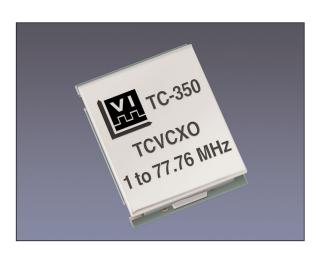


# TC-350 Series Low Profile TCXO's Temperature Compensated Crystal Oscillators



#### **Features**

- Frequency from 1 to 77.76 MHz
- ±1.0 ppm, -40°C to +85°C
- Low Profile: 3.81 mm (0.15") Ht.
- Aging <5 ppm for Ten Years</li>
- 3.3 Vdc or 5 Vdc operation
- TTL/HCMOS Output

#### **Applications**

- SMC Clock
- SONET/SDH Network Timing Sources
- Wireless Communications
- Satellite Communications
- Portable Test Equipment

#### **Description**

Vectron International has introduced a series of low profile surface mount, Temperature Compensated Crystal Oscillators (TCXO's) available in frequencies from 1 to 77.76 MHz.

The TC-350 series surface mount TCXO can be mounted using the standard convection reflow process. Current drain to less than 5 mA is available upon request. Aging <5 ppm for ten years.

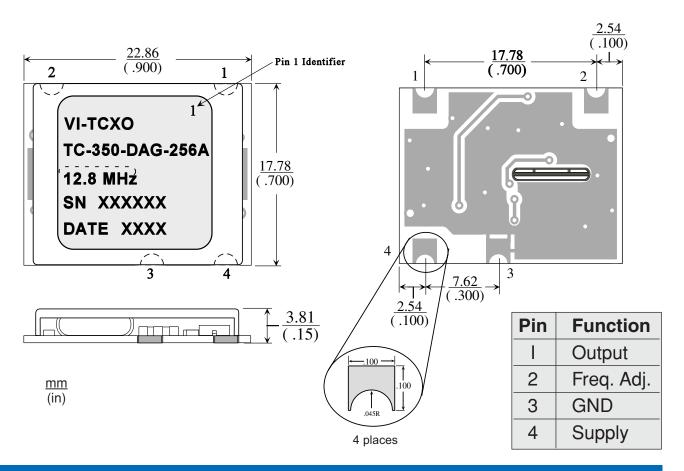
For additional information about TCXO's visit our website at:

www.tcxo.com

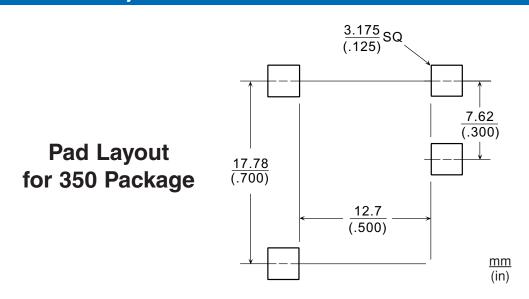
## **Performance Characteristics**

Parameter (	Characteristics		
Standard Frequencies:	10.00, 12.80, 13.00, 16.384, 19.44, 20.00, 20.48, 27.00 MHz Available from 1.0 MHz to 77.76 MHz		
Package:	22.86 x 17.78 x 3.81 mm (0.90" x 0.70" x 0.15")		
Supply Voltage (Vdd): (Other options are available upon request)	<b>C</b> = 5.0 Vdc ±5% <b>D</b> = 3.3 Vdc ±5%		
Current:	Current draw will vary greatly depending on frequency and output type. For this series TCXO typical current draw will be about 10 mA. Please consult the factory about your exact current requirements.		
Output:	A = HCMOS/ACMOS	<b>B</b> = 10 TTL	
Voh min.	0.8 Vdd	2.4 Vdc	
Voh max.	0.5 Vdc	0.5 Vdc	
Rise/Fall Time:	5 ns max.	10 ns max.	
Symmetry (Duty Cycle):	50% ±10%	50% ±10%	
Load:	100k ohm // 10 pF	10 TTL	
Temperature Stability:	<b>B-507</b> = $\pm 5.0 \times 10^{-7}$ <b>OVA B-106</b> = $\pm 1.0 \times 10^{-6}$ <b>OVA C-507</b> = $\pm 5.0 \times 10^{-7}$ <b>OVA C-106</b> = $\pm 1.0 \times 10^{-6}$ <b>OVA D-757</b> = $\pm 7.5 \times 10^{-7}$ <b>OVA D-156</b> = $\pm 1.5 \times 10^{-6}$ <b>OVA F-106</b> = $\pm 1.0 \times 10^{-6}$ <b>OVA F-206</b> = $\pm 2.0 \times 10^{-6}$ <b>OVA G-156</b> = $\pm 1.5 \times 10^{-6}$ <b>OVA G-256</b> = $\pm 2.5 \times 10^{-6}$ <b>OVA</b>	er 0°C to +50°C er 0°C to +70°C er 0°C to +70°C er -20°C to +70°C er -20°C to +70°C er -40°C to +85°C er -40°C to +85°C er -55°C to +85°C	
Aging (typical):	<5 ppm for ten years @ +70°C		
Frequency vs. Supply:	<±0.1 ppm for a ±5% change in Supply Voltage		
Electrical Frequency Adjust:	±5 ppm minimum via external voltage, 0 to Vdd		

