



# PLETRONICS UCG4 Series TCXO / VCTCXO



UCG4  
2.0 x 1.6 x 0.7 mm  
LCC Ceramic Package

## Features

- Pletronics' UCG4 Series Temperature Compensated Crystal Oscillator
- Optional Voltage Control Function
- Clipped Sine Wave Output
- 1.8V to 3.3V nominal Supply Voltage
- 10 - 40 MHz Frequency

## Applications

GPS  
WiMAX, Wi-Fi, Wi-LAN  
Handsets  
Broadband Access  
Point to point radios  
Seismic Exploration  
Wireless Communications  
Base Stations  
Test Equipment

## Electrical Characteristics

Parameter	Min	Typ	Max	Unit	Condition (Consult factory for other options)
Frequency Range <sup>2</sup>	10	-	40	MHz	Specified by part number
Frequency Stability vs. Temperature <sup>2</sup>	±0.5	-	±2.5	ppm	Specified by part number $(f_{max} - f_{min}) / 2$
Frequency Initial Calibration	-	-	±2.0	ppm	Vcontrol 1.50 volts at 25°C ± 2°C when V <sub>CC</sub> ≥ 2.5 volts Vcontrol 0.9 volts at 25°C ± 2°C when V <sub>CC</sub> ≤ 2.4 volts If Vcontrol used
Operating Temperature Range <sup>2</sup>	-40	-	+85	°C	Specified by part number, Consult factory for wider range
Supply Voltage <sup>1,2</sup> V <sub>CC</sub>	1.8	-	3.3	Volts	± 5%, Specified by part number
Supply Current I <sub>CC</sub>	-	2.0	3.0	mA	Load: 10 Kohm    10 pF, V <sub>CC</sub> ± 5%
Frequency Stability vs. Supply	-	-	±0.2	ppm	Load: 10 Kohm    10 pF, V <sub>CC</sub> ± 5%
Frequency Stability vs. Load	-	-	±0.2	ppm	Load: 10 Kohm    10 pF ± 5%
Vcontrol Range	0.50 0.30	1.50 0.90	2.50 1.50	Volts	1.50 volts nominal for V <sub>CC</sub> nominal ≥ 2.5 volts 0.9 volts nominal for V <sub>CC</sub> nominal ≤ 2.4 volts
Frequency Pullability <sup>2</sup>	0	±8.0	±12.0	ppm	Specified by part number, Positive Slope
Output Waveform	Clipped Sine Wave				DC Coupled
Output Level	0.8	-	-	V p-p	Load: 10 Kohm    10 pF ± 10%
Startup Time	-	-	10.0	mS	Within ± 2.0 ppm of final frequency
Long Term Stability (Aging)	-	-	±1.0	ppm	Per year at 25°C ± 2°C
Phase Noise	100 Hz 1 kHz 10 kHz 100 kHz	-110 -130 -145 -145	-	dBc/Hz	25°C ± 2°C at 26.0 MHz
Storage Temperature Range	-55	-	+85	°C	

### Notes:

<sup>1</sup> Place an appropriate power supply bypass capacitor next to device for correct operation

<sup>2</sup> Specified by part number



### Part Number

Series Model	V <sub>CC</sub> Supply Voltage <sup>1</sup>		Operating Temperature		Stability <sup>1,2</sup>	Pullability <sup>1</sup>	Frequency
	Lowest	Highest	Lowest	Highest	(ppm)	(ppm)	(MHz)
UCG6	031	035	C	G	015	008	-19.44M
	031 = 3.1 for 3.3 volts nominal 029 = 2.9 for 3.0 volts nominal 027 = 2.7 for 2.8 volts nominal 024 = 2.4 for 2.5 volts nominal 017 = 1.7 for 1.8 volts nominal	035 = 3.5 for 3.3 volts nominal 031 = 3.1 for 3.0 volts nominal 029 = 2.9 for 2.8 volts nominal 026 = 2.6 for 2.5 volts nominal 019 = 1.9 for 1.8 volts nominal	A = +10°C B = +5°C C = +0°C D = -5°C E = -10°C F = -15°C G = -20°C H = -25°C J = -30°C K = -35°C L = -40°C	A = +40°C B = +45°C C = +50°C D = +55°C E = +60°C F = +65°C G = +70°C H = +75°C J = +80°C K = +85°C	005 = ± 0.5 010 = ± 1.0 015 = ± 1.5 020 = ± 2.0 025 = ± 2.5	000 = TCXO 005 = ± 5 008 = ± 8	10 - 40 MHz

