

**Description**

- Temperature compensated voltage controlled crystal oscillator (TCVCXO) in a hermetically sealed 3.2x2.5mm SMD package.
- Model IQXT-220-2
- Model Issue number 1

**Frequency Parameters**

- Frequency 12.80MHz
- Frequency Tolerance  $\pm 1.00$ ppm
- Frequency Stability  $\pm 0.28$ ppm
- Operating Temperature Range  $-40.00$  to  $85.00^{\circ}\text{C}$
- Ageing  $\pm 0.02$ ppm max/day,  $\pm 1$ ppm max/year
- Frequency Tolerance: Measurement referenced to frequency observed with  $T_A=25^{\circ}\text{C}$ ,  $V_s=3.3\text{V}$ ,  $V_C=1.5\text{V}$  and load= $10\text{k}\Omega//10\text{pF}$ , within 30 days after ex-works.
- Frequency Stability:  $T_A$  varied across the operating temperature range, measurement referenced to frequency observed with  $f_{\text{ref}}=(f_{\text{max}}+f_{\text{min}})/2$ ,  $V_s=3.3\text{V}$ ,  $V_C=1.5\text{V}$ , load= $10\text{k}\Omega//10\text{pF}$  and temperature variable speed less than  $2^{\circ}\text{C}/\text{min}$ .
- Ageing:  $V_s$ ,  $V_C$ ,  $T_A$  and load constant, measurement referenced to frequency observed with  $T_A=25^{\circ}\text{C}$ ,  $V_s=3.3\text{V}$ ,  $V_C=1.5\text{V}$ , load= $10\text{k}\Omega//10\text{pF}$  and after 1hr of operation.
- Supply Voltage Variation (measurement referenced to frequency observed  $T_A=25^{\circ}\text{C}$ ,  $V_s$  varied from 3.13V to 3.47V,  $V_C=1.5\text{V}$  and load= $10\text{k}\Omega//10\text{pF}$ ):  $\pm 0.1$ ppm max
- Load Variation (measurement referenced to frequency observed with  $T_A=25^{\circ}\text{C}$ ,  $V_s=3.3\text{V}$ ,  $V_C=1.5\text{V}$  and load change= $10\text{k}\Omega//10\text{pF} \pm 5\%$ ):  $\pm 0.1$ ppm max
- Developed Frequencies: 10.0MHz, 12.80MHz, 16.320MHz, 16.3840MHz, 19.20MHz, 20.0MHz, 30.720MHz, 32.7680MHz, 38.880MHz, 40.0MHz.

**Electrical Parameters**

- Supply Voltage  $3.3\text{V} \pm 5\%$
- Current Draw 5.000mA
- Current Consumption (@  $T_A=25^{\circ}\text{C}$ ,  $V_s=3.3\text{V}$ ,  $V_C=1.5\text{V}$  and load= $10\text{k}\Omega//10\text{pF}$ ): 5mA max

**Frequency Adjustment**

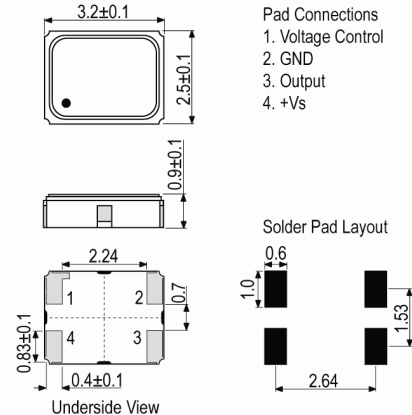
- Pulling  $\pm 10$ ppm min to  $\pm 15$ ppm max
- Control Voltage  $1.5\text{V} \pm 1.0\text{V}$
- Input Impedance  $100\text{k}\Omega$  min
- Linearity: 10% max  
Slope: Positive

**Output Details**

- Output Compatability Clipped Sine
- Drive Capability  $10\text{k}\Omega//10\text{pF}$
- Output Voltage Level: 0.8V pk-pk min

**Noise Parameters**

- Phase Noise @  $25^{\circ}\text{C}$  ( $F=10.0\text{MHz}$ , typ):
  - 90dBc/Hz @ 10Hz
  - 120dBc/Hz @ 100Hz
  - 140dBc/Hz @ 1kHz
  - 145dBc/Hz @ 10kHz
  - 148dBc/Hz @ 100kHz


**Outline (mm)**

**Sales Office Contact Details:**

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**Environmental Parameters**

- Operable Temperature Range: -40 to 85°C
- Storage Temperature Range: -55 to 105°C
- ESD Levels: ANSI/ESDA/JEDEC JS-001-2010:  
Human Body Model, Class 2: 2000V to 4000V  
Machine Model, Class B: 200V to 400V
- Shock: IEC 60068-2-27, Test Ea, Severity 50A: 100G acceleration for 6ms, half sine wave, 3 times in 3 mutually perpendicular planes.
- Vibration: IEC 60068-2-06, Test Fc: 10Hz-2000Hz, 0.75mm amplitude, 10G acceleration, 30mins per cycle, 3 times in 3 mutually perpendicular planes, test duration 2hrs.

**Manufacturing Details**

- Storage Conditions:  
Temperature: -10 to 35°C  
Humidity: 20 to 70% RH
- Maximum Process Temperature: 260°C (30secs max)

**Compliance**

- RoHS Status (2011/65/EU)      Compliant
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    Not Applicable

**Packaging Details**

- Pack Style: Reel      Tape & reel in accordance with EIA-481-D  
Pack Size: 1,400
- *Alternative packing option available*

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