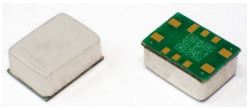
PLETRONICS OHA4 7x5mm SMD OCXO



OHA4 Series
7.5 x 5.5 x 3.3 mm
10 Pad SMD Package

Features

- Ovenized Quartz Crystal High Precision Square Wave Generator
- CMOS
- 3.3V nominal Supply Voltage
- 10.0MHz - 40MHz Frequency Range
- Voltage control option available

Applications

SONET / SDH / DWDM
Test & Measurement
Telecom Transmission & Switching Equipment
Base Stations / Picocell
Wireless Communication Equipment
Packet Timing Protocol (e.g. IEEE-1588)

Electrical Characteristics

Parameter	Min	Typ	Max	Unit	Condition
Frequency	10	-	40	MHz	Standard frequencies: 10, 12.8, 19.2, 20, 30.72, 38.88MHz
Frequency Stability vs Temperature	±20	-	±100	ppb	±10ppb available over temp range –20 to 70°C
Initial Frequency Tolerance	-	-	±1.5	ppm	Referenced to 25°C within 30 days of shipment
Frequency Stability vs Supply	-	-	±10	ppb	±5% voltage change
Frequency Stability vs Load	-	-	±10	ppb	CL ± 5%
Output Type		CMOS			CL = 15 pF
Warm-up Time	-	-	60	s	Time until RF output is within ± 0.025 ppm referenced to last frequency reading 1 h after startup
Aging	-	-	±3	ppb	per day after 30 days, at 25°C, 3.3V
	-	-	±0.3	ppm	per year, after 30 days operation
Operating Temperature Range	-40	-	+95	°C	Rate of change for stability specification is <±2°C/minute
Operable Temperature Range	-40	-	+105	°C	
Supply Voltage [1] V_{CC}	3.135	3.3	3.465	V	
Input Current - Turn-on	-	-	600	mA	@ 25°C, 3.3V
Input Current - Steady State	-	-	230	mA	@ 25°C, 3.3V
Phase Noise 1 Hz 10 Hz 100 Hz 1 kHz 10 kHz 100 kHz 1 MHz	-	-72 -110 -143 -158 -163 -164 -165	-	dBc/Hz	At 20MHz
Storage Temperature Range	-55	-	+105	°C	
Vcontrol Range (With voltage control option)	0	1.65	3.3	V	
Pullability (With voltage control option)	±2	-	-	ppm	Referenced to measurement at 1.65V; Slope positive

HCMOS

Parameter	Min	Typ	Max	Unit	Condition
Output Waveform		Squarewave			
"1" Level	2.4	-	-	V	
"0" Level	-	-	0.4	V	
Load	-	15	-	pF	
Duty Cycle	45	50	55	%	@ 0.5Vcc
Raise/Fall Time	-	-	6	ns	@ 0.1Vcc~0.9Vcc

Note: [1] Place a 10nF power supply bypass capacitor next to device for correct operation

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Device Marking

P*xx.xx*M • *YMDz xxx*	P	= Pletronics
	*xx.xx*M	= Frequency (M = MHz)
	YMD	= Date code (Year-Month-Day: See Table below)
	z	= Internal Code
	S/N: *xxx*	= Serial number

* A unique number is assigned for your exact specifications.
Specifications such as part number, frequency stability, supply voltage and operating temperature range, etc. are not identified from marking.
External packaging labels and packing list will correctly identify the ordered Pletronics part number.

Codes for Date Code YMD (Year Month Day)

Code	3	4	5	6	7	Code	A	B	C	D	E	F	G	H	J	K	L	M
Year	2023	2024	2025	2026	2027	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	H	J	K	L	M	N	P	R	T	U	V	W	X	Y	Z
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Environmental / ESD Ratings

Parameter	Ref Standard	Condition
Solderability	MIL-STD-202, Method 208	
Mechanical Shock	IEC 60068-2-27	100g, 6ms, half sine wave (3 times for each 3 directions X ,Y, Z)
Vibration	IEC 60068-2-6	10 ~ 2000Hz, 0.75mm, 10g; 1 cycle 30 minutes, test 2 hours. 3 times for each 3 directions X ,Y, Z

Model	Voltage	
Human Body Model	Class 2: 2000V ~ <4000V	JEDEC JS-001-2010
Machine Model	Class B: 200V ~ 400V	JESD22-A115C

Pletronics Inc. certifies this device is in accordance with the RoHS and REACH directives.

