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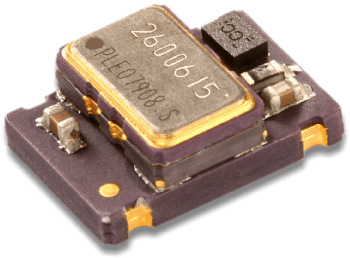


THA3004-16.384MHz
Stratum-III Series
TCVCXO

October 2011

Lead Free

- Pletronics' THA3004-16.384 is a temperature compensated crystal oscillator
- Optional Voltage Control Function
- HCMOS output.
- The package is designed for high density surface mount designs.
- Tape and Reel packaging is available.
- Select Stratum-III frequencies available
- 5 x 7 mm LCC Ceramic Package

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: 0.10 grams
Moisture Sensitivity Level: 1 As defined in J-STD-020D.1
Second Level Interconnect code: e4

Absolute Maximum Ratings:

Parameter	Unit
V_{CC} Supply Voltage	-0.5V to +6.5V
Vi Input Voltage	-0.5V to V_{CC} + 0.5V
Vo Output Voltage	-0.5V to V_{CC} + 0.5V

Thermal Characteristics

The maximum die or junction temperature is 155°C
The thermal resistance junction to board is 30 to 50°C/Watt depending on the solder pads, ground plane and construction of the PCB.

