

Helping Customers Innovate, Improve & Grow




TX-321

Description

The TX-321 Series TCXO combines Vectrons lowest phase noise TCXO option with good g-sensitivity in a 23x18 mm package.

Features

- Low Phase Noise, Low g-sensitivity 0.2ppb/g
- Fully RoHS Compliant 
- Surface Mount, Low Profile
- Shock Survival up to 10k g
- Frequency Range: 5 MHz to 50 MHz
- Common Frequencies: 5, 10, 16.368, 20, 25, 32.736, 38.4, 40, & 50 MHz

Applications

- Military Portable Radios
- GPS Telemetry
- Test and Measurement Equipment

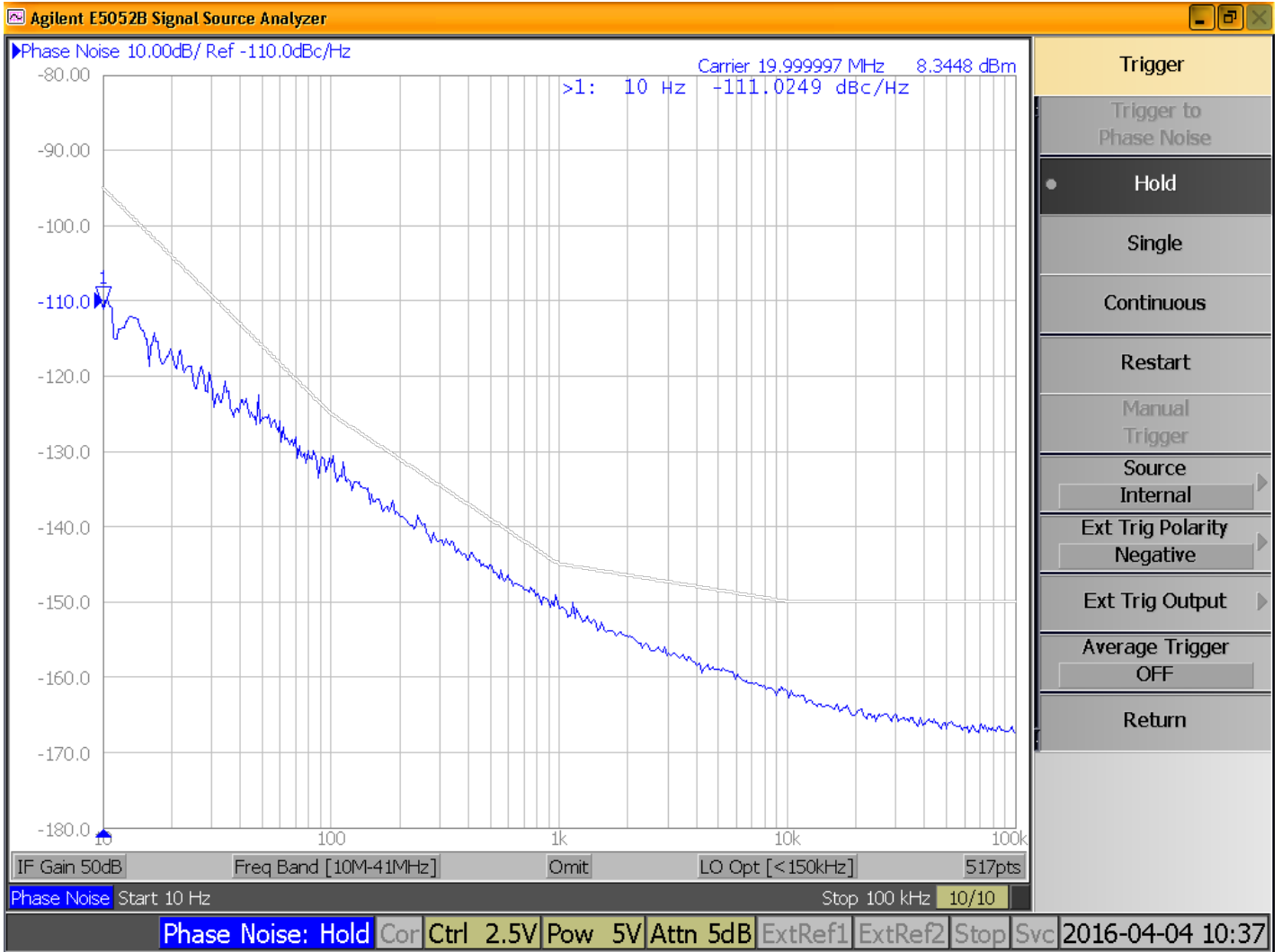
Performance Specifications^{1,2}

| Parameter | Min | Typ | Max | Units | Condition |
|---|-------|-----|-------|-------|--|
| Frequency Stabilities¹ | | | | | |
| vs. operating temperature range (referenced to +25°C) | -1.0 | | +1.0 | ppm | -40... +85°C (for tighter stabilities contact factory) |
| Initial Tolerance | -1.0 | | +1.0 | ppm | at time of shipment, nominal EFC Vs ± 5% Load ± 10% @ +40°C for 15 years |
| vs. supply voltage change | -0.1 | | +0.1 | ppm | |
| vs. load change | -0.1 | | +0.1 | ppm | |
| vs. aging / 1 year | | ±1 | | ppm | |
| vs. aging | | | 4.0 | ppm | |
| Supply Voltage (Vs) | | | | | |
| Supply voltage | 4.75 | 5.0 | 5.25 | VDC | |
| Supply voltage | 3.135 | 3.3 | 3.465 | VDC | |
| Current consumption | | | 25 | mA | Increases with output frequency |