Pletronics Inc. guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
Moisture Sensitivity Level: 3 As defined in J-STD-020D
Second Level Interconnect code: e4
Product Weight: 0.153g

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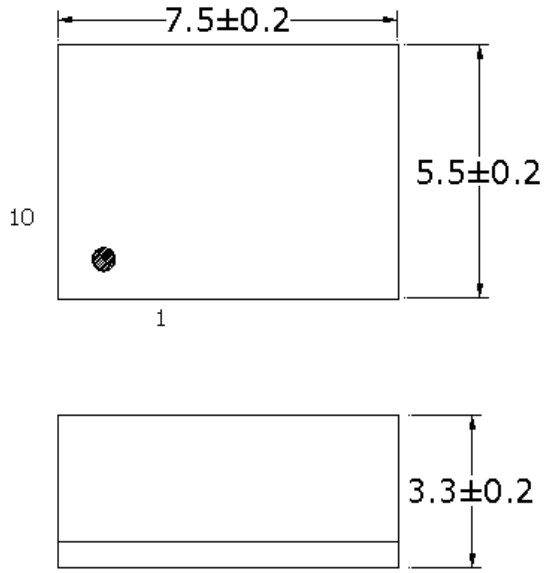
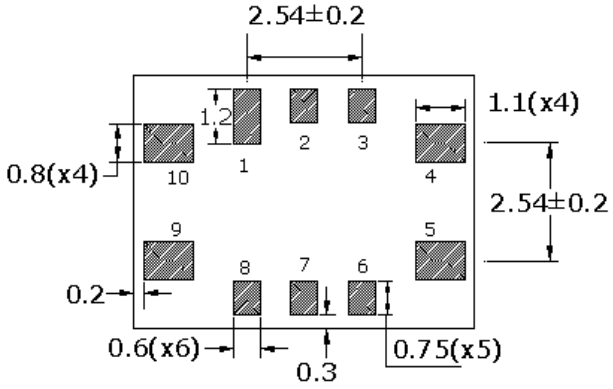
Mechanical Dimensions

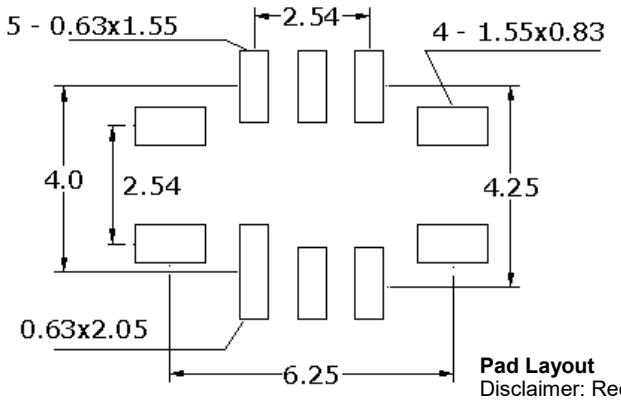


Pin Connections	
PIN	FUNCTION
1,2,3,6,7,8	No Connect
4	GND
5	Output
9	Vcc
10	No Connect or Vc



Pad reference numbers not marked on device

Dimensions in mm



Pad Layout
Disclaimer: Recommended layout shown. Adjust layout as needed for individual process requirements.

Contacts (pads): ENIG

For Optimum Jitter Performance, Pletronics recommends:

- A ground plane under the device
- Do not route large transient signals (both current and voltage) under the device
- Do not place 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

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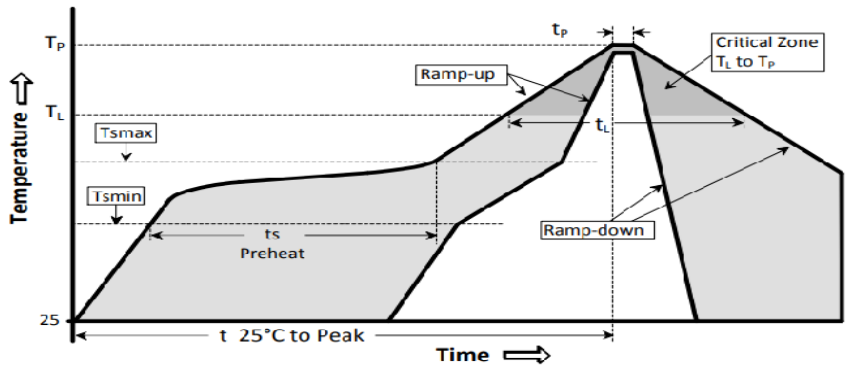
Reflow

