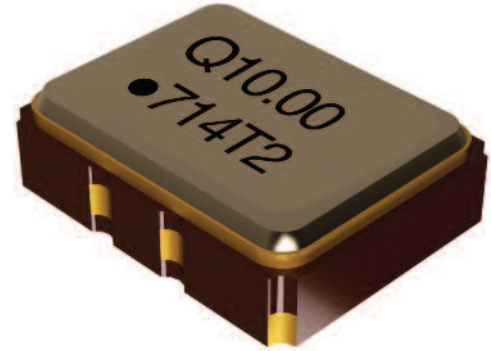


### 5PeNdTbfTaY

Q-Tech's surface-mount QTCT220 oscillators consist of an IC 3.3Vdc TCXO built in a low profile ceramic package with gold plated contact pads.

### Features

- ECCN: EAR99
- Frequency range from 10.000MHz to 52.000MHz
- Small footprint
- Clipped Sine logic
- 2.8, 3.0, 3.3Vdc supply
- Operating temperature -40°C to +85°C available
- Optional Free Tuning
- Hermetically sealed ceramic package
- Military screening tests per MIL-PRF-55310 available
- Tape and reel packaging
- Lead Free, RoHS Compliant
- VCTCXO Option

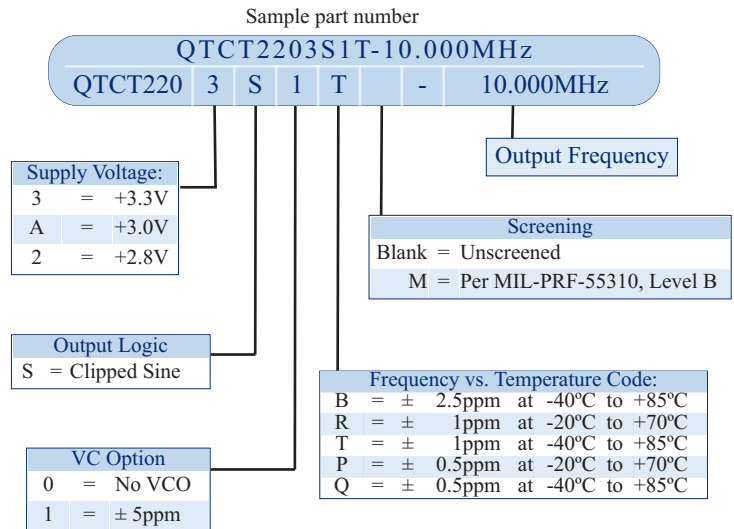


### Applications

- Designed to meet today's requirements for low voltage applications
- Instrumentation
- Navigation
- Avionics
- Ethernet/SynchE
- Base Station
- Global Positioning Systems (GPS)
- Manpack Radio
- FEMTO Cells

[See our Stock List \(Updated Monthly\)](#)

### Ordering Information



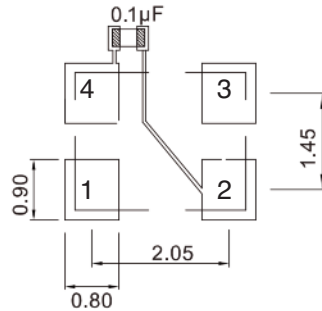
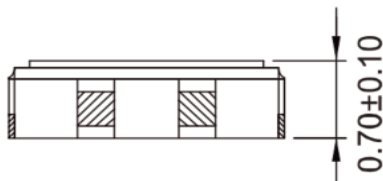
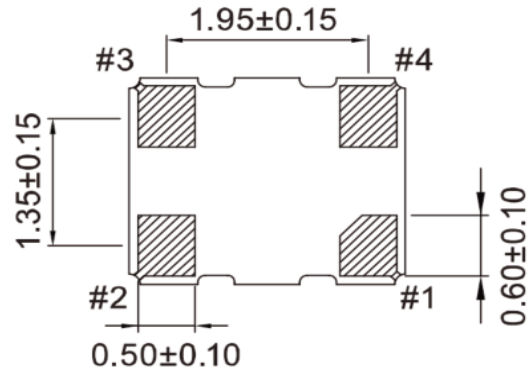
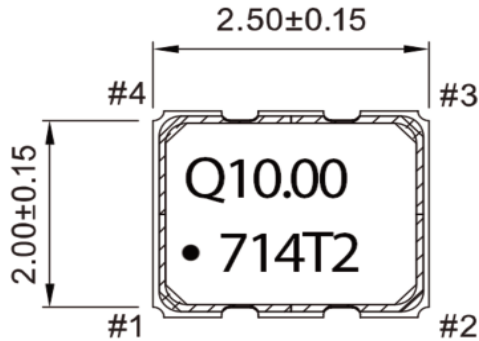
#### Other Options Available For An Additional Charge

- Hot Solder Dip Sn60/Pb40 per MIL-PRF 55310
- Specifications subject to change without prior notice.**

Frequency stability vs. temperature codes may not be available in all frequencies.  
 For Non-Standard requirements, contact Q-Tech Corporation at [Sales@Q-Tech.com](mailto:Sales@Q-Tech.com)

### Package Outline and Pin Connections

Dimensions are in mm



An external bypass capacitor  $0.1 \mu\text{F}$  is required between Vdd and GND

Pin No.	Function
1	VC or NC
2	GND/CASE
3	OUTPUT
4	VDD

### Marking

Line 1: QXX.XX (Q for Q-Tech, no space 5 Characters of Frequency including decimal)  
Line 2: Dot (Pin 1 Indicator) + Date code (Y/WW) + Internal Traceability Code (No Spaces)

### Package Information

- Termination pads (4x), Electro nickel plating  $1.27 \mu\text{m} \sim 8.89 \mu\text{m}$  typ., with gold  $0.3 \mu\text{m} \sim 1.0 \mu\text{m}$  flash plate
- Weight:  $0.025 \text{g}$  typ.