<sup>1</sup> Contact Factory for non-standard specifications

<sup>2</sup> Not all stabilities are available with all operating temperature ranges. Contact Factory for exact combinations available.

### Device Marking

<b>Pff.f</b>	P	= Pletronics
	ff.f	= Frequency in MHz
	YM	= Date Code (Year Month) See below for YM codes
• <b>YMxxx</b>	x	= All other markings are internal codes

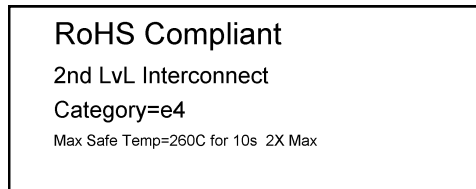
Note: Specifications such as frequency stability, supply voltage and operating temperature range, etc. are not identified from marking. External packaging labels and packing list will correctly identify the ordered Pletronics part number.

Code	2	3	4	5	6	Code	1	2	3	4	5	6	7	8	9	O	N	D
Year	2022	2023	2024	2025	2026	Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

### Package Labeling

P/N Label is 1" x 2.6" (25.4mm x 66.7mm)  
 Font is Courier New  
 Bar code is 39-Full ASCII

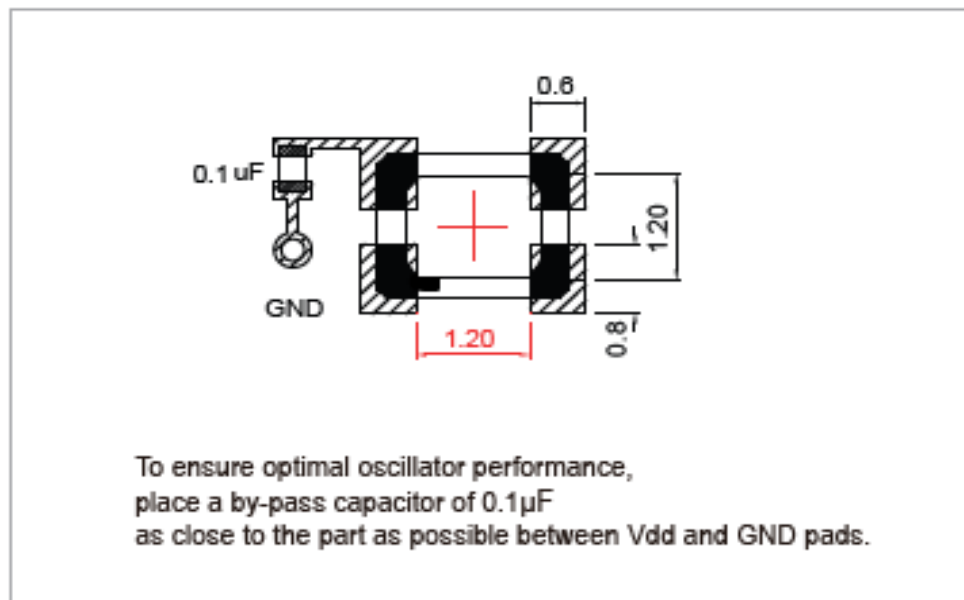
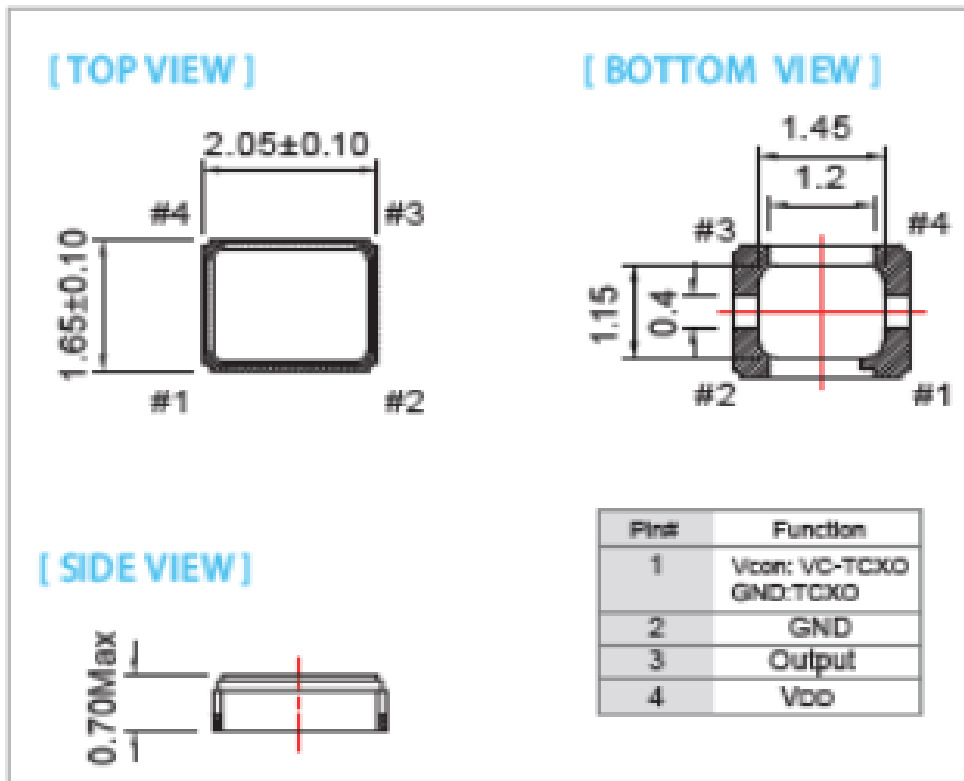
RoHS Label is 1" x 2.6" (25.4mm x 66.7mm)  
 Font is Arial



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

Pletronics Inc. guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's  
 Weight of the Device: 0.01 grams  
 Moisture Sensitivity Level: 1 As defined in J-STD-020D  
 Second Level Interconnect code: e4