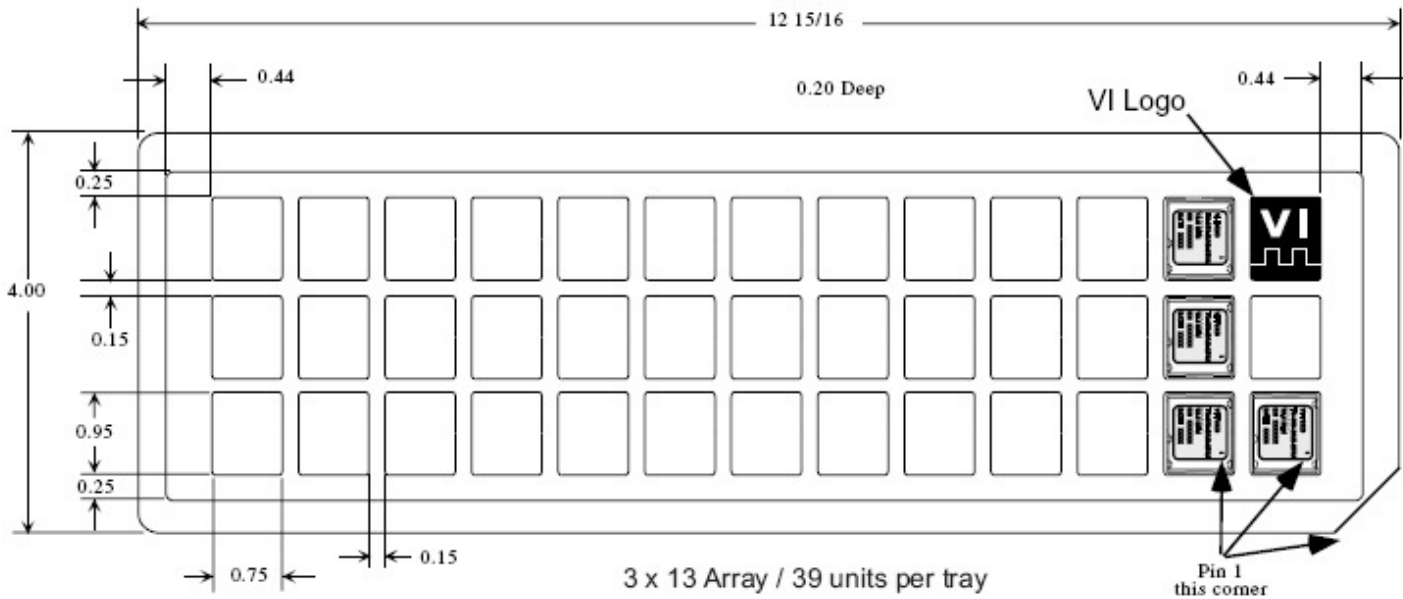
Performance Specifications

| Parameter | Min | Typ | Max | Units | Condition |
|--|------------------|------|--------|--------|---|
| RF Output | | | | | |
| Signal | HCMOS | | | | |
| Load | | 15 | | pF | |
| Signal Level (Vol) | | | 0.1*Vs | V | |
| Signal Level (Voh) | 0.9*Vs | | | V | |
| Rise/Fall Time | | | 5 | ns | @ nominal Load and 10% to 90% of waveform |
| Duty cycle | 40 | 50 | 60 | % | @ nominal Load and @ 50% level |
| Signal | Sine | | | | |
| Load | | 50 | | Ohm | |
| Output Power | 0 | | 6 | dBm | into 50 Ohms |
| Harmonics | | | -30 | dBc | |
| Electronic Frequency Control (EFC) | | | | | |
| Tuning Range (optionsA) | Fixed; No adjust | | | | |
| Tuning Range (options B) | ±5.0 | | ±12 | ppm | |
| Tuning Slope | Positive | | | | |
| Control Voltage Range | 0.0 | | Vs | VDC | |
| Freq. control input impedance | 100 | | | kohm | |
| Additional Parameters² | | | | | |
| Phase Noise ³ (@ 10 MHz - no vibration) | | -116 | | dBc/Hz | 10 Hz |
| | | -138 | | dBc/Hz | 100 Hz |
| | | -150 | | dBc/Hz | 1 kHz |