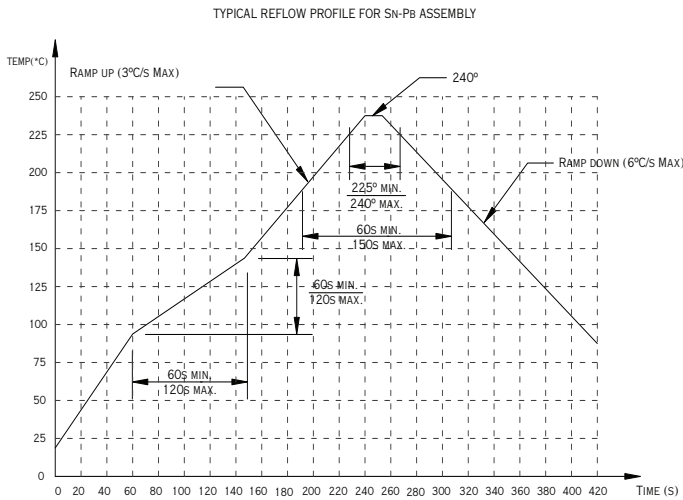
## Electrical Characteristics

Parameters	QTCT230XS
Output frequency range (Fo)	<b>10.000MHz — 45.000MHz</b>
Logic	<b>Clipped Sine</b>
Supply voltage (Vdd)	2.8, 3.0, 3.3Vdc ± 5%
Supply current (Idd)	1.5 mA max. - 10MHz ~ ≤ 26MHz 2.5 mA max. - 26MHz ~ ≤ 52MHz
VCO Option (Tuning Range)	See Part Number on Page 1
Operating temperature (Topr)	See Part Number on Page 1
Storage temperature (Tsto)	-55°C to + 125°C
Start-up time (Tstup)	2ms max.
Output Level	Vop-p = 0.8V
Output Load	10k    10pF
Control Voltage to reach Pull Range (Note 1)	0.5V min. 2.5V max.
Pulling Range (Note 1)	±5 ppm min.
Control Voltage Impedance (Note 1)	500kΩ min.
Phase Noise typ. at 19.2MHz 100Hz 1kHz 10kHz	-115 dBc/Hz -135 dBc/Hz -148 dBc/Hz
Frequency Tolerance (Ftol) at 25°C (Note 2)	±2.0ppm max.
Power Supply Stability ±5% (Fpwr)	±0.2ppm max.
Load Stability ±10% (Fload)	±0.2ppm max.
Aging	±1.0ppm max. 1st year

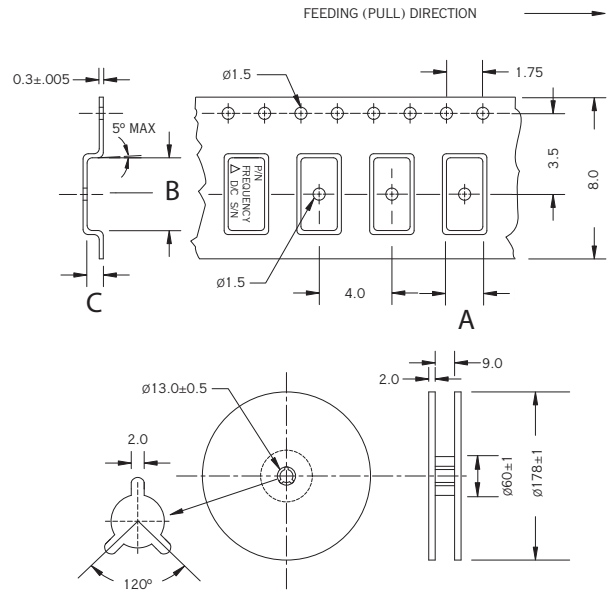
### Notes

1. For VCTCXO option.
2. Frequency at 25°C, 1 hour after reflow.

### Reflow Profile



### Embossed Tape and Reel Information



Package	A	B	C
QTCT 220	2.30 ±0.1	2.80 ±0.1	1.00 ±0.1
Reel size (Diameter in mm)	178		
Qty per reel (pcs)	1,000		

### Environmental and Mechanical Specifications

Environmental Test	Test Conditions
Temperature cycling	MIL-STD-883, Method 1010, Cond. B
Constant acceleration	MIL-STD-883, Method 2001, Cond. A, Y1
Seal: Fine and Gross Leak	MIL-STD-883, Method 1014, Cond. A and C
Vibration sinusoidal	MIL-STD-202, Method 204, Cond. D
Shock, non operating	MIL-STD-202, Method 213, Cond. I
Resistance to solder heat	MIL-STD-202, Method 210, Cond. B
Resistance to solvents	MIL-STD-202, Method 215
Solderability	MIL-STD-202, Method 208
ESD Classification	MIL-STD-883, Method 3015, Class 1
Moisture Sensitivity Level	J-STD-020, MSL=1



**Q-TECH**  
CORPORATION



**QTCT220 SERIES**  
**2.0 x 2.5mm MINIATURE SMD TEMPERATURE CONTROLLED CRYSTAL OSCILLATORS**  
**2.8 to 3.3Vdc - 10.000MHz to 52.000MHz**

DCO	REV	REVISION SUMMARY	PAGE	DATE
7527	-	Initial Release		12/29/2017