### Mechanical Dimensions (mm)

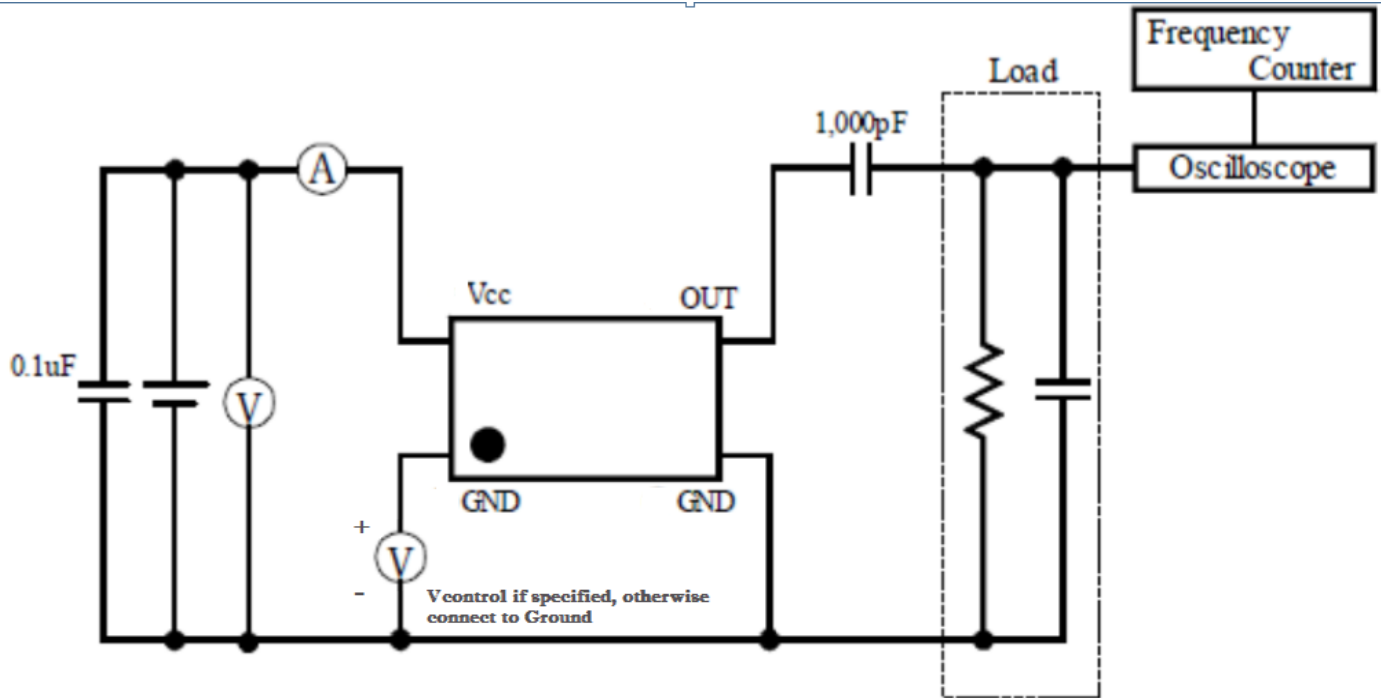


**Termination Finish: Gold plating (0.3~1 $\mu$ m) over Nickel plating (1.27~8.87 $\mu$ m)**

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

### Electrical Test / Load Circuit



### Environmental / ESD Ratings

Reliability: Environmental Compliance

Parameter	Condition
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A
Solderability	IPC J-STD-002
Thermal Cycle	MIL-STD-883 Method 1010, Condition B

ESD Rating

Model	Min. Voltage	Condition
Human Body Model	2000V	MIL-STD-883 3015.7
Machine Model	200V	EIAJ ED-4701/304

