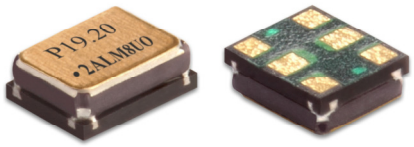
PLETRONICS
www.pletronics.com 425-776-1880

Preliminary

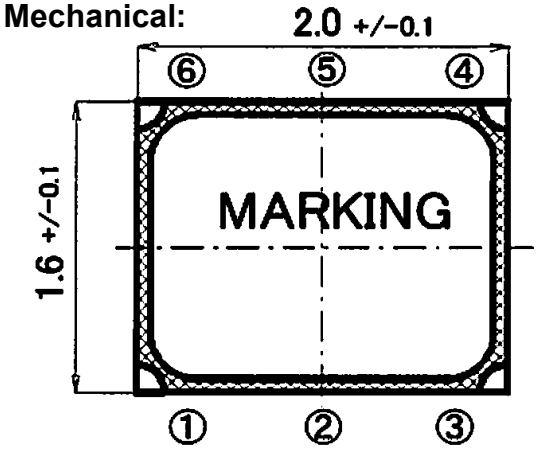
TCG4 Series
TCVCXO Oscillator
November 2012

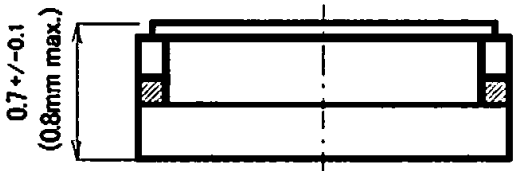


Lead Free

- Pletronics TCG4 Series is an precision temperature compensated crystal oscillator.
- The TCG4 has a clipped-sine output.
- Frequencies available from 15MHz to 52 MHZ
- Supply voltages from 1.8V to 3.3V
- 1.6 X 2.0 mm Ceramic LCC Package
- Very Low Power consumption
- Optional Voltage Control function
- Low phase noise and jitter

Mechanical:



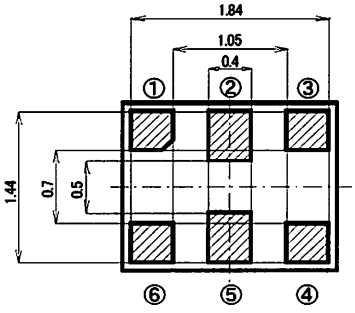


Contacts: gold 11.8 to 39.4 µ-inches (0.3 to 1.0 µm) over Nickel 50 to 350 µ-inches (1.27 to 8.89 µm).

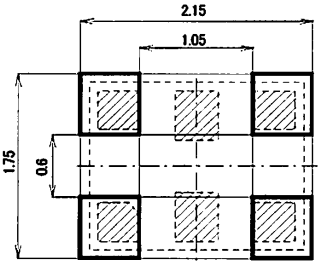
Pin Connections

①: VC
②: NC
③: GND
④: OUTPUT
⑤: NC
⑥: Vcc

NC= no external connection allowed



Recommended land pattern



Layout and Application Information

For optimum jitter performance, Pletronics recommends:

- A ground plane under the device
- No large transient signals (both voltage and current) should be routed under the device.
- Do not layout near large magnetic fields such as high frequency switching power supplies.
- Do not place near piezoelectric buzzers or mechanical fans.

Electrical Specification for specified Vcc over the specified temperature range

Item	Min	TYP	Max	Unit	Condition
Frequency Range	15		52	MHz	See table of available frequencies.
Frequency Tolerance (Calibration)	-1.0		+1.0	ppm	Vcontrol =(1.50 or 0.9) volts at 25±2°C, reference to nominal frequency Vcontrol = 0.9 volts for VCC below 2.5 Volts
Frequency Stability vs. Temp.[1]	-0.5		+0.5	ppm	Over operating range referenced to value at 25±2°C
Frequency Stability vs. Supply	-0.2		+0.2	ppm	Load: 10K ohm // 10 pF & Vcc ±5%
Frequency Stability vs. Load	-0.2		+0.2	ppm	Load 10K ohm || 10 pF ±5%
Aging	-1.0		+1.0	ppm	Per year at 25°C
Output Waveform	Clipped Sinewave				DC Coupled
Output Level	0.8			V_{p-p}	Load: 10K ohm ±10% // 10 pF ±10%
Phase Noise 10 Hz 100Hz 1 KHz 10 KHz 100KHz	- - - -	-85 -110 -130 -145 -145	- - - -	dBc/Hz	
V Supply Range V_{CC}	1.7	-	3.3	Volts	Specified by part number.
Supply Current I_{CC}		2.5		mA	
Vcontrol Range	0.5 0.3		2.5 1.5	Volts	1.50 volts nominal for $V_{CC} \geq 2.5V$ 0.90 volts nominal for $V_{CC} \leq 2.5V$
Frequency Pullability [1]		±8		ppm	
Linearity	-	0.05	2.0	%	In accordance with MIL-PRF-55310
Operating Temperature Range [1]	-30		+85	°C	
Storage Temperature Range	-40		+85	°C	

