

Description

Q-Tech's surface-mount QTCC230 oscillators consist of an IC 3.3Vdc, 2.5Vdc, and 1.8Vdc clock square wave generator and a miniature strip AT quartz crystal built in a low profile ceramic package with gold plated contact pads.

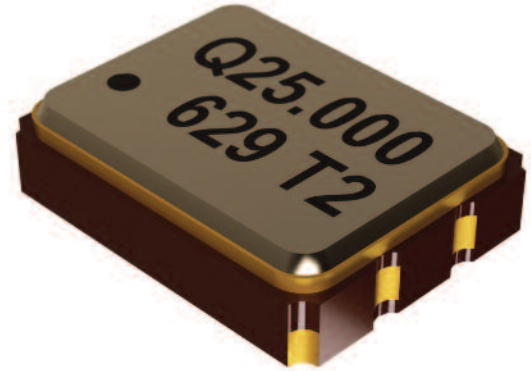
Features

- ECCN: EAR99
- Broad frequency range from 625kHz to 133.000MHz
- Small footprint
- HCMOS logic
- 3.3Vdc, 2.5Vdc, and 1.8Vdc supply
- Operating temperature -55°C to +125°C available
- Tri-State Output Standard
- Hermetically sealed ceramic package
- Fundamental and 3rd Overtone designs
- Military screening tests per MIL-PRF-55310 available
- Tape and reel packaging
- Lead Free, RoHS Compliant

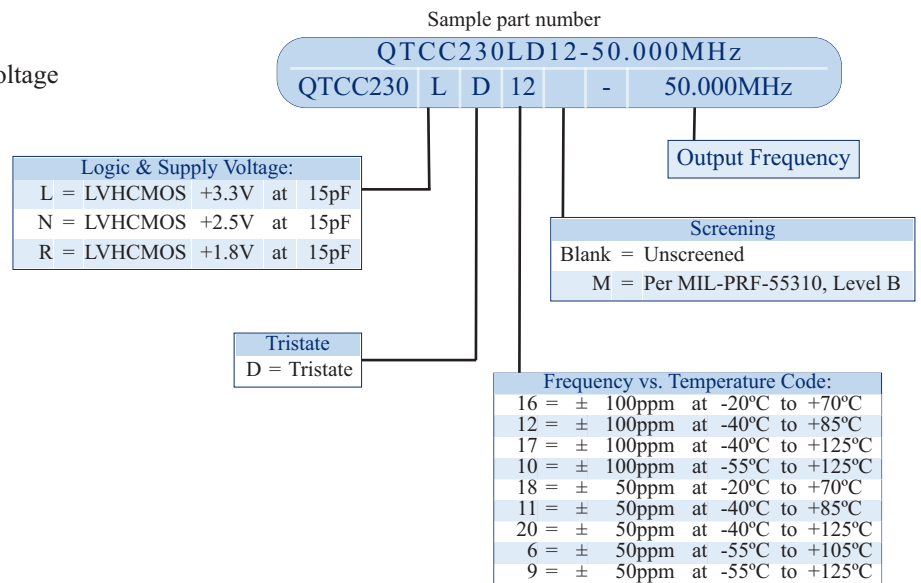
Applications

- Designed to meet today's requirements for low voltage applications
- Gun launched munitions and systems
- Smart munitions
- Instrumentation
- Navigation
- Avionics
- Ethernet/SynchE
- SONET
- Microprocessor clock

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



Ordering Information



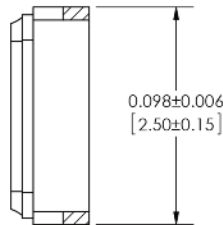
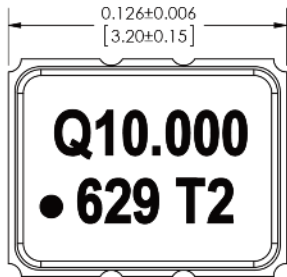
Other Options Available For An Additional Charge

