1.6 x 2.0 mm Ceramic Package TCXO / VCTCXO

I589 / I789 Series

Product Feature:

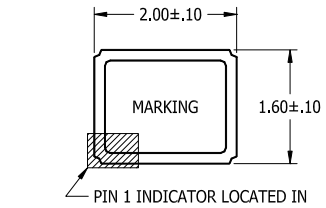
- High precision GPS support
- Voltage Control Option (I789 Series)
- Excellent Phase Noise
- Low Power Consumption
- RoHS Compliant / Pd Free

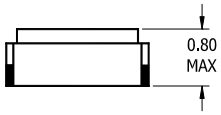
Applications:

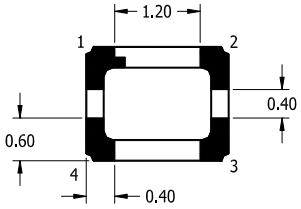
- Mobile GPS terminals
- Smartphones
- Wireless Base Stations
- Sonet / SDH
- T1/E1, T3/E3

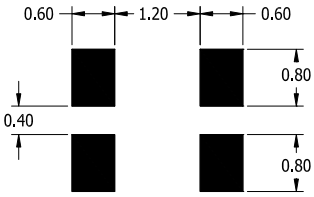
Frequency	13.000000 MHz to 52.000000 MHz
Standard Frequencies	16.368, 16.369, 19.200, 26.000, 27.456, 38.400, and 52.000 MHz
Frequency Tolerance at +25°C ±2°C	±2.0 ppm max after second reflow
Frequency Stability vs. Temperature vs. Voltage vs. Load vs. Time	 See Part Number Guide ±0.1 ppm max for a ±5% change in Vdd ±0.2 ppm max for a ±5% change in Load ±1.0 ppm per year max
Output Waveform Output Level Harmonics Load	Clipped Sine wave 0.8 V p-p min -5 dBc 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	-40ºC to +85ºC

Voltage Control Option Pin 1 (I789 Series Only)	
Control Voltage Center and Range	Vdd = +3.30 Vdd Vc = +1.65 VDC ±1.50 VDC Vdd = +2.70 Vdd Vc = +1.35 VDC ±1.25 VDC Vdd = +1.80 Vdd Vc = +0.90 VDC ±0.80 VDC
Frequency Control Range	±8 ppm min, ±13 ppm max
Slope	Positive









SUGGESTED LAND PATTERN

Pin Connections		
PIN 1	I589	GROUND
	I789	CONTROL VOLT.
PIN 2	GROUND	
PIN 3	OUTPUT	
PIN 4	SUPPLY (Vcc)	

DIMENSIONS IN mm

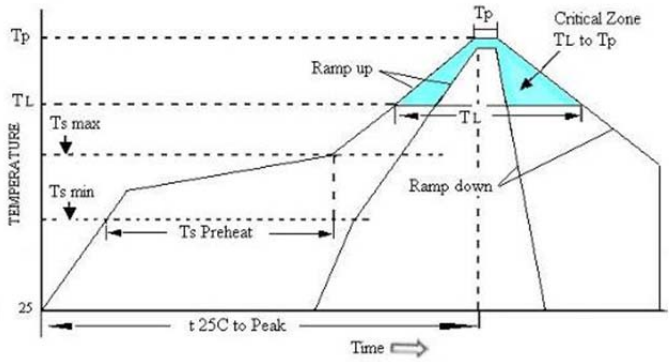
Part Number Guide: Sample Part Number: I589-15Y-26.0000MHz

Package	Input Voltage	Operating Temperature	Frequency Stability vs. Temperature (in ppm)	Frequency
I589 Series = TCXO I789 Series = VCTCXO	1 = +1.80 VDC	1 = 0° to +70°C	Y = ±0.5	-Frequency
	2 = +2.70 VDC	3 = -20ºC to +70ºC	N = ±1.0	
	3 = +3.30 VDC	5 = -30ºC to +85ºC	0 = ±1.5	
			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.

