

2.0 x 1.6 mm Ceramic Package TCXO / VCTCXO

1589 / 1789 Series

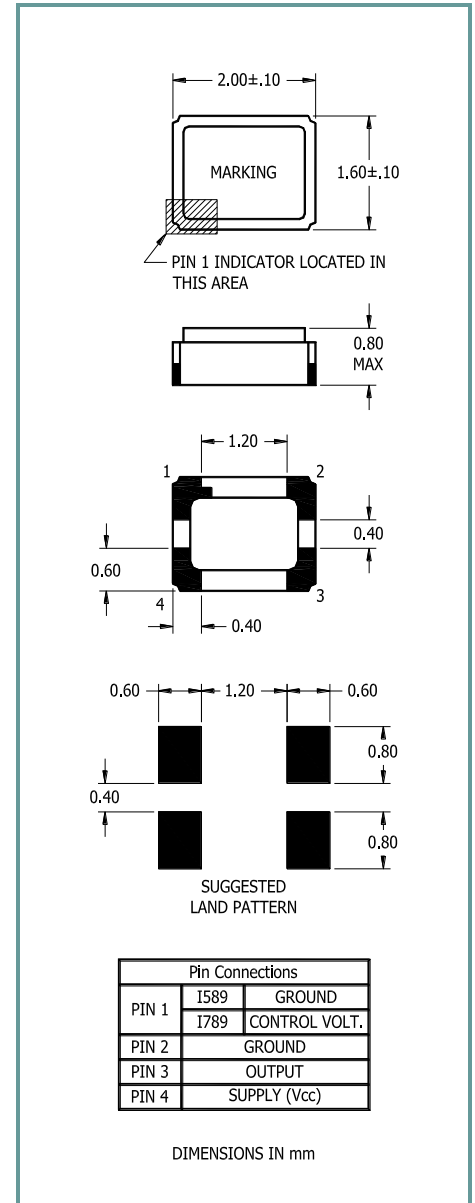
Product Feature:

High precision GPS support
Voltage Control Option (I789 Series)
Excellent Phase Noise
Low Power Consumption
Compensation: Analog
RoHS Compliant / Pb Free

Applications:

Mobile GPS terminals
Smartphones
Wireless Base Stations
Sonet / SDH
T1/E1, T3/E3

Frequency	13.000000 MHz to 52.000000 MHz
Standard Frequencies	16.368, 16.369, 19.200, 26.000, 27.456, 38.400, and 52.000 MHz
Frequency Tolerance at +25°C ±2°C	±2.0 ppm max after second reflow
Frequency Stability	See Part Number Guide
vs. Temperature	±0.1 ppm max for a ±5% change in Vdd
vs. Voltage	±0.2 ppm max for a ±5% change in Load
vs. Load	±1.0 ppm per year max
vs. Time	
Output Waveform	Clipped Sine wave
Output Level	0.8 V p-p min
Harmonics	-5 dBc
Load	10 kΩ // 10pF
Supply Voltage (Vdd)	See Part Number Guide
Supply Current	2.0 mA max
Start Up Time	5.0 mSec max
Frequency Drift	80 ppb within 20 seconds of startup 2.5 ppb per second max from 20 to 600 seconds 100 ppb max over first 600 seconds
Phase Noise (Typ)	-83 dBc/Hz max @ 10 Hz -104 dBc/Hz max @ 100 Hz -130 dBc/Hz max @ 1 kHz -145 dBc/Hz max @ 10 kHz -147 dBc/Hz max @ 100 kHz
Storage Temperature Range	-40°C to +85°C
Voltage Control Option Pin 1 (I789 Series Only)	
Control Voltage Center and Range	Vdd = +3.30 Vdc Vc = +1.65 Vdc ±1.50 Vdc Vdd = +3.00 Vdc Vc = +1.50 Vdc ±1.50 Vdc Vdd = +2.70 Vdc Vc = +1.35 Vdc ±1.25 Vdc Vdd = +1.80 Vdc Vc = +0.90 Vdc ±0.80 Vdc
Frequency Control Range	±8 ppm min, ±13 ppm max
Slope	Positive

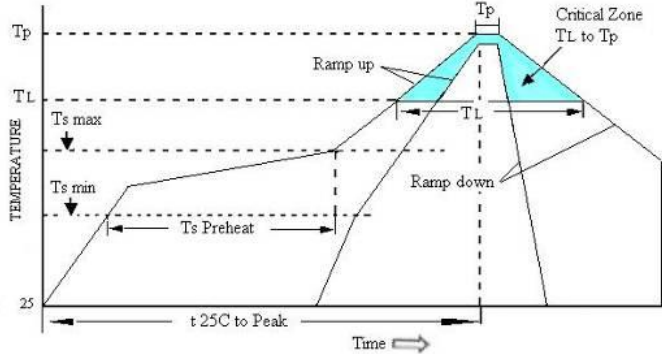


Part Number Guide:		Sample Part Number:		I589-15Y-26.0000MHz
Package	Input Voltage	Operating Temperature	Frequency Stability vs. Temperature (in ppm)	Frequency
I589 Series = TCXO	1 = +1.80 VDC	1 = 0° to +70°C	Y = ±0.5	-Frequency
	2 = +2.70 VDC	3 = -20°C to +70°C	N = ±1.0	
	3 = +3.30 VDC	5 = -30°C to +85°C	0 = ±1.5	
I789 Series = VCTCXO	7 = +3.00 VDC		P = ±2.0	

Notes:

- Not all options are available at all frequencies and temperatures ranges.
- Please consult with sales department for any other parameters or options.
- Oscillator specification subject to change without notice.

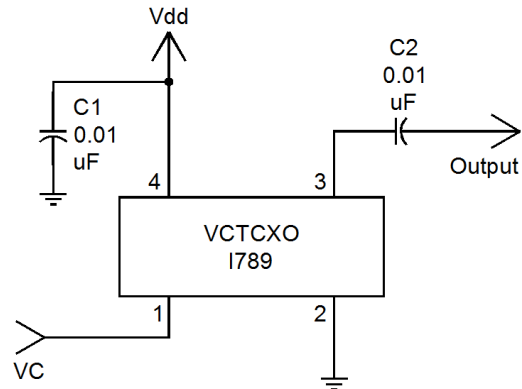
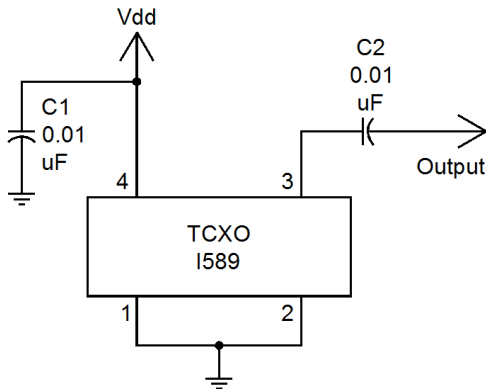
Pb Free Solder Reflow Profile:



Ts max to TL (Ramp-up Rate)	3°C / second max
Preheat	
Temperature min (Ts min)	150°C
Temperature typ (Ts typ)	175°C
Temperature max (Ts max)	200°C
Time (Ts)	60 to 180 seconds
Ramp-up Rate (TL to Tp)	3°C / second max
Time Maintained Above Temperature (TL)	217°C
Time (TL)	60 to 150 seconds
Peak Temperature (Tp)	260°C max for seconds
Time within 5°C to Peak Temperature (Tp)	20 to 40 seconds
Ramp-down Rate	6°C / second max
Tune 25°C to Peak Temperature	8 minute max
Moisture Sensitivity Level (MSL)	Level 1

Units are backward compatible with +240°C reflow processes

Circuit Configuration:



Notes:

- It is recommended that a 0.01 μF bypass capacitor be connected between Vdd (Pin 4) and Ground (Pin 2) to minimize power supply noise.
- It is recommended that an external 0.01 μF AC-coupling capacitor be connected to output (Pin 3) of the device.
- For the TCXO (1598) Pin 1 should not be left floating but must be connected to ground.

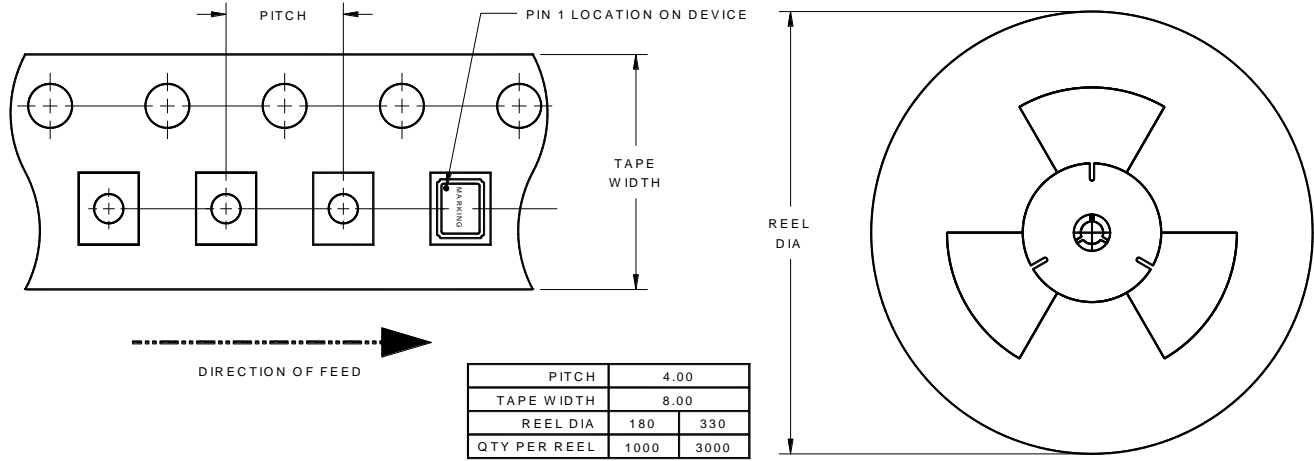
Environmental Specifications:

Thermal Shock	MIL-STD-883, Method 1011, Condition A
Moisture Resistance	MIL-STD-883, Method 1004
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Mechanical Vibration	MIL-STD-883, Method 2007, Condition A
Resistance to Soldering Heat	J-STD-020C, Table 5-2 Pb-free devices (except 2 cycles max)
Hazardous Substance	Pb-Free / RoHS / Green Compliant
Solderability	JESD22-B102-D Method 2 (Preconditioning E)
Terminal Strength	MIL-STD-883, Method 2004, Test Condition D
Gross Leak	MIL-STD-883, Method 1014, Condition C
Fine Leak	MIL-STD-883, Method 1014, Condition A2, R1=2x10 ⁻⁸ atm cc/s
Solvent Resistance	MIL-STD-202, Method 215

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I589 / I789 Series

Tape and Reel Information:



Package Information:

MSL = 1

Marking:

Line 1: Date Code (yww)
Line 2: XX.X (Frequency in MHz)

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