Maximum Reflow Conditions

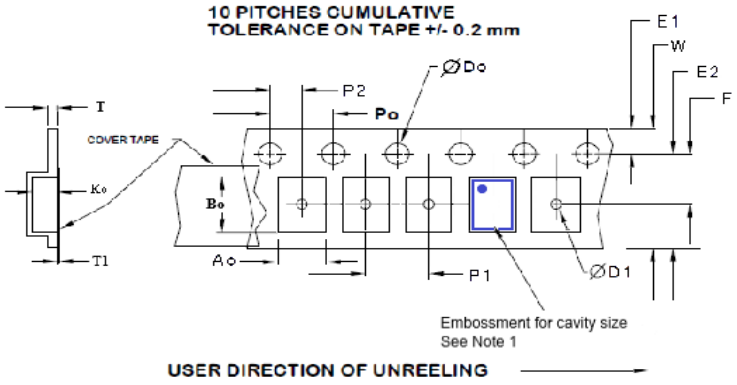


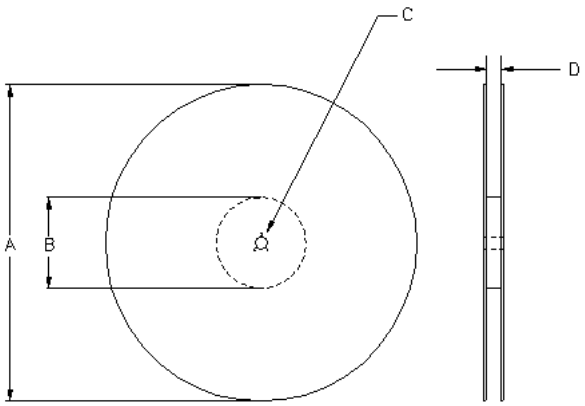
Temperature Profile	Symbol	Condition	Unit
Average ramp-up rate	(Ts_{max} to T_p)	3°C / second max	°C / s
Ramp down Rate	T_{cool}	6°C / second max	°C / s
Time 25°C to Peak Temperature	$T_{to-peak}$	8 minutes max	min
Preheat			
Temperature min	Ts_{min}	150	°C
Temperature max	Ts_{max}	200	°C
Time Ts_{min} to Ts_{max}	ts	60 – 180	sec
Soldering above liquidus			
Temperature liquidus	T_L	217	°C
Time above liquidus	t_L	60 – 150	sec
Peak temperature			
Peak Temperature	Tp	260	°C
Time at peak temperature	tp	10 max	sec

The part may be reflowed 2 times without degradation (typical for lead free processing).
NO AQUEOUS WASHING

Tape and Reel

Tape and Reel available for quantities of 250 to 1000 per reel, cut tape for < 250. 16mm tape, 8mm pitch.





Tape Variable Dimensions Table 2									
Part Size	Tape Size	E2 typ	F	P1	W max	Ao	Bo	Ko	Qty/reel standard
7050	16mm	14.25	7.5 ±0.05	8.0 ±0.1	16.3	6.0 ± 0.2	8.0 ± 0.2	4.0 ± 0.2	1K

Dimensions in mm Drawings Not to scale
Note 1: Embossed cavity to conform to EIA– 481-B

Tape Constant Dimensions Table 1							
Tape Size	Do	D1 typ	E1	Po	P2	T typ	T1 max
16mm	1.5 +0.1 -0.0	1.5	1.75 ±0.1	4.0 ±0.1	2.0 ±0.1	0.3	0.1

Reel Dimensions (1K pcs) Table 3						
	A		B		C	D
Reel Size	Inches	mm	Inches	mm	mm	mm
13	13.0	330	3.75	95.3	13.0 +0.5 -0.2	Tape size +0.4 +2.0 -0.0

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