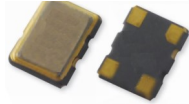




PLETRONICS UCE4 Series

TCXO / TCVCXO



UCE4
2.5 x 3.2 x 1.0 mm
LCC Ceramic Package

Features

- Pletronics' UCE4 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 ²	10	-	40	MHz	Specified by part number
Frequency Stability vs. Temperature ²	±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 _{CC} ≥ 2.5 volts Vcontrol 0.9 volts at 25°C ± 2°C when V _{CC} ≤ 2.4 volts If Vcontrol used
Operating Temperature Range ²	-40	-	+85	°C	Specified by part number, Consult factory for wider range
Supply Voltage ^{1,2} V _{CC}	1.8	-	3.3	Volts	± 5%, Specified by part number
Supply Current I _{CC}	-	2.0	3.0	mA	Load: 10 Kohm 10 pF, V _{CC} ± 5%
Frequency Stability vs. Supply	-	-	±0.2	ppm	Load: 10 Kohm 10 pF, V _{CC} ± 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 _{CC} nominal ≥ 2.5 volts 0.9 volts nominal for V _{CC} nominal ≤ 2.4 volts
Frequency Pullability ²	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:

¹ Place an appropriate power supply bypass capacitor next to device for correct operation

² Specified by part number



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Part Number

Series Model	V _{CC} Supply Voltage ¹		Operating Temperature		Stability ^{1,2}	Pullability ¹	Frequency
	Lowest	Highest	Lowest	Highest	(ppm)	(ppm)	(MHz)
UCE4	031	035	G	K	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

¹ Contact Factory for non-standard specifications

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

Device Marking

Pff.ff • YMDxxx	P = Pletronics ff.ff = Frequency in MHz YMD = Date Code (year month day) See below for YMD codes x = internal factory codes
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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	9	0	1	2	3	Code	1	2	3	4	5	6	7	8	9	O	N	D
Year	2019	2020	2021	2022	2023	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	Q	R	S	T	V	W	X	Y
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

Package Labeling

Tape and Reel available for quantities of 250 to 1000 per reel, cut tape for < 250. 8mm tape, 4mm pitch.

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

P/N:  UCE4024026JK010008-20.0M
Customer P/N:  12345678
Qty:  1000 D/C  9DW
MSL: 1

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

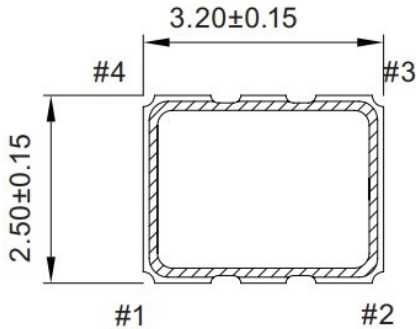
Pletronics Inc. certifies this device is in accordance with the RoHS 3 (2015/863) and WEEE 2 (2012/19/EU) directives.

Pletronics Inc. guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
 Weight of the Device: 0.04 grams
 Moisture Sensitivity Level: 1 As defined in J-STD-020D
 Second Level Interconnect code: e4

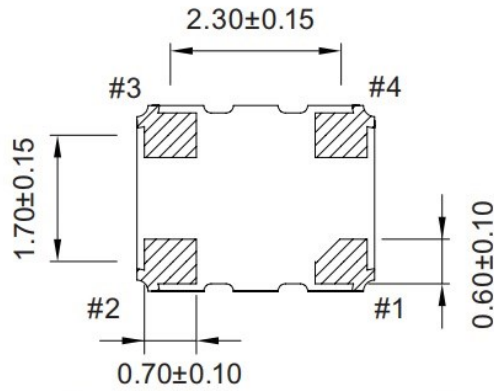
Product information is current as of publication date. The product conforms to specifications per the terms of the Pletronics standard warranty. **Jul 31, 2019 Rev. A**
 Production processing does not necessarily include testing of all parameters.

Mechanical Dimensions (mm)

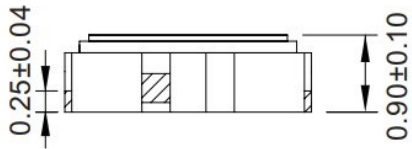
[TOP VIEW]



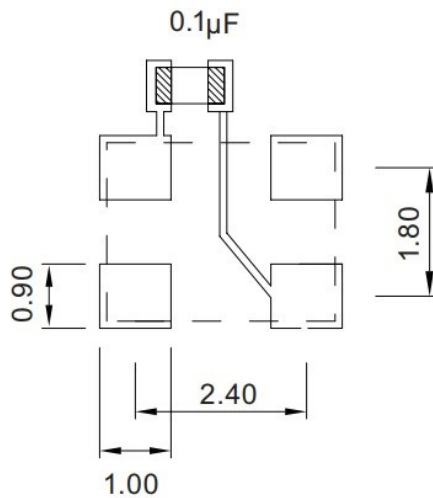
[BOTTOM VIEW]



[SIDE VIEW]



Pin#	Function
1	Vcon: VC-TCXO GND / NC: TCXO
2	GND
3	Output
4	V _{DD}



To ensure optimal oscillator performance, place a by-pass capacitor of 0.1µF as close to the part as possible between V_{DD} and GND pads.