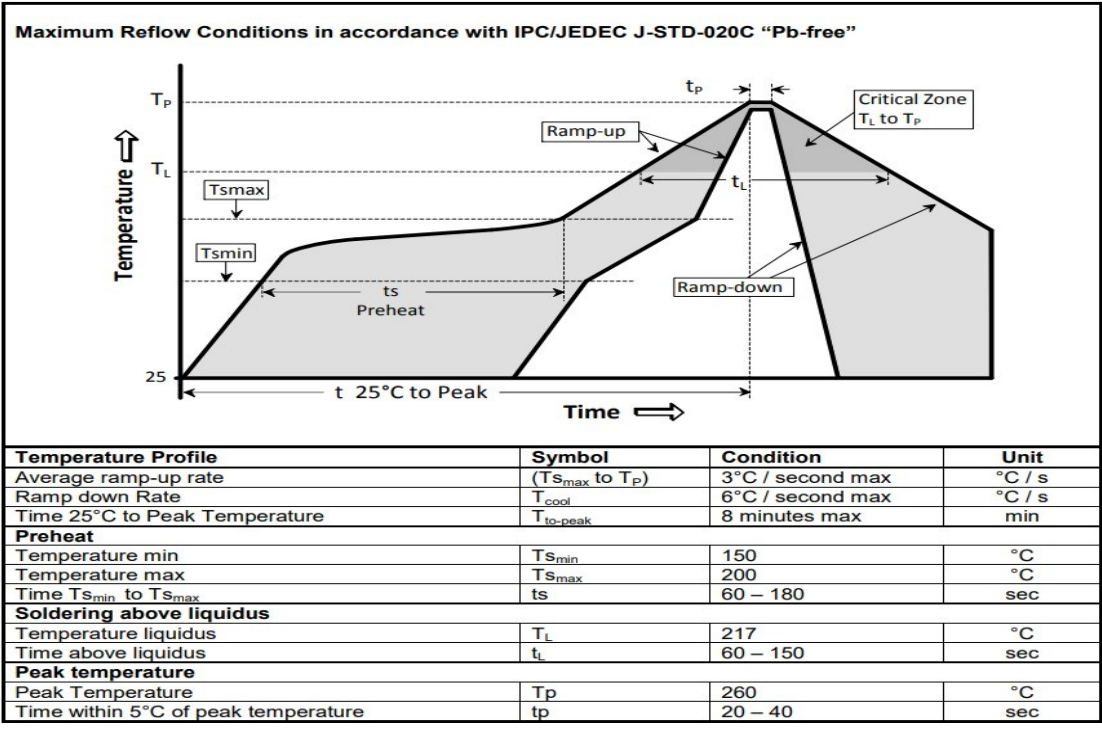
Absolute Maximum Ratings

Parameter	Unit
V <sub>CC</sub> Supply Voltage	-0.6V to +4.6V
V <sub>i</sub> Input Voltage	-0.6V to V <sub>CC</sub> + 0.6V
I <sub>o</sub> Output Current	-10mA to +10mA

#### Thermal Characteristics:

The maximum die or junction temperature is 125°C

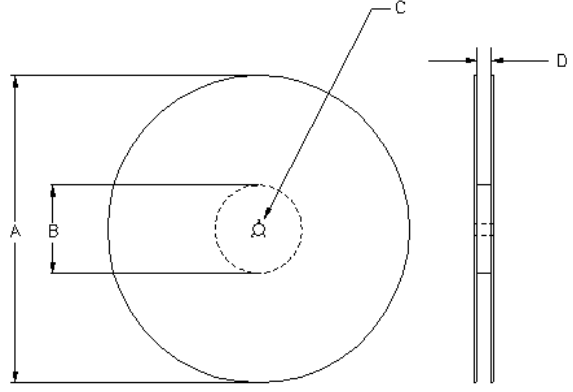
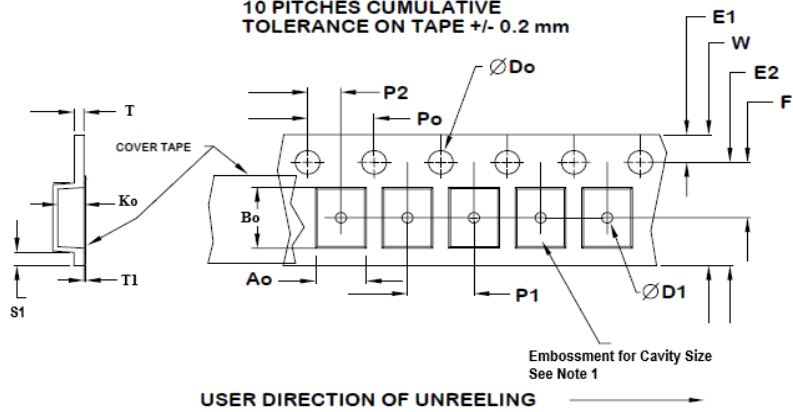
### Reflow Cycle



The part may be reflowed 2 times without degradation (typical for lead free processing).

### Tape and Reel

Tape and Reel available for quantities of 250 to 3000 per reel, cut tape for < 250. 8mm tape, 4mm pitch. 3K standard quantity



Tape Size	E2 typ	F	P1	W max	Ao	Bo	Ko
8mm	6.25	3.5 ±0.05	4.0 ±0.1	8.2	1.9±0.1	2.3±0.1	0.9±0.1

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

Reel Size	A		B		C	D
	Inches	mm	Inches	mm	mm	mm
7	7.0	177.8	2.50	63.5	13.0	Tape size +0.4
					+0.5 -0.2	+2.0 -0.0

Tape Size	Do	D1 min	E1	Po	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	0.3	0.1



## Important Notice

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