	10	±200	±150	±100
21	30.0 MHz	55	5	40 to 60	10 TTL	15	10	±50	±40	±25
22	to	55	5	40 to 60	10 TTL	25	10	±100	±80	±50
23	60.0 MHz	55	5	40 to 60	10 TTL	25	10	±200	±150	±100

MIL-PRF-55310/21 1 MHz – 60 MHz TTL Oscillator

Generic Equivalent is McCoy #061



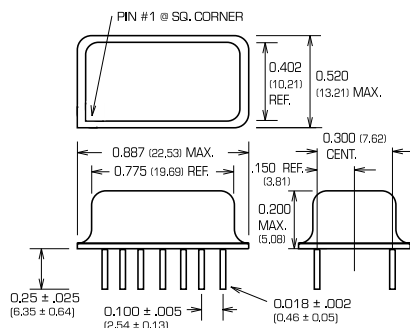
PIN CONNECTIONS

10 – B- (GND/Case)
11 – Output
13, 20 – B+
All Others N/C

Dash Number Note 1, 2	Output Frequency Range	Input Current (max) @ 5.25 V ±1% mA Note 3	Pulse Characteristics			Initial Accuracy ppm @ 23°C (to 30 days post ship)	Aging ppm/yr (After 30 days)	Frequency Tolerance ppm Note 2		
			Rise & Fall Time (max) ns Note 4	Duty Cycle @1.4V percent	Load (max) Note 5			-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
01	1.0 MHz to 5.0 MHz	70	15	40 to 60	10 TTL	15	10	±50	±40	±25
02	1.0 MHz to 5.0 MHz	70	15	40 to 60	10 TTL	25	10	±100	±75	±50
03	1.0 MHz to 5.0 MHz	70	15	40 to 60	10 TTL	25	10	±200	±150	±100
11	5.0 MHz to 20.0 MHz	30	15	40 to 60	10 TTL	15	10	±50	±40	±25
12	5.0 MHz to 20.0 MHz	30	15	40 to 60	10 TTL	25	10	±100	±75	±50
13	5.0 MHz to 20.0 MHz	30	15	40 to 60	10 TTL	25	10	±200	±150	±100
21	20.0 MHz to 60.0 MHz	65	5	40 to 60	10 TTL	15	10	±50	±40	±25
22	20.0 MHz to 60.0 MHz	65	5	40 to 60	6 TTL	25	10	±100	±75	±50
23	20.0 MHz to 60.0 MHz	65	5	40 to 60	6 TTL	25	10	±200	±150	±100

MIL-PRF-55310/25 40 MHz – 125 MHz ECL Oscillator

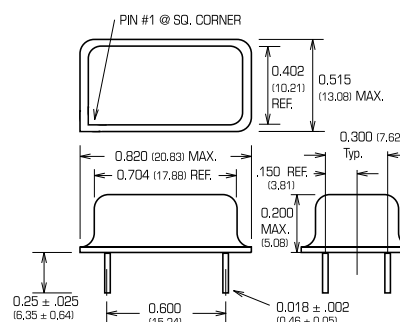
A CONFIGURATION Generic Equivalent is McCoy 771



PIN CONNECTIONS

7 – B-
8 – Output
14 – GND/Case
All Others N/C

B CONFIGURATION Generic Equivalent is McCoy 770



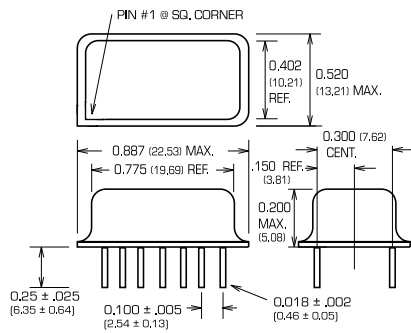
PIN CONNECTIONS

7 – B-
8 – Output
14 – GND/Case
All Others N/C

Dash Number	Configuration	Output Frequency Range	Input Current (max) @ 5.25 V ±5% mA	Pulse Characteristics			Initial Accuracy ppm @ 23°C (to 30 days post ship)	Aging ppm/yr (After 30 days)	Frequency Temp. Accuracy ppm		
				Rise & Fall Time (max) ns Note 7	Duty Cycle min-max @50% percent	Load Test to -2Vdc Note 8 Ohms			-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
02	03	40 MHz to 100 MHz	50	3.5	40 to 60	50	15	5	±65	±55	±40
06	07	40 MHz to 100 MHz	75	3.5	40 to 60	100	15	5	±65	±55	±40
10	11	40 MHz to 100 MHz	50	3.5	40 to 60	50	25	10	±100	±75	±50
14	15	40 MHz to 100 MHz	75	3.5	40 to 60	100	25	10	±100	±75	±50
32	33	100 MHz to 125 MHz	60	3.5	40 to 60	50	15	5	±65	±55	±40
36	37	100 MHz to 125 MHz	75	3.5	40 to 60	100	15	5	±65	±55	±40
40	41	100 MHz to 125 MHz	60	3.5	40 to 60	50	25	10	±100	±75	±50
44	45	100 MHz to 125 MHz	60	3.5	40 to 60	100	25	10	±100	±75	±50
62	63	125 MHz to 130 MHz	70	3.0	40 to 60	50	15	5	±65	±55	±40
66	67	125 MHz to 130 MHz	125	3.0	40 to 60	100	15	5	±65	±55	±40
70	71	125 MHz to 130 MHz	70	3.0	40 to 60	50	25	10	±100	±75	±50
74	75	125 MHz to 130 MHz	125	3.0	40 to 60	100	25	10	±100	±75	±50