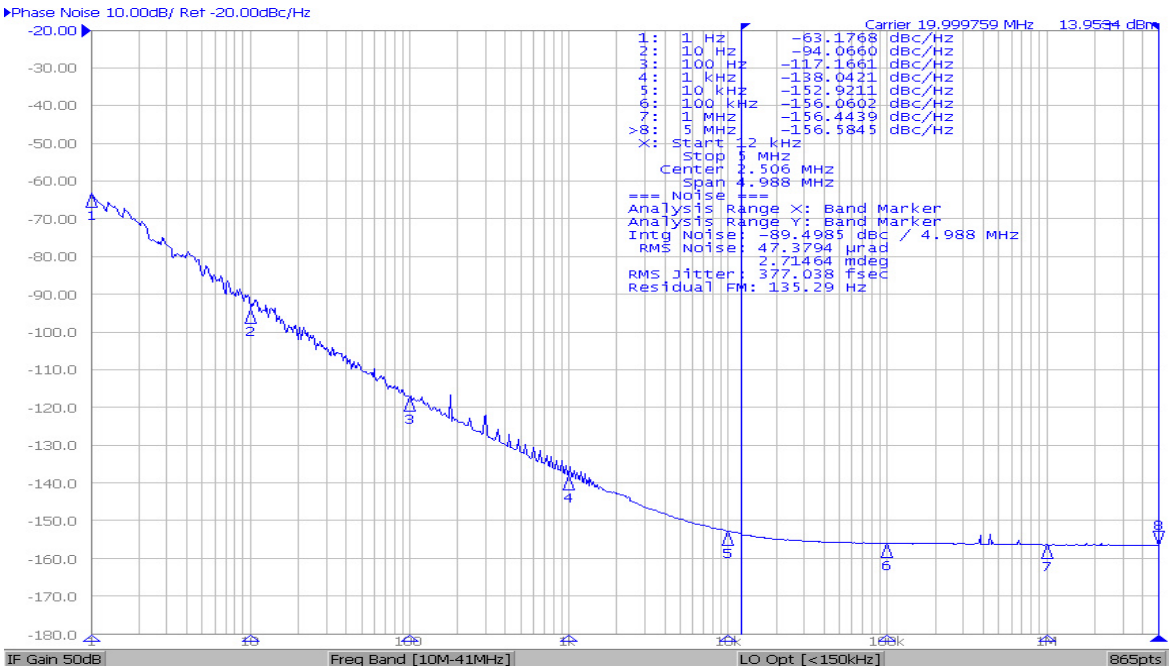
ESD Rating

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

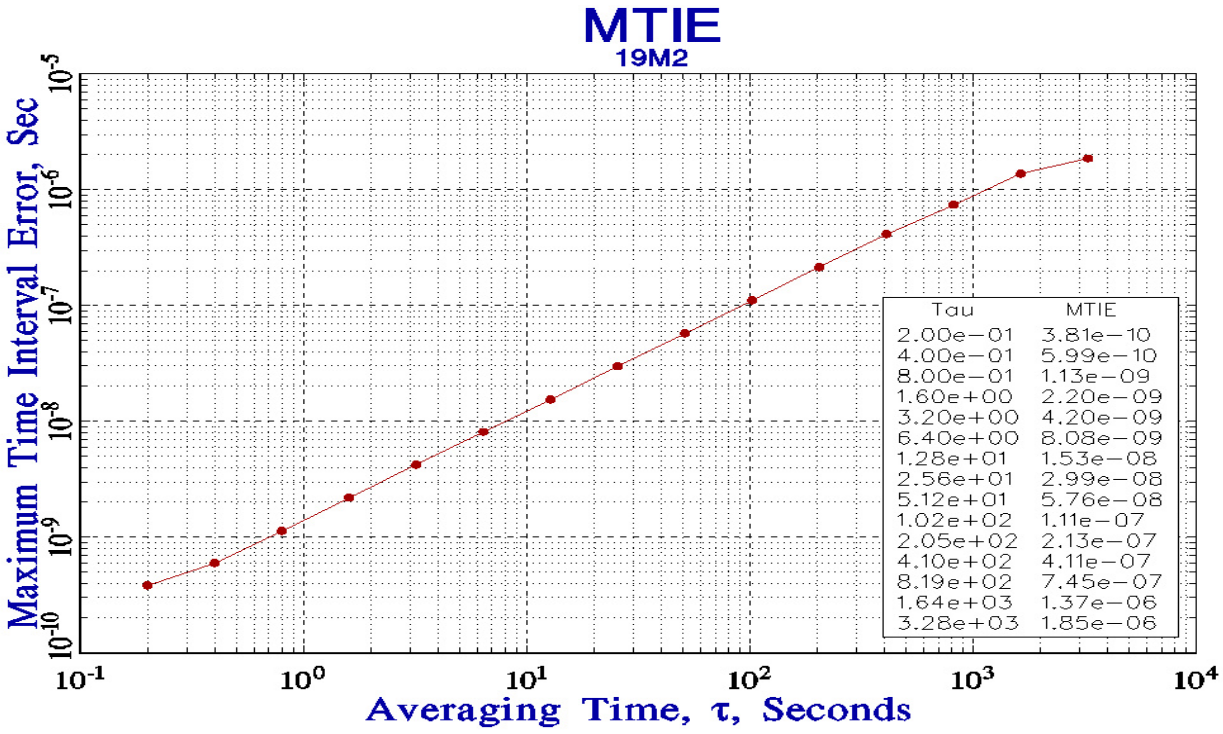
Electrical Specification for specified Vcc over the specified temperature range