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

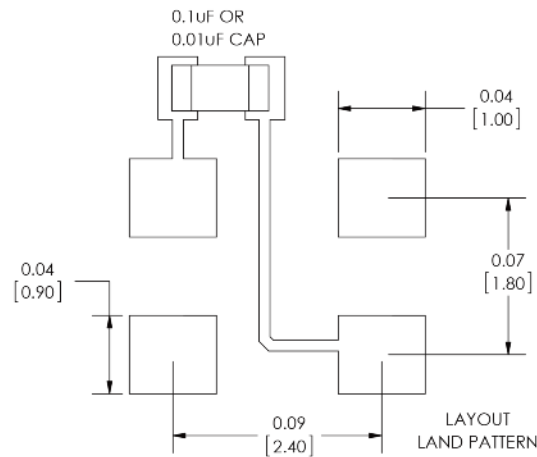
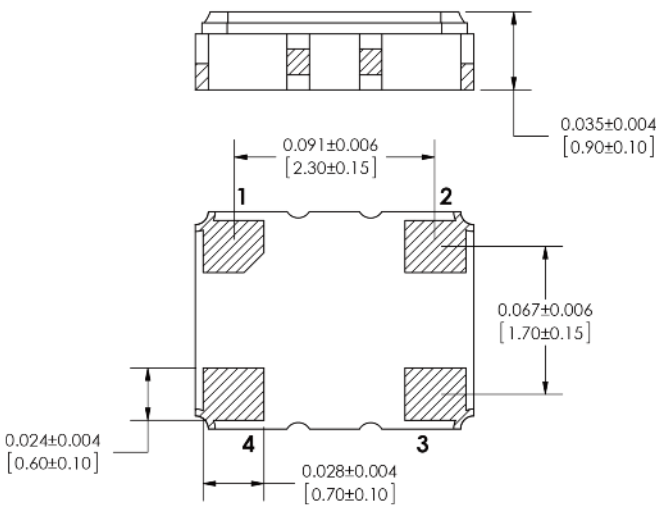
Frequency stability vs. temperature codes may not be available in all frequencies.
For Non-Standard requirements, contact Q-Tech Corporation at Sales@Q-Tech.com



Package Outline and Pin Connections
Dimensions are in inches (mm)



Pin No.	Function
1	TRISTATE
2	GND/CASE
3	OUTPUT
4	VDD



An external bypass capacitor 0.01µF is required between Vdd and GND

Marking

Line 1: QXX.XXX (Q for Q-Tech, no space 7 Characters of Frequency including decimal)
Line 2: Dot (Pin 1 Indicator) + Date code (Y/WW), Internal Traceability Code

Package Information

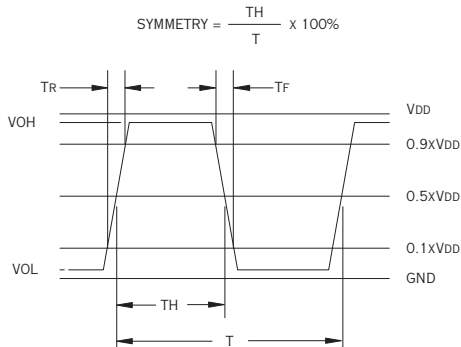
- Termination pads (4x), Electro nickel plating 1.27µm ~ 8.89µm typ., with gold 0.3µm ~ 1.0µm flash plate
- Weight: 0.025g typ.

Electrical Characteristics

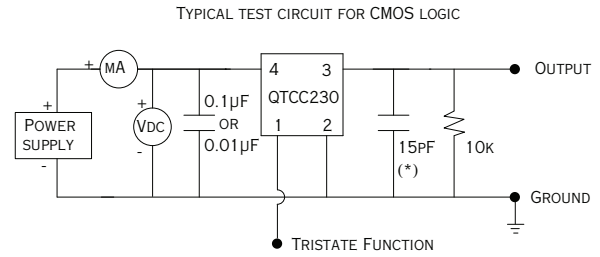
Parameters	QTCC230L	QTCC230N	QTCC230R
Output frequency range (Fo)	625.000kHz — 133.000MHz		625.000kHz — 125.000MHz
Supply voltage (Vdd)	3.3Vdc ± 10%	2.5Vdc ± 10%	1.8Vdc ± 10%
Maximum Applied Voltage (Vdd max.)	-0.5 to +5.0Vdc		-0.5 to +3.6Vdc
Frequency stability ($\Delta F/\Delta T$)	See Part Number on Page 1		
Operating temperature (Topr)	See Part Number on Page 1		
Storage temperature (Tsto)	-62°C to +125°C		
Operating supply current (No Load)	6 mA max. - < 20MHz 7 mA max. - 20MHz ~ < 40MHz 8 mA max. - 40MHz ~ < 50MHz 9 mA max. - 50MHz ~ < 80MHz 10 mA max. - 80MHz ~ < 100MHz 40 mA max. - 100MHz ~ 125MHz	4.5 mA max. - < 20MHz 5.5 mA max. - 20MHz ~ < 40MHz 7 mA max. - 40MHz ~ < 80MHz 7.5 mA max. - 80MHz ~ < 100MHz 30 mA max. - 100MHz ~ < 125MHz	2.5 mA max. - < 40MHz 3.5 mA max. - 40MHz ~ < 50MHz 6.5 mA max. - 50MHz ~ < 80MHz 7 mA max. - 80MHz ~ < 100MHz 20 mA max. - 100MHz ~ < 125MHz
Symmetry (50% of output waveform)	45/55%		
Rise and Fall times	4ns		5ns
Output Load	15pF max.		
Start-up time (Tstup)	5ms max.		
Output voltage (Voh/Vol)	0.9Vdd min. / 0.1Vdd - <40MHz Vdd-0.4 / 0.4 - 40MHz ~ <100MHz 2.3/0.4 - 100MHz~133MHz	0.9Vdd min. / 0.1Vdd - <40MHz Vdd-0.4 / 0.4 - 40MHz ~ <100MHz 1.65/0.4 - 100MHz~125MHz	0.9Vdd min. / 0.1Vdd - <40MHz Vdd-0.4 / 0.4 - 40MHz ~ <125MHz
Output Current (Ioh/Iol)	± 4mA max. - <100MHz ± 8mA max. - ≥100MHz		± 2.8mA max. - <40MHz ± 4mA max. - ≥40MHz
Enable/Disable function Pin 1	VIH ≥ 0.7×Vdd Active VIL ≤ 0.3×Vdd High Z		
Period Jitter Typical RMS Peak-Peak Random Jitter	2.4ps 20.2ps 2.4ps		
RMS Jitter, 12kHz - 20MHz	0.06ps typ. 0.3ps max. (@125MHz)		0.4ps typ. 0.9ps max. (@62.5MHz)
Aging	10 years aging included in Frequency Stability		