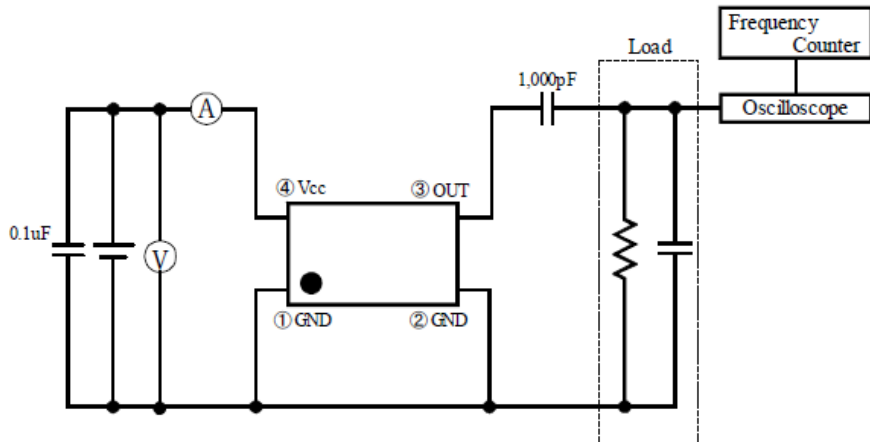
(Not to Scale)

Contacts (pads): Gold 11.8 to 39.4 µm (0.3 to 1.0 µm) over Nickel 50 to 350 µm (1.27 to 8.89 µm)

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	JESD22-B104
Vibration	JESD22-B103
Solderability	IPC J-STD-002
Thermal Shock	MIL-STD-883 Method 1011, Condition A

ESD Rating

Model	Min. Voltage	Condition
Human Body Model	2000V	JESD22-A114
Charged Device Model	500V	JESD 22-C101
Machine Model	200V	JESD22-A115

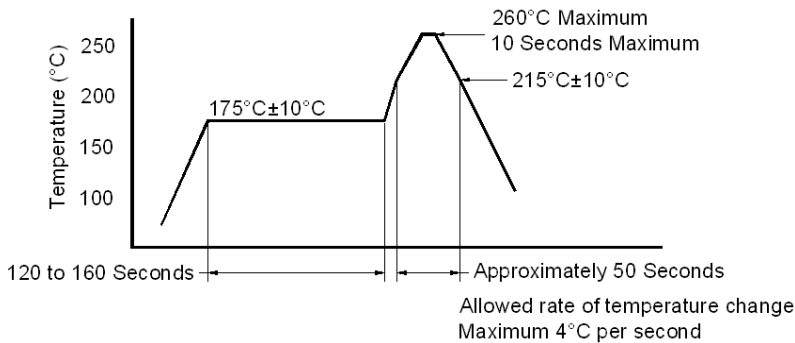
Absolute Maximum Ratings

Parameter	Unit
V _{CC} Supply Voltage	-0.6V to +4.6V
V _i Input Voltage	-0.6V to V _{CC} + 0.6V
I _o Output Current	-10mA to +10mA

Thermal Characteristics:

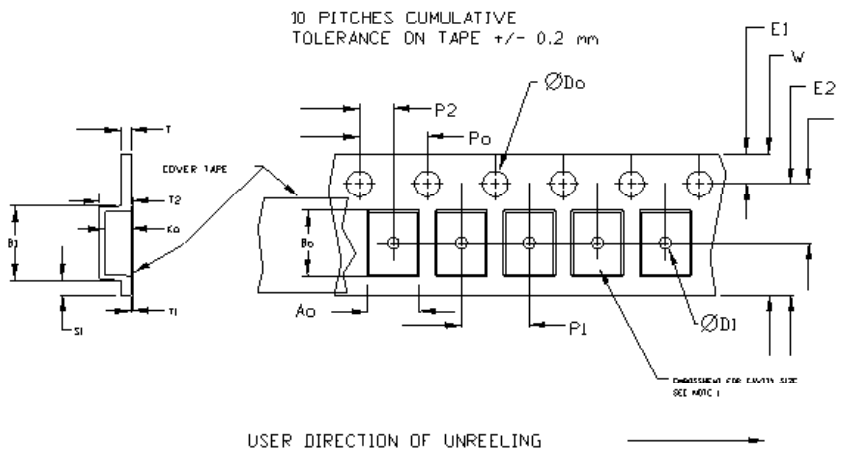
The maximum die or junction temperature is 155°C
 The thermal resistance junction to board is 25 to 40°C/Watt
 depending on the solder pads, ground plane and construction of the PCB.

Reflow Cycle



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

Tape and Reel

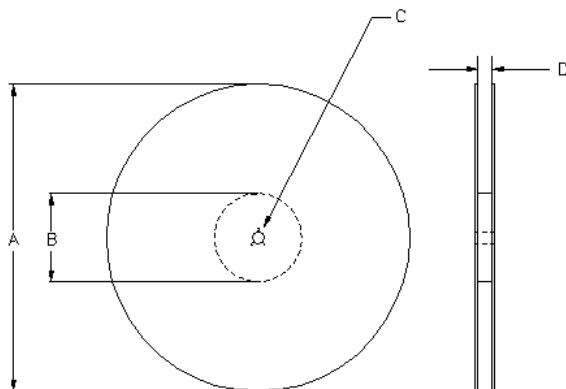


Tape Size	Do	D1 min	E1	Po	P2	S1 min	T max	T1 max
8mm	+0.1 -0.0	1.0	±0.1	4.0	±0.05	0.6	0.6	0.1
12mm		1.5						
16mm		1.5						
24mm		1.5						

Tape Size	B1 max	E2 min	F	P1	T2 max	W max	Ao, Bo & Ko
8mm	4.2	6.25	3.5 ± 0.05	4.0 ± 0.1	2.0	8.3	Note 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		
7	7.0	177.8	2.50	63.5	13.0 +0.5 -0.2	Tape size +0.4 +2.0 -0.0
10	10.0	254.0	4.00	101.6		
13	13.0	330.2	3.75	95.3		



Important Notice

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