



OHM4 Series 5.0 V Oven Controlled Oscillators

May 2006

- 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 5/6 (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 or e2

Absolute Maximum Ratings:

Parameter	Unit
V _{CC} Supply Voltage	-0.5V to +7.0V
V _i Input Voltage	-0.5V to V _{CC} + 0.5V
V _o 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

Part Number:

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 020 = \pm 2.0 ppm minimum 040 = \pm 4.0 ppm minimum 150 = \pm 15.0 ppm minimum 999 = \pm 4.0 ppm with 0 to 10K ohm
							Frequency Stability 003 = \pm 25 ppb for 0°C to 60°C 008 = \pm 75 ppb for 0°C to 60°C 005 = \pm 50 ppb for -20°C to 70°C 015 = \pm 150 ppb for -20°C to 70°C 010 = \pm 100 ppb for -40°C to 85°C 025 = \pm 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 C = 0°C F = -15°C J = -30°C D = -5°C G = -20°C K = -35°C E = -10°C H = -25°C L = -40°C
							Series Model

Standard values are listed, consult Pletronics Inc. for other options.

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
nnn = Device number



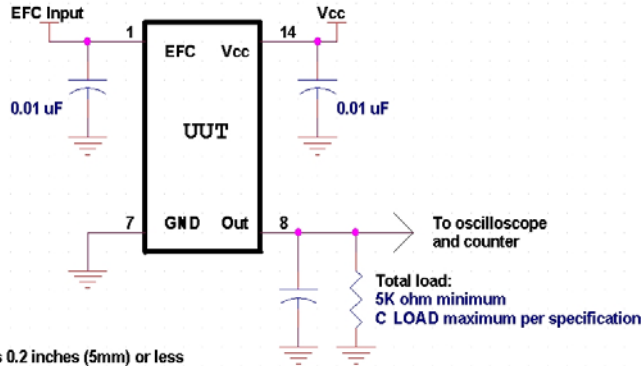
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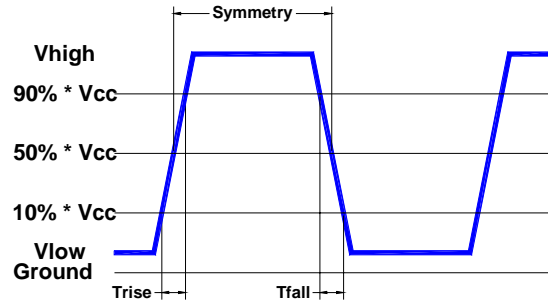
Specification for 5.00V $\pm 0.20V$ over the specified temperature range

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 $\pm 10\%$	
Frequency Accuracy Short Term	-0.5	+0.5	ppb	for periods of 0.1 seconds to 30 seconds	
Aging	1 st 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	--	-70	dBc/Hz	
	10 Hz	--	-100		
	100 Hz	--	-130		
	1,000Hz	--	-140		
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 Clod = 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



All leads 0.2 inches (5mm) or less



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

P/N:	 OHM4048052GG010040-20.00M	
Customer P/N:	 12345678	
Qty:	 1000	D/C 0510M012

Pb Free

2nd LvL Interconnect
Category=e1

Max Safe Temp=245C for 10s (Reflow only) 2X Max
Max Safe Temp=280C for 15s (Wave solder only)

Pb Free

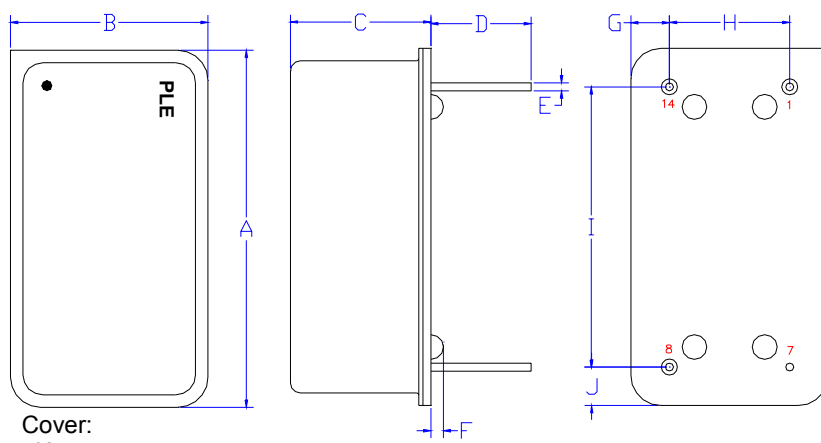
2nd LvL Interconnect
Category=e2

Max Safe Temp=245C for 10s (Reflow only) 2X Max
Max Safe Temp=280C for 15s (Wave solder only)

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

Base:
Kovar
Glass to metal sealed leads

Label:
Laser Engraved – or –

Pin 7 Connected to case

White Kapton with Black Letters

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

Pad	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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