Output Waveform (Typical)



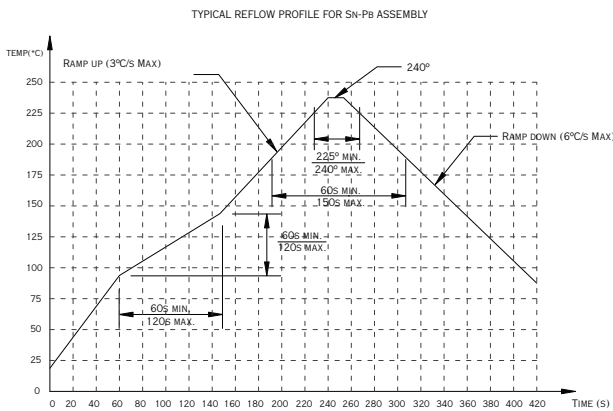
Test Circuit



(* CL INCLUDES PROBE AND JIG CAPACITANCE

The Tristate function on pin 1 has a built-in pull-up resistor so it can be left floating or tied to Vdd without deteriorating the electrical performance.

Reflow Profile

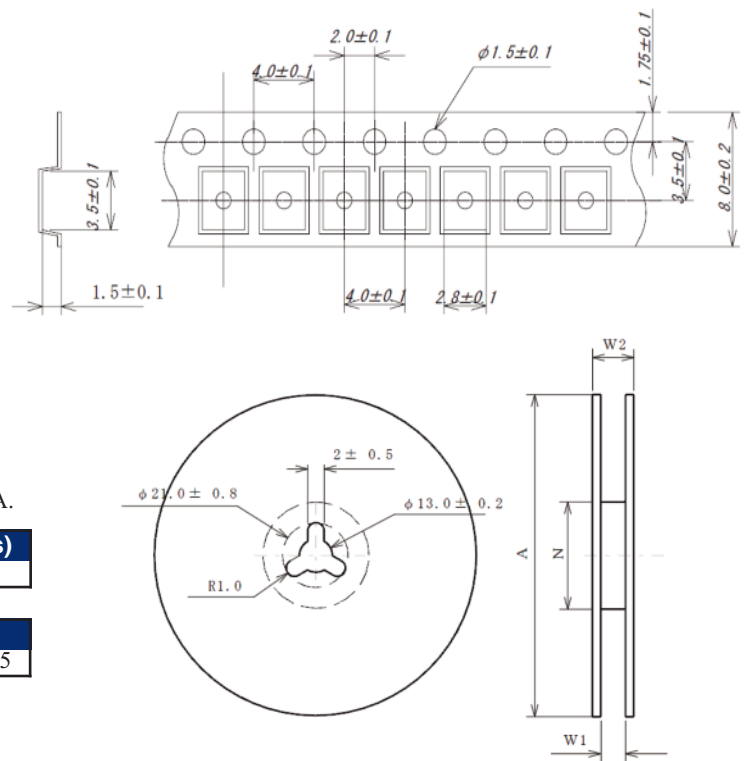


Dimensions are in mm. Tape is compliant to EIA-481-A.

Reel size (Diameter in mm)	Qty per reel (pcs)
180	1,000

Symbol	A	N	W1	W2
Dimension in mm	180	60	9.0±1.0	11.4±1.5

Embossed Tape and Reel Information



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



DCO	REV	REVISION SUMMARY	PAGE	DATE
6162	A	Add N and R logic options	1	2/3/17
		Storage temp changed -55C to -62C	3	
		Jitter information added		
		Add N and R Electrical Characteristics		
	B	Remove 'LA - 3.3V at 50pF' logic option	1, 3	3/8/17