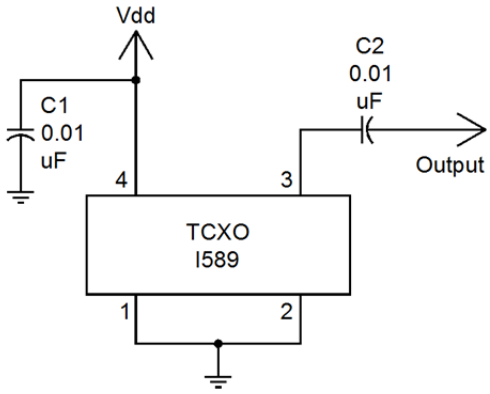
Pb Free Solder Reflow Profile:

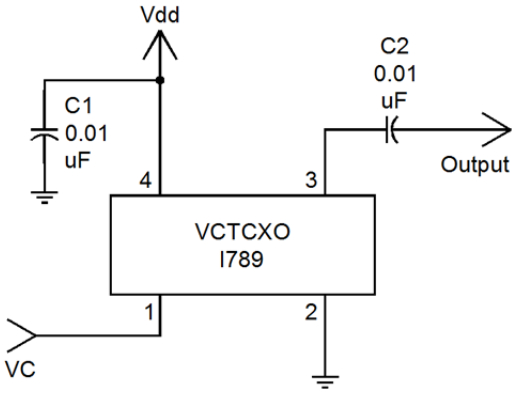


Units are backward compatible with +240ºC reflow processes

Ts max to T_L (Ramp-up Rate)	3ºC / second max
Preheat Temperature min (Ts min) Temperature typ (Ts typ) Temperature max (Ts max) Time (Ts)	 150ºC 175ºC 200ºC 60 to180 seconds
Ramp-up Tate (T_L to Tp	3ºC / second max
Time Maintained Above Temperature (T_L) Time (T_L)	 217ºC 60 to 150 seconds
Peak Temperature (Tp)	260ºC max for seconds
Time within 5ºC to Peak Temperature (Tp)	20 to 40 seconds
Ramp-down Rate	6ºC / second max
Tune 25ºC to Peak Temperature	8 minute max
Moisture Sensitivity Level (MSL)	Level 1

Circuit Configuration:





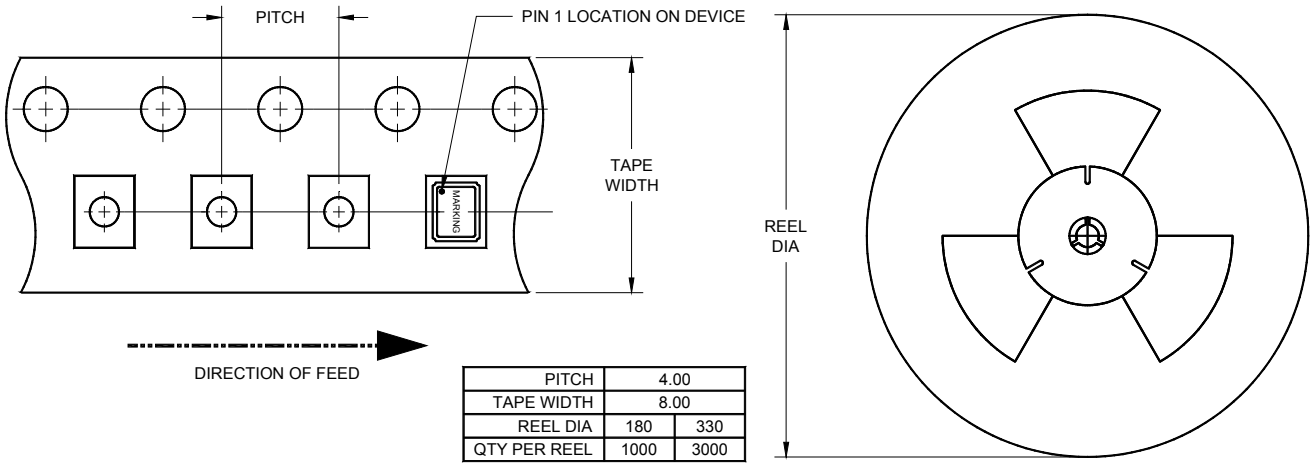
Notes:

- 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 (I598) 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

Tape and Reel Information:



PITCH	4.00	
TAPE WIDTH	8.00	
REEL DIA	180	330
QTY PER REEL	1000	3000

Package Information:

MSL = 1

Marking:

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