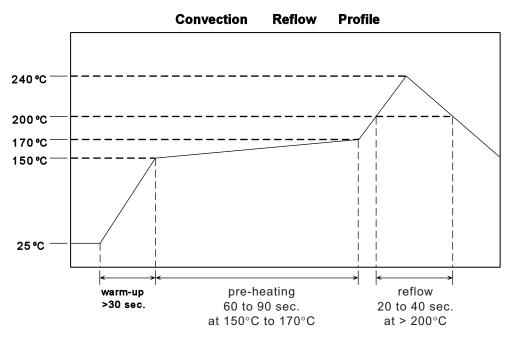
# **Outlline Drawing**



## **Recommended Pad Layout**

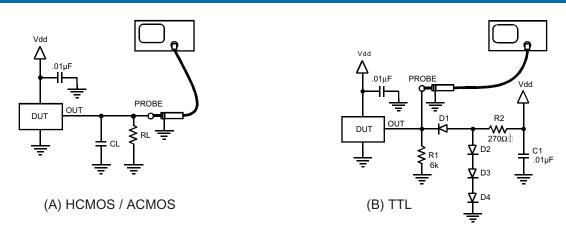


#### **Recommended Reflow Profile**



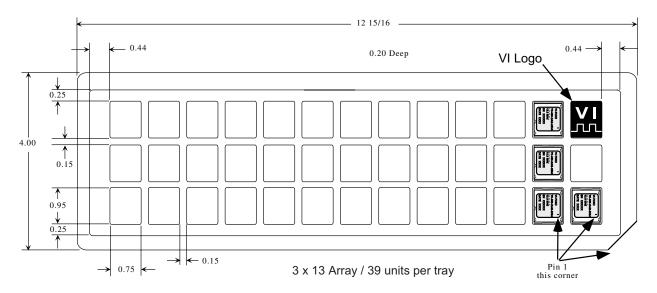
Note: TCXO's are precision subsystems with tolerances measured to 0.01 ppm. Non-Hermetically sealed TCXO's should not be subjected to a wash process that will immerse the TCXO in solvents. NO CLEAN is the recommended procedure. The TC-350 series of TCXO's has been designed for pick and place reflow soldering. The suggested reflow profile is shown above. The TCXO may be relfowed one time in the non-inverted state. Typical frequency shift as a result of reflow is <1.0 ppm per reflow. VI recommends waiting at least two hours after reflow below measuring the unit.

#### **Output Loads**



### **Standard Shipping Method**

The Standard ship method for volume production of the TC-350 series is in a matrix tray. These trays are 100% recyclable. The trays also offer the added feature that they can be continuously feed into a pick-n-place machine eliminating the down time required with tape-n-reel.



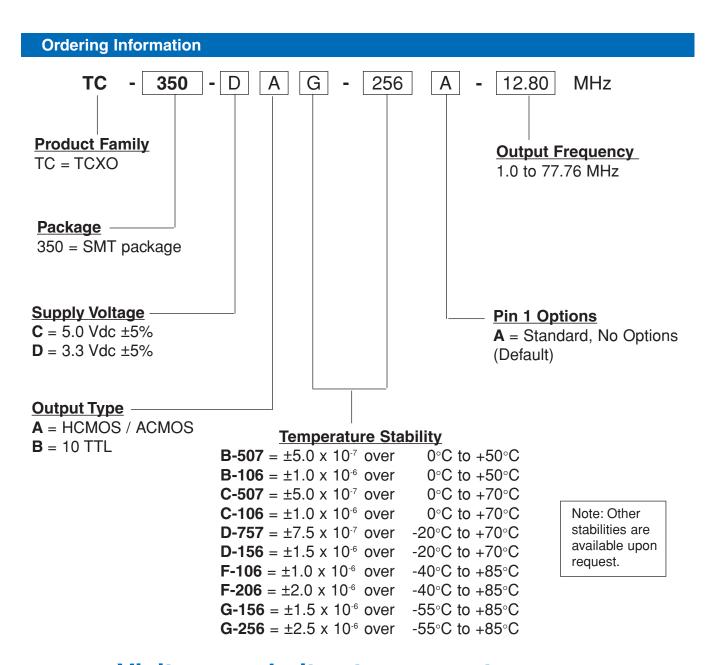
## **Handling Precautions**

Although protection circuitry has been designed into this device, proper precautions should be taken to avoid exposure to electrostatic discharge (ESD) during handling and mounting. VI employs a human-body model \*HBM) and a charged-device model (CDM) for ESD-susceptibility testing and protection design evaluation. ESD voltage thresholds are depending on the circuit parame-

ters used to define the mode.

Although no industry-wide standard has been adopted for the CDM, a standard HBM (resistance =1500 ohms, capacitance - 1000 pf) is widely used and therefore can be used for comparison purposes. The HBM ESD threshold presented here was obtained by using these circuit parameters.

ESD Threshold Voltage					
Model	Threshold	Unit			
Human-Body (HBM)	500	V min			
Charged-Device	500	V min			



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