



OeM4 Series TCVCXO Oscillator

July 2010

- Pletronics' OeM4 is from the OeXO™ Series of temperature compensated voltage controlled crystal oscillator with a CMOS output.
- Tube packaging is available
- OCXO equivalent Crystal Oscillator Series
- Metal Package to replace DIP/DIL OCXOs
- Optional Voltage Control Function
- Supply Voltage range: 2.7V to 30V

Please submit your requirements to Pletronics for review and quotation

**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: 4.00 grams
Moisture Sensitivity Level: 1 As defined in J-STD-020D.1
Second Level Interconnect code: e1



Absolute Maximum Ratings:

Parameter	Unit
V _{CC} Supply Voltage	-0.5V to +6.5V
V _i Input Voltage	-0.5V to +6.5V
V _o Output Voltage	-0.5V to +6.5V

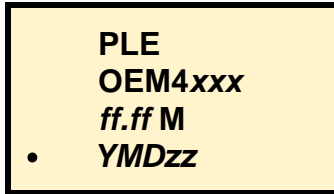
Thermal Characteristics

The maximum die or junction temperature is 155°C
The thermal resistance junction to board is 120°C/Watt depending on the solder pads, ground plane and construction of the PCB.

ESD Rating

Model	Minimum Voltage	Conditions
Human Body Model	1500	MIL-STD-883 Method 3115
Charged Device Model	1000	JESD 22-C101

Part Marking:



PLE = Pletronics
 OEM4 = Model number of the series
 ff.ff = ff.ff frequency in MHz
 xxx = Model number
 YMD = Year, Month and Date of manufacture
 zz = internal factory code

Codes for Date Code YMD

Code	0	1	2	3	4	Code	A	B	C	D	E	F	G	H	J	K	L	M
Year	2010	2011	2012	2013	2014	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	D	E	F	G
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Code	H	J	K	L	M	N	P	R	T	U	V	W	X	Y	Z
Day	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Reliability: Environmental Compliance

Parameter	Condition
Mechanical Shock	MIL-STD-883 Method 2002, Condition B
Vibration	MIL-STD-883 Method 2007, Condition A
Solderability	MIL-STD-883 Method 2003
Thermal Shock	MIL-STD-883 Method 1011, Condition A

Package Labeling

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





Font is Courier New

Bar code is 39-Full ASCII

The bar code will show the actual Part Number

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

Font is Arial

P/N:  OEM4xxx-ff.ffM Customer P/N:  123456 Qty:  1000 D/C  0GD MSL: 1

RoHS Compliant 2nd Lvl Interconnect Category=e4 Max Safe Temp=260C for 10s 2X Max

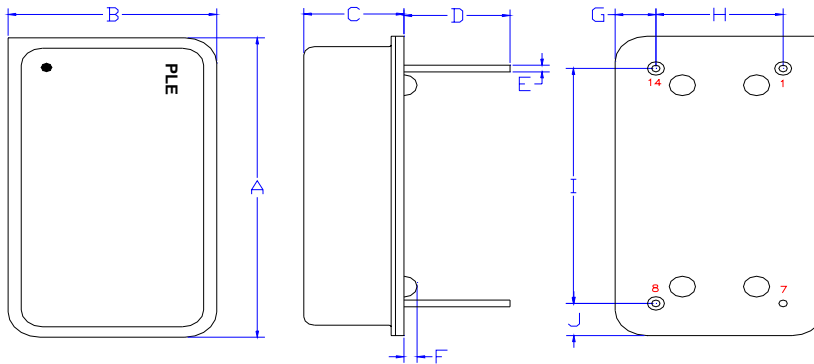
Electrical Specification for specified Vcc $\pm 5\%$ over the specified temperature range, typical stability options are listed.