Item	Min	TYP	Max	Unit	Condition
Frequency Range		16.384		MHz	
Frequency Stability [1]	-0.28		+0.28	ppm	Vcontrol @ 1.50 volts (Fmax-Fmin)/2
Holdover	-0.37		+0.37	ppm	GR-1244-CORE
Frequency Calibration	-0.5		+0.5	ppm	Frequency offset at 25℃, 60 minutes after reflow
Frequency Stability / Supply	-0.1		+0.1	ppm	Load: 10K ohm // 10 pF & Vcc ± 5%
Load Sensitivity	-0.2		+0.2	ppm	±2% variation in magnitude from 10K ohm ±10% || 10 pF
Long Term Stability (Aging)	-3.4		+3.4	ppb	After 15 years.
Output Waveform	CMOS				
Output V_{HIGH} as % of Supply	90			$\%V_S$	Load: 10K ohm ± 10% // 10 pF ± 10%
Output V_{LOW} as % of Supply			10	$\%V_S$	
T_{RISE} and T_{FALL} (10% to 90%)			6.5	nS	
Duty Cycle at 50% Supply	40	50	60	%	
Phase Noise 10 Hz 100 Hz 1 kHz 10 kHz	- - - -	-90 -115 -135 -145	- - - -	dBc/Hz	Typical values for a 20.0 MHz oscillator at 25℃
Jitter	-	-	1.7	pS	10 Hz to 1 MHz offset from carrier
V Supply Range V_{CC}	3.15	3.3	3.45	Volts	
Supply Current I_{CC}	-	-	7.0	mA	
Vcontrol Range	0.5		2.50	Volts	1.50 volts nominal
Frequency Pullability	± 9.2	± 10.0	-	ppm	
Linearity	-	0.05	2.0	%	In accordance with MIL-PRF-55310
Operating Temperature Range	-40		+85	℃	
Storage Temperature Range	-55		+95	℃	

Phase Noise:



MTIE:



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

Part Marking:

ffff.yww
• **PLE*xx.xxxx***

or

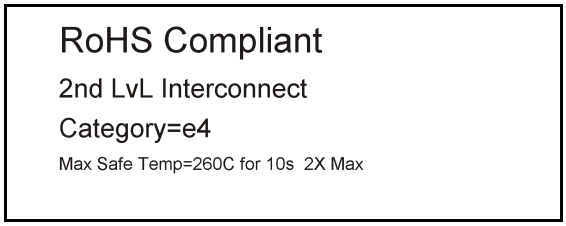
ffff:yww
• **PLE*xx.xxxx***

ffff.yww = frequency in MHz . Year week
PLE = Pletronics
xx.xxxx = internal code

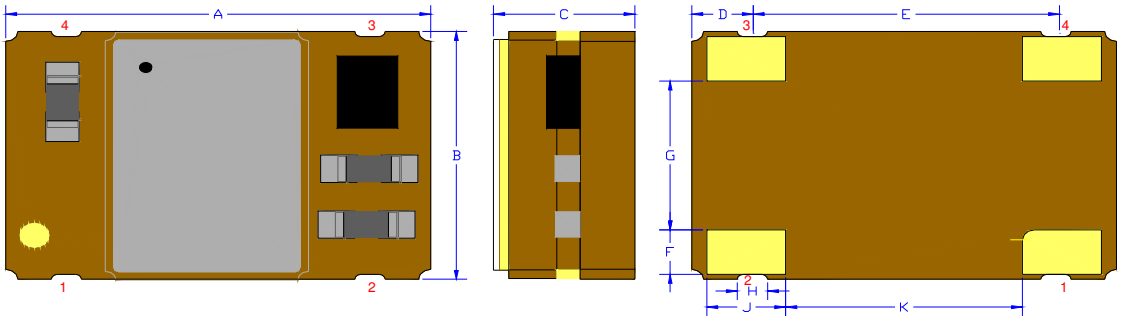
Package Labeling

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



Mechanical:



Not to Scale

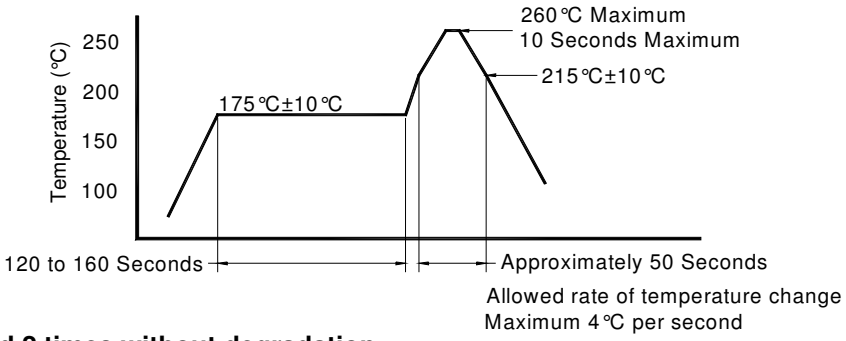
Pad	Function	Note
1	Vcontrol Input	If this function is not specified, recommend connecting this pad to ground.
2	Ground (GND)	
3	Output	
4	Supply Voltage (V_{CC})	Recommend connecting appropriate power supply bypass capacitors as close as possible.