| | | -162 | | dBc/Hz | 10 kHz |
| | | -165 | | dBc/Hz | 100 kHz |
| Phase Noise ³ (@ 40 MHz - no vibration) | | -104 | | dBc/Hz | 10 Hz |
| | | -126 | | dBc/Hz | 100 Hz |
| | | -144 | | dBc/Hz | 1 kHz |
| | | -160 | | dBc/Hz | 10 kHz |
| | | -165 | | dBc/Hz | 100 kHz |
| g-sensitivity | | 0.2 | | ppb/g | per axis |
| Shock | | | | | MIL-STD-883G; Method 2002; Condition B |
| Vibration Sine | | | | | MIL-STD-202G, METHOD 204D, Test Condition D |
| Thermal Cycling | | | | | MIL-STD-202, METHOD 107, Test Condition A |
| Absolute Maximum Ratings | | | | | |
| Supply voltage (Vs) | | | 6.0 | V | Damage will occur beyond this level |
| Control Voltage | 0 | | Vs | V | |
| Operable temperature range | -45 | | +90 | °C | |
| Storage temperature range | -55 | | +125 | °C | |

Phase Noise Plot at 20 MHz



Standard Shipping Method



The Standard ship method for volume production of the TX-321 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.

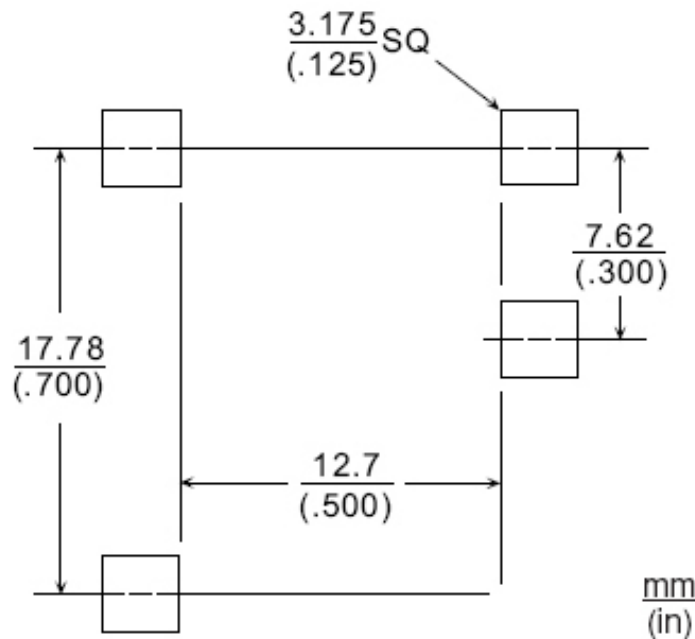
Recommended Reflow Profile

IPC/JEDEC J-STD-020 (latest revision)