Item	Min	TYP	Max	Unit	Condition	
Frequency Range	10	-	40	MHz		
Frequency Stability over temperature ²	-100 -250 -75 -50	- - - -	100 250 75 50	ppb	Over -40°C to 85°C Over -40°C to 85°C Over -20°C to 70°C Over 0°C to 70°C	
Holdover ²	-200 -100	0 0	200 100	ppb	Over -40°C to 85°C for 24 hours Over 0°C to 70°C for 24 hours	
Frequency Calibration	-2.0	-	2.0	ppm	Frequency offset at 25°C, 60 minutes after reflow.	
Supply voltage stability	-10	0	10	ppb	$\pm 2\%$ variation in supply voltage	
Load sensitivity	-5	-	5	ppb	5K ohm $\pm 10\%$ 15 pF $\pm 10\%$	
Warm Up	-	0.4	3.0	S	Time to reach specified frequency	
Aging rate following reflow	- - -	± 10 ± 3 ± 1	- - -	ppb/day	1 day after reflow 7 days after reflow 30 days after reflow	
Long term stability (Aging)	-1000 -1500 -4600	- - -	1000 1500 4600	ppb	after 1 year after 5 years after 15 years	
Output Waveform	CMOS					
Output V _{HIGH}	90	-	-	%V _{OUT}	Load: 10K ohm $\pm 5\%$ 15 pF $\pm 10\%$ Vth: T _R and T _F 10% and 90% of amplitude Vth: D.C. 50% of amplitude V _{OUT} can be specified to be 2.5V, 3.3V or 5.0V nominal	
Output V _{LOW}	-	-	10	%V _{OUT}		
T _{RISE} and T _{FALL}	-	-	6.5	nS		
Duty Cycle	40	50	60	%		
Phase Noise	10 Hz 100 Hz 1 KHz 10 KHz	- - - -	-100 -120 -134 -144	- - - -	dBc/Hz	Typical values for a 26.0 MHz oscillator at 25°C
Jitter	-	-	0.6	pS	Frequency offset from carrier 12KHz to 20MHz	
V Supply Range ^{1,2} V _{CC}	2.7	-	30	Volts		
Supply Current ² I _{CC}	- - -	- - -	4.5 5.5 6.5	mA	10MHz 25MHz 40MHz	
Vcontrol Range	0.5	-	2.50	Volts	1.50 volts nominal	
Frequency Pullability	4.5	-	10	\pm ppm	Slope positive	
Linearity	-	0.05	2.0	%	In accordance with MIL-PRF-55310	
Operating Temperature	-40	-	+85	°C	Widest range allowed	
Storage Temperature	-55	-	+95	°C		

Note: ¹ For correct operation a 10nF supply de-coupling capacitor should be placed next to the device.

² Typical capabilities shown. The OeXO™ datasheet for the specific device shows the specification for the specific part number.

Mechanical:



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

Base:
Kovar
Glass to metal sealed leads

Label:
Laser marked

Pin 7 Connected to case

Not to scale

	Inches	mm
A	0.787 ±0.005	20.00 ±0.13
B	0.487 ±0.005	12.37 ±0.13
C	0.225 ±0.011	5.72 ±0.28
D ¹	0.250	6.35
E ¹	0.020	0.51
F ¹	0.031	0.79
G ¹	0.094	2.37
H ¹	0.300	7.62
I ¹	0.600	15.24
J ¹	0.094	2.37

¹ Nominal dimension

Layout and application information

For Optimum Stability and Jitter Performance, Pletronics recommends:

- a ground plane under the device
- no large transient signals (both current and voltage) should be routed under the device
- do not layout near a large magnetic field such as a high frequency switching power supply
- do not place near piezoelectric buzzers or mechanical fans.
- minimize air flow across the device

PCB Mounting (typical for lead free processing)

Hand soldering is recommended.

Wave solder at 255°C to 280°C with maximum wave exposure of 15 seconds

Reflow solder maximum exposure of 245°C for 15 seconds
Soldering done in a nitrogen atmosphere enhances the solder joint quality.

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