PLETRONICS
www.pletronics.com 425-776-1880

OHM4 Series 5.0V CMOS Oven Controlled Oscillators

May 2008

- Ovenized quartz crystal high precision square wave generator with a CMOS output.
- Tube packaging is available.
- 10 to 40 MHz
- Full Size Thru-Hole DIP package
- Electronic Frequency Control (EFC) optional
- Low Jitter - Good phase noise characteristics

Pletronics Inc. certifies this device is in accordance with the RoHS 6/6 (2002/95/EC) and WEEE (2002/96/EC) directives.

Pletronics Inc. guarantees the device does not contain the following:
Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
Weight of the Device: 6.2 grams
Moisture Sensitivity Level: 1 As defined in J-STD-020C
Second Level Interconnect code: e1

Absolute Maximum Ratings:

Parameter	Unit
V_{CC} Supply Voltage	-0.5V to +7.0V
Vi Input Voltage	-0.5V to V_{CC} + 0.5V
Vo Output Voltage	-0.5V to V_{CC} + 0.5V

Reliability: Environmental Compliance

Parameter	Condition
Vibration	10 to 2000 Hz / 10 g
Shock	2000 g, 0.3 mS, ½ sine
Solderability	MIL-STD-883 Method 2003
Thermal Shock	MIL-STD-883 Method 1011, Condition A

OHM4 Series 5.0V CMOS
Oven Controlled Oscillators

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Part Number (specification values shown are typical, call for other options)**:**

OHM4048052	G	G	010	040	- 20.00M	-XX

Internal code or blank

Frequency MHZ (standards Shown)
10.000 12.800 16.000 16.384
19.440 20.000 32.768 40.000

Electronic Frequency Control
000 = No EFC
030 = ± 3.0 ppm minimum
080 = ± 8.0 ppm minimum
150 = ± 15.0 ppm minimum
999 = ± 4.0 ppm with 0 to 10K ohm

Frequency Stability (examples shown here)
003 = ± 25 ppb for 0°C to 60°C
008 = ± 75 ppb for 0°C to 60°C
005 = ± 50 ppb for -20°C to 70°C
015 = ± 150 ppb for -20°C to 70°C
010 = ± 100 ppb for -40°C to 85°C
025 = ± 250 ppb for -40°C to 85°C

Upper Operating Temperature
C = 50°C **F** = 65°C **J** = 80°C
D = 55°C **G** = 70°C **K** = 85°C
E = 60°C **H** = 75°C **L** = 90°C

Lower Operating Temperature
A =10°C **D** = -5°C **G** = -20°C **J** = -30°C
B = 5°C **E** = -10°C **H** = -25°C **K** = -35°C
C = 0°C **F** = -15°C **I** = -30°C **L** = -40°C

Series Model

Part Marking:

PLE
OHM4050c
***fff.fff* M**
ymdannn

Where: *c* = N for no EFC, R for resistor, V for voltage
fff.fff = Frequency in MHZ
Ymda = Date code (Year Month Day plus internal code)
nnn = Device number

Standard values are listed, consult Pletronics Inc. for other options. Specifications such as frequency stability and operating temperature range, etc. are not identified from the marking. External packaging labels and packing list will correctly identify the ordered Pletronics part number.

Codes for Date Code YMD

Code	6	7	8	9	0	1	2
Year	2006	2007	2008	2009	2010	2011	2012

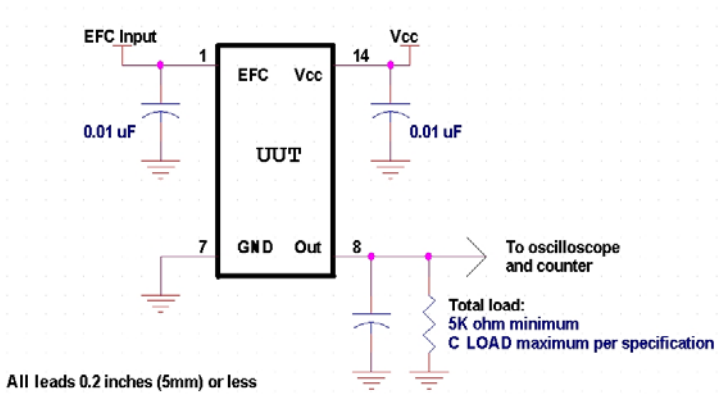
Code	A	B	C	D	E	F	G	H	J	K	L	M
Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

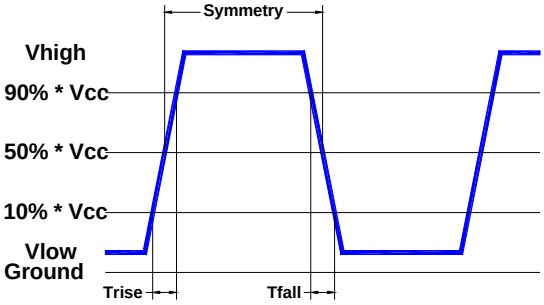
Code	1	2	3	4	5	6	7	8	9	A	B	C
Day	1	2	3	4	5	6	7	8	9	10	11	12
Code	D	E	F	G	H	J	K	L	M	N	P	R
Day	13	14	15	16	17	18	19	20	21	22	23	24
Code	T	U	V	W	X	Y	Z					
Day	25	26	27	28	29	30	31					