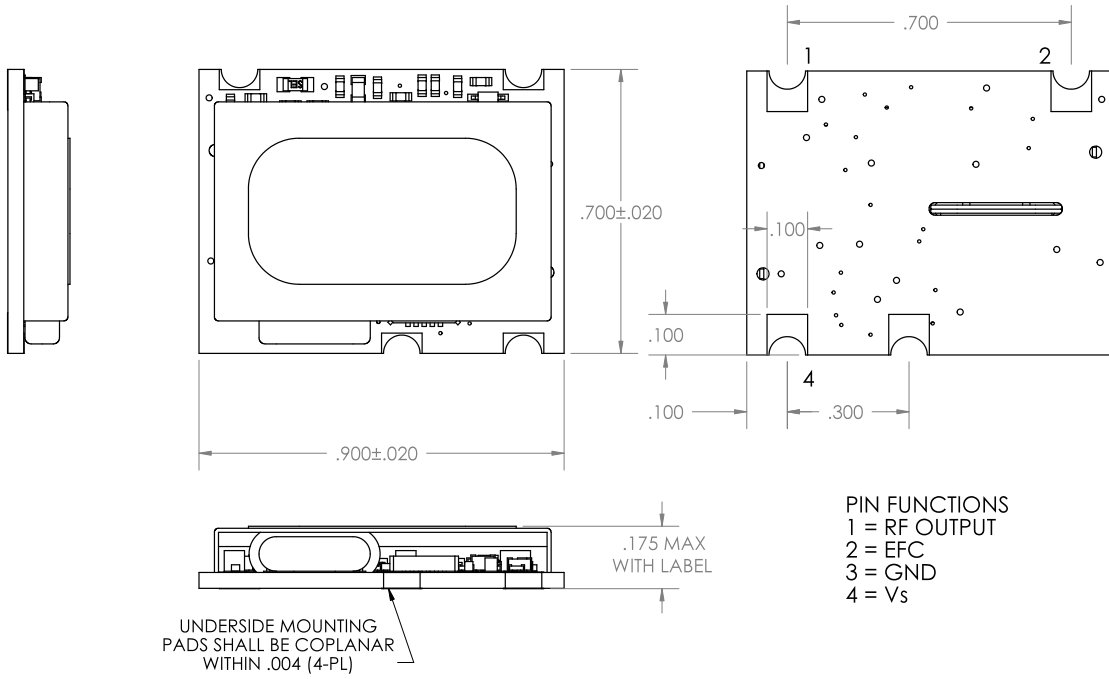
Additional Information:

This SMD oscillator has been designed for pick and place reflow soldering.

Recommended Pad Layout



Outline Drawing / Enclosure



All dimensions in inches

Ordering Information

TX - 3210 - E A E - 106 A - 10M000000

Product Family
TX: TCXO

Package
23x18 mm

Height
0: 4.5 mm

Supply Voltage
D: 5.0 Vdc
E: 3.3 Vdc

RF Output Code
A: HCMOS
E: Sinewave

Frequency

Tuning
A: No Tuning
B: Electrical Tuning

Stability Code
106: ±1ppm
206: ±2ppm

Temperature Range
E: -40°C to +85°C
J: -20°C to +70°C
T: 0°C to +70°C

| Available Frequencies (MHz) ⁵ | | | |
|--|--------|--------|--------|
| 5.000 | 6.250 | 8.184 | 9.600 |
| 10.000 | 12.500 | 16.368 | 19.200 |
| 20.000 | 25.000 | 32.736 | 38.400 |
| 40.000 | 50.000 | | |

Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless otherwise stated, all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, and temperature (25°C).
3. Phase noise degrades with increasing output frequency.
4. Subject to technical modification.
5. Frequencies not listed above will require NRE charges and additional lead times.

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