MIL-PRF-55310/26 375 kHz – 65 MHz AC MOS Oscillator

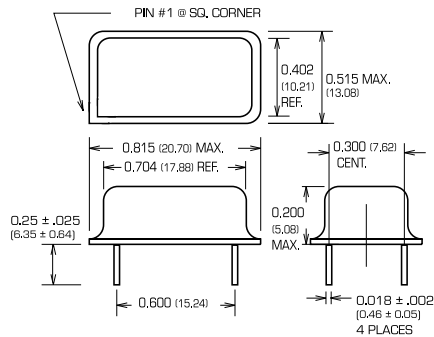
A CONFIGURATION Generic Equivalent is McCoy 748



PIN CONNECTIONS

- 7 – GND/Case
- 8 – Output
- 14 – B+
- All Others N/C

B CONFIGURATION Generic Equivalent is McCoy 728



PIN CONNECTIONS

- 7 – GND/Case
- 8 – Output
- 14 – B+
- All Others N/C

Dash Number		Output Frequency Range MHz	Input Current (max) @ 5.0 V ±10% mA	Pulse Characteristics		Initial Accuracy ppm @ 23°C (to 30 days post ship)	Aging ppm/yr (After 30 days)	Frequency Temp. Accuracy ppm		
				Rise & Fall Time (max) ns	Duty Cycle min-max @50% percent			-55 °C +125 °C A	-55 °C +105 °C B	-20 °C +70 °C C
Configuration A	B									
02	03	.375 to 1.0	10	10	45 to 55	15	5	±65	±55	±40
06	07	.375 to 1.0	10	10	45 to 55	25	10	±100	±75	±50
22	23	1.0 to 4.0	15	10	45 to 55	15	5	±65	±55	±40
26	27	1.0 to 4.0	15	10	45 to 55	25	10	±100	±75	±50
32	33	4.0 to 20.0	20	10	40 to 60	15	5	±65	±55	±40
36	37	4.0 to 20.0	20	10	40 to 60	25	10	±100	±75	±50
42	43	20.0 to 35.0	35	10	40 to 60	15	5	±65	±55	±40
46	47	20.0 to 35.0	35	10	40 to 60	25	10	±100	±75	±50
52	53	35.0 to 50.0	40	5	40 to 60	15	5	±65	±55	±40
56	57	35.0 to 50.0	40	5	40 to 60	25	10	±100	±75	±50
62	63	50.0 to 65.0	70	5	40 to 60	15	5	±65	±55	±40
66	67	50.0 to 65.0	70	5	40 to 60	25	10	±100	±75	±50

HIGH RELIABILITY PROGRAMS

OFC has manufactured components for many high reliability programs, including:

Space Shuttle	Global Positioning System (GPS)
Space Station	SADARM
Centaur Missile	DSCS satellite
NSCAT (NASA satellite)	MILSTAR
TDRSS satellite	

The high reliability clock oscillators manufactured by OFC have met very stringent environmental requirements, including:

- Vibration: Random to 97 g's rms
- Mechanical shock for cannon launch (10,000 g's, 4.5 ms, 1/2 sine)
- 30,000 g's centrifuge acceleration
- Thermal cycling from -60°C to +130°C for >100 cycles
- Liquid immersion thermal shock from 0 to 100°C
- Operating temperature range to +200°C
- Radiation hardened clock oscillators to RHA Level R (100 Krads)
- Radiation levels on ACMOS/SOS product to 4×10^{11} rad/s without clock upset, and total dose of 1 Mrad

Depending on program requirements, hybrid oscillators may be processed in one of three methods as outlined below. Customers procuring oscillators for high reliability or space applications are encouraged to contact our applications engineering team for additional details.

HIGH RELIABILITY PROCESSING OPTIONS

MIL-PRF-55310, CLASS S

- Element evaluation
- Microcircuits & semiconductor dice
- Passive elements
- Package
- Device screening
- Group A inspection (MIL-PRF-55310 electricals)
- Group B inspection (Aging)
- Group C inspection

MIL-H-38534, CLASS K

- Element evaluation
- Microcircuits & semiconductor dice
- Passive elements semiconductor dice
- Package
- Device screening
- Group A electrical test (Customer specifications)
- Group B testing
- Group C testing
- Group D package Related tests
- Group E radiation testing

CUSTOMER SPECIFICATIONS

With an intermix of:

- MIL-PRF-55310, Class S
- MIL-H-38534, Class K
- Special & Additional

Requirements:

Electrical
Mechanical
Environmental

CAPABILITY: OFC has facilities to provide all electrical, screening and environmental testing, except internal water vapor content and radiation, which are performed at a DESC approved facility. Quality Assurance Program is in accordance with MIL-STD-790.

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