[1] Specified by Part Number

Part Number:

TCG4	017	019	G	H	010	008	-20.0M	-XX	
									Internal code or blank
									Nominal Frequency in MHz
									Pullability in ppm (Vcontrol)(in ppm) **000** = TCXO only **005** = ±5 ppm minimum **008** = ±8 ppm minimum
									Stability in ppm **010 =** ± 1.0 ppm, **005** = ±0.5 ppm
									Highest Specified Operating Temperature **A** = +40°C **E** = +60°C **J** = +80°C **B** = +45°C **F** = +65°C **K** = +85°C **C** = +50°C **G** = +70°C **D** = +55°C **H** = +75°C
									Lowest Specified Operating Temperature **A** = +10°C **E** = -10°C **J** = -30°C **B** = +5°C **F** = -15°C **C** = +0°C **G** = -20°C **D** = -5°C **H** = -25°C
									Highest Supply Voltage [1] (voltage * 10) **035** = 3.3 volts **030** = 3.0 volts (typical examples shown)
									Lowest Supply Voltage [1] (voltage * 10) **017** = 1.7 volts **028** = 2.8 volts (typical examples shown)
									Series (Part Type, Logic & Package)

Part Marking:

P *ff.ff*
· xxx.*xxxx*

P	=	Pletronics
ff.ff	=	frequency in MHz
xxx.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

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

Absolute Maximum Ratings:

Parameter	Unit
V_{CC} Supply Voltage	-0.5V to +6.0V
Vi Input Voltage	-0.5V to V_{CC} + 0.5V
Vo Output Voltage	-0.5V to V_{CC} + 0.5V

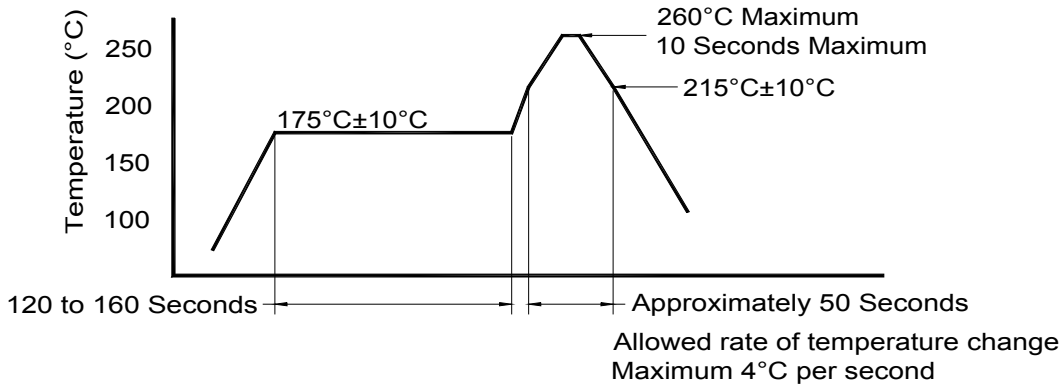
ESD Rating

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

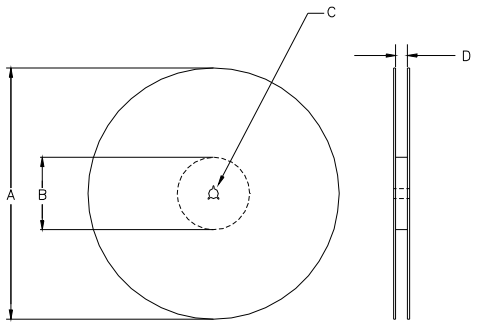
Reliability: Environmental Compliance

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

Reflow Cycle (typical for lead free processing)



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

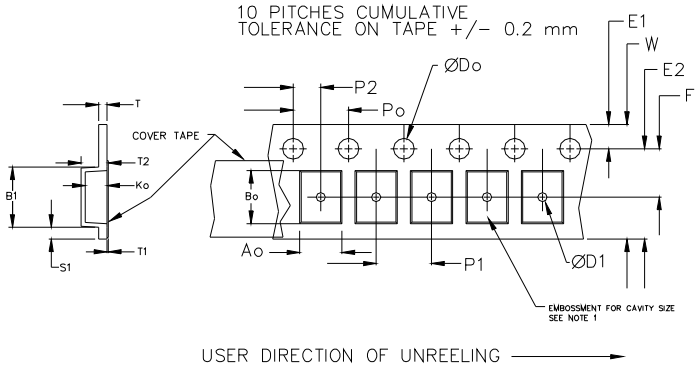


Variable Dimensions Table 2						
Tape Size	B1 Max	F	P1	T2 Max	W Max	Ao, Bo & Ko
8mm	2.2	3.5 ±0.1	4.0 ±0.1	1.2	8.0	Note 1

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			16.0

Reel Dimensions may vary from the above.



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