	Inches	mm
A	0.276 ±0.006	7.00 ±0.15
B	0.197 ±0.006	5.00 ±0.15
C	0.099 max	2.50 max
D[1]	0.039	1.00
E[1]	0.197	5.00
F[1]	0.025	0.90
G[1]	0.118	3.00
H[1]	0.020	0.50
J[1]	0.051	1.30
K[1]	0.154	3.90

[1] Typic dimensions

Contacts :
Gold 11.8 µinches 0.3 µm minimum over Nickel 50 to 350 µinches 1.27 to 8.89 µm

Reflow Cycle (typical for lead free processing)

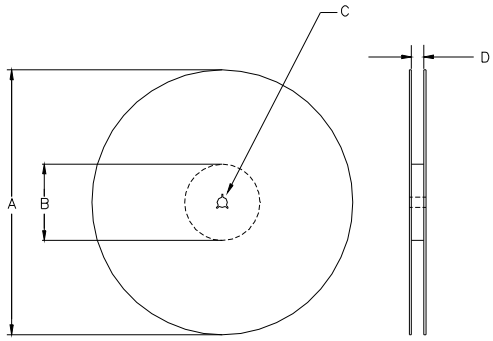


The part may be reflowed 2 times without degradation.

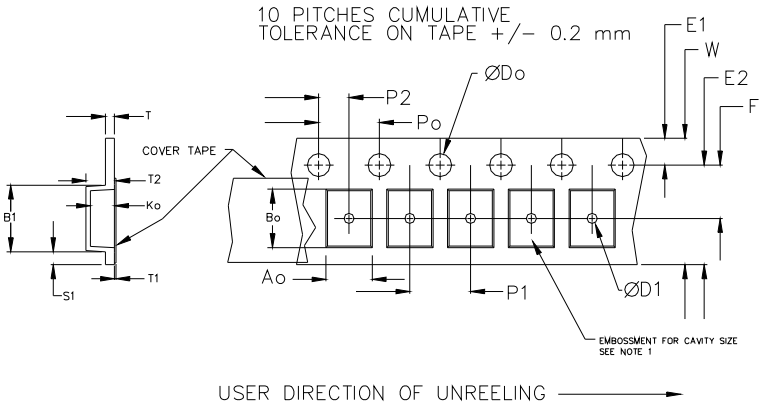
Tape and Reel: available for quantities of 250 to 1000 per reel, cut tape for < 250

Constant Dimensions Table 1								
Tape Size	D0	D1 Min	E1	P0	P2	S1 Min	T Max	T1 Max
8mm	1.5 +0.1 -0.0	1.0	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	0.6	0.6	0.1
12mm		1.5						
16mm		1.5			2.0 ±0.1			
24mm		1.5						

Variable Dimensions Table 2							
Tape Size	B1 Max	E2 Min	F	P1	T2 Max	W Max	Ao, Bo & Ko
16 mm	12.1	14.25	7.5 ±0.1	8.0 ±0.1	8.0	16.3	Note 1



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



		REEL DIMENSIONS			
A	inches	7.0	10.0	13.0	
	mm	177.8	254.0	330.2	
B	inches	2.50	4.00	3.75	
	mm	63.5	101.6	95.3	Tape Width
C	mm	13.0 +0.5 / -0.2			
D	mm	16.4 +2.0 -0.0	16.4 +2.0 -0.0	16.4 +2.0 -0.0	16.0

Reel dimensions may vary from the above

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