Specification for 5.00V ±0.20V over the specified temperature range

Item	Min	Max	Unit	Condition	
Frequency Range	10	40	MHz	See list of standard frequencies	
Frequency Accuracy vs. Temperature	250	± 250	ppb	determined by part number	
Frequency Accuracy vs. Supply	-100	+100	ppb	for Supply change of 0.2V	
Frequency Accuracy vs. Load	-10	+10	ppb	Load change of ±10%	
Frequency Accuracy Short Term	-0.5	+0.5	ppb	for periods of 0.1 seconds to 30 seconds	
Aging 1st Year	-0.70	+0.70	ppm		
10 Years	-4.0	+4.0	ppm	Accumulated for 10 years	
Frequency Control Voltage	-4.0	+4.0	ppm	0.5V to 5.0V, determined by part number > 47 K ohm	
(positive slope) Resistance	-4.0	+4.0	ppm	0 to 10 Kohm, determined by part number > 4.7 K ohm	
Phase Noise 1 Hz 10 Hz 100 Hz 1,000Hz	-- -- -- --	-70 -100 -130 -140	dBc/Hz		
Warmup	--	30	sec	within specification after turn on at 0°C	
Output Waveform	CMOS				
Output High Level	0.4	--	V	Below V_{CC}	See Load Circuit Cload = 15 pF
Output Low Level	--	0.4	V		
Output Symmetry	40	60	%	at 50% of V_{CC}	
T_{rise} and T_{fall}	--	7	nS	10% to 90% of V_{CC}	
Power Supply Current	--	110	mA	at -20°C	
	--	70	mA	at +30°C	
Warmup	--	250	mA	for 10 seconds maximum	
Operating Temperature Range	-40	+85	°C	Part number defines the temperature range to meet the accuracy specification	
Storage Temperature Range	-55	+125	°C		

Load Circuit and Test Waveform





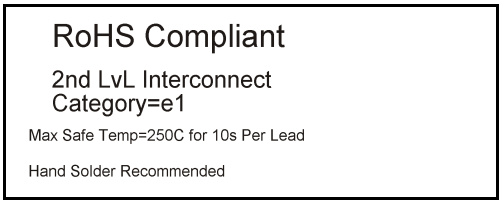
ESD Rating

Model	Minimum Voltage	Conditions
Human Body Model	2000	MIL-STD-883 Method 3115
Charged Device Model	2000	JESD 22-C101

Package Labeling

Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Courier New
Bar code is 39-Full ASCII

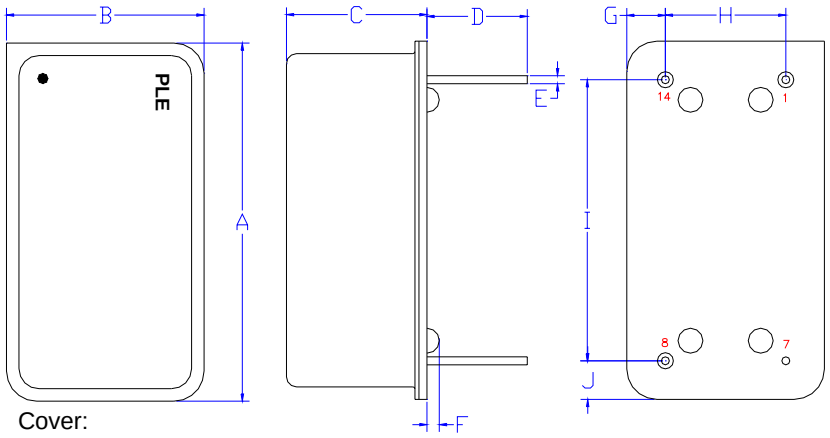
Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Arial



PCB Mounting (typical for lead free processing)

Hand soldering is recommended at 245°C ± 5°C for 5 seconds maximum per pin

Mechanical:



Cover:
Kovar
Electroless Nickel Plated
1 µinch (25 µm) typical
Resistance welded to base

Label:
Laser Engraved – or –

White Kapton with Black Letters

Base:
Kovar
Glass to metal sealed leads

Pin 7 Connected to case

Not to scale

	Inches	mm
A	0.800 ±0.005	20.3 max
B	0.52 ±0.005	13.2 max
C	0.315 max	8.00 max
D[1]	0.250	6.35
E[1]	0.020	0.51
F[1]	0.040 max	1.0 max
G[1]	0.110	2.79
H	0.300	7.62
I[1]	0.600	15.24
J[1]	0.100	2.53

[1] Nominal dimension

Pin	Function	Note
1	EFC	10 K ohm to ground –OR– 0.5 to 5.0V control voltage, depends on option ordered. Use the 30% value for initial operation
7	Ground (GND)	
8	Output	
14	Supply Voltage (V_{CC})	Recommend connecting appropriate power supply bypass capacitors as close as possible.

Layout and application information

For Optimum Jitter Performance, Pletronics recommends:
- Minimize air flow over the oscillator
- Stabilize the power supply voltage for best performance.

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