

Description

Q-Tech's surface-mount QTCC350 oscillators consist of an IC 5Vdc, 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 32.768kHz to 125.000MHz
- Small footprint
- HCMOS logic
- 5.0Vdc, 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

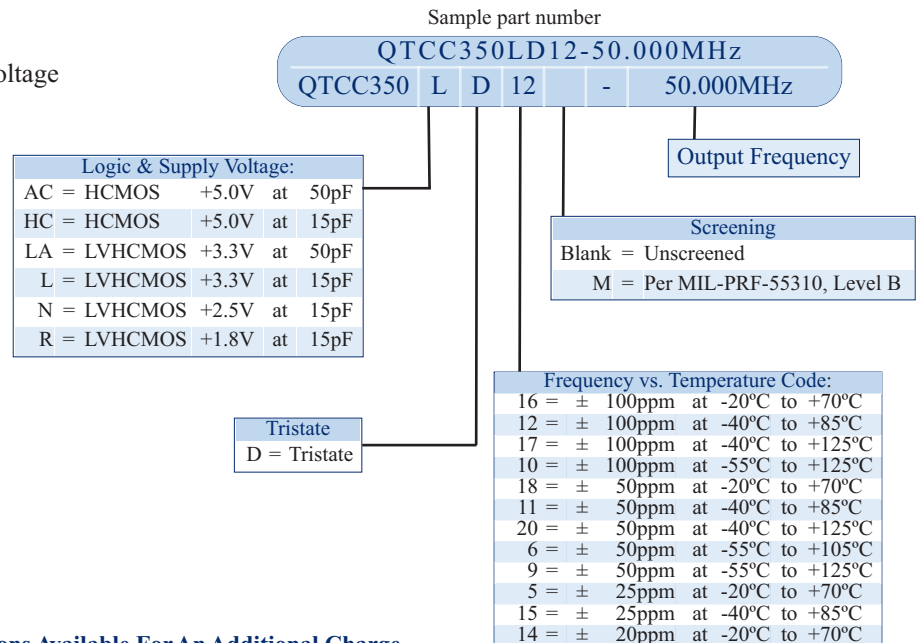


Applications

- 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



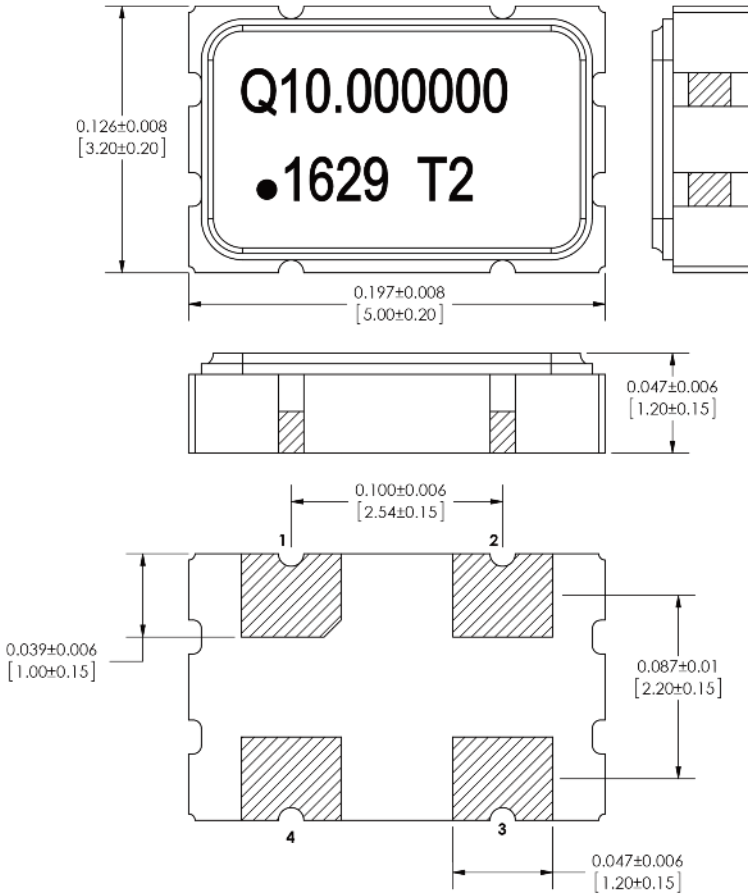
Other Options Available For An Additional Charge

- Hot Solder Dip Sn60/Pb40 per MIL-PRF 55310

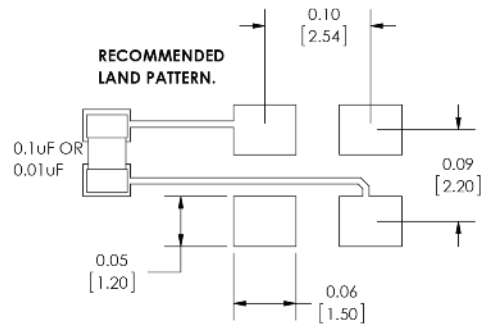
Specifications subject to change without prior notice.

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: QXXX.XXXXXX (Q for Q-Tech, no space 9 or 10 Characters of Frequency including decimal)
 Line 2: Dot (Pin 1 Indicator) + Date code (YY/WW), Internal Traceability Code

Package Information

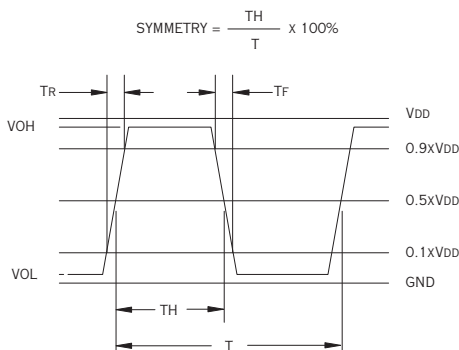
- Termination pads (4x), Electro nickel plating 1.27µm ~ 8.89µm typ., with gold 0.3µm ~ 1.0µm flash plate
- Weight: 0.057g typ.

Electrical Characteristics

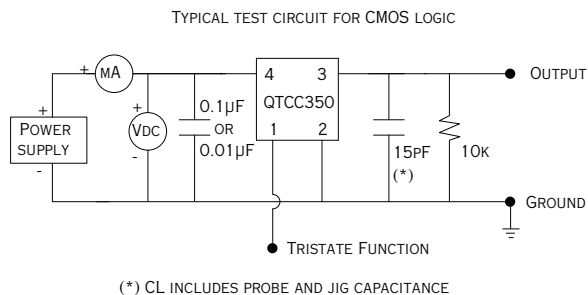
Parameters	QTCC350AC	QTCC350HC	QTCC350LA	QTCC350L	QTCC350N	QTCC350R	
Output frequency range (Fo)	1.544MHz — 75.000MHz		32.768kHz — 125.000MHz			1.544MHz — 125.000MHz	
Supply voltage (Vdd)	5.0Vdc ± 10%		3.3Vdc ± 10%		2.5Vdc ± 10%	1.8Vdc ± 10%	
Maximum Applied Voltage (Vdd max.)	-0.7 to +7.0Vdc		-0.5 to +5.0Vdc			-0.5 to +3.6Vdc	
Frequency stability (ΔF/ΔT)	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)	10 mA max. - ≤ 20MHz 30 mA max. - 20MHz ~ ≤ 50MHz 40 mA max. - 50MHz ~ ≤ 75MHz	5 mA max. - <1.5MHz 7 mA max. - 1.5MHz ~ ≤ 20MHz 20 mA max. - 20MHz ~ ≤ 50MHz 30 mA max. - 50MHz ~ ≤ 100MHz 40 mA max. - 100MHz ~ 125MHz	5 mA max. - <1.5MHz 7 mA max. - 1.5MHz ~ ≤ 20MHz 15 mA max. - 20MHz ~ ≤ 50MHz 20 mA max. - 50MHz ~ ≤ 75MHz 25 mA max. - 75MHz ~ ≤ 100MHz 30 mA max. - 100MHz ~ 125MHz	5 mA max. - <1.5MHz 7 mA max. - 1.5MHz ~ ≤ 20MHz 15 mA max. - 20MHz ~ ≤ 50MHz 20 mA max. - 50MHz ~ ≤ 75MHz 25 mA max. - 75MHz ~ ≤ 100MHz 30 mA max. - 100MHz ~ 125MHz	5 mA max. - 1.5MHz ~ ≤ 20MHz 15 mA max. - 20MHz ~ ≤ 70MHz 20 mA max. - 70MHz ~ ≤ 100MHz 25 mA max. - 100MHz ~ 125MHz		
Symmetry (50% of output waveform)	45/55%						
Rise and Fall times	8 ns max. - ≤ 20MHz 5 ns max. - 20MHz ~ ≤ 50MHz 2 ns max. - 50MHz ~ 75MHz 7 ns max. - 50pF Load (20 ~ 50MHz)	200ns max. - 32.768kHz ~ ≤ 345.6kHz 6 ns max. - 345.6kHz ~ ≤ 20MHz 4 ns max. - 20MHz ~ ≤ 50MHz 3 ns max. - 50MHz ~ ≤ 75MHz 2 ns max. - 75MHz ~ 125MHz 7 ns max. - 50pF Load	200ns max. - 32.768kHz ~ ≤ 345.6kHz 6 ns max. - 345.6kHz ~ ≤ 20MHz 5 ns max. - 20MHz ~ ≤ 50MHz 3 ns max. - 50MHz ~ ≤ 75MHz 2 ns max. - 75MHz ~ 125MHz	200ns max. - 32.768kHz ~ ≤ 345.6kHz 6 ns max. - 345.6kHz ~ ≤ 20MHz 5 ns max. - 20MHz ~ ≤ 50MHz 3 ns max. - 50MHz ~ ≤ 75MHz 2 ns max. - 75MHz ~ 125MHz	6 ns max. - ≤ 20MHz 5 ns max. - 20MHz ~ ≤ 50MHz 3 ns max. - 50MHz ~ 125MHz		
Output Load (Note 1)	50pF max.	15pF max.	50pF max.	15pF max.			
Start-up time (Tstup)	8ms max.						
Output voltage (Voh/Vol)	0.9Vdd min. / 0.1Vdd max.						
Output Current (Ioh/Iol)	± 16mA max.			± 8mA max.			
Enable/Disable function Pin 1	VIH ≥ 4.0V Active VIL ≤ 0.8V High Z		VIH ≥ 2.0V Active		VIH ≥ 1.75V Active VIL ≤ 0.5V High Z		
Phase Noise typ. @20.000MHz	10Hz -90 dBc/Hz 100Hz -124 dBc/Hz 1kHz -140 dBc/Hz 10kHz -148 dBc/Hz 100kHz -155 dBc/Hz 1MHz -157 dBc/Hz 10MHz -158 dBc/Hz						
Aging	±5ppm max. First Year ±2ppm max. Each Year Thereafter						

Note 1: 50pF Load is only available up to 50MHz

Output Waveform (Typical)

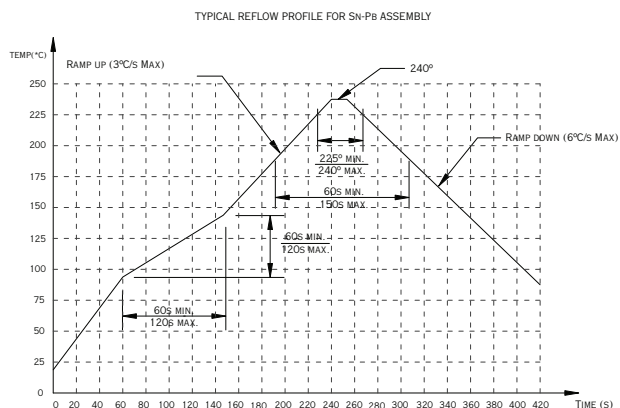


Test Circuit

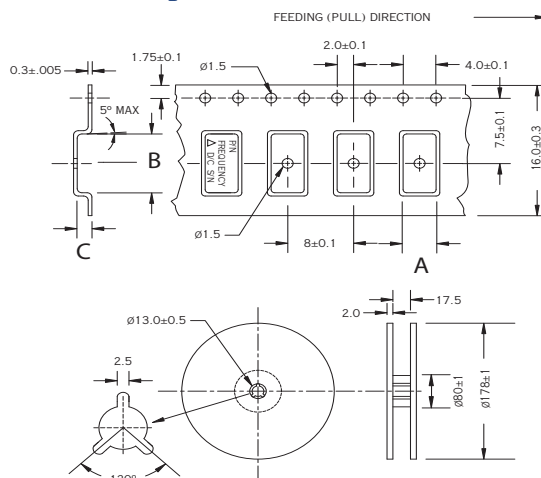


The Tristate function on pin 1 has a built-in pull-up resistor so it can be left floating or tied to Vdd without deteriorating the electrical performance.

Reflow Profile



Embossed Tape and Reel Information



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

Package	A	B	C
QTCC 350	3.70 ±0.1	5.50 ±0.1	1.40 ±0.1
Reel size (Diameter in mm)		Qty per reel (pcs)	
178		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



DCO	REV	REVISION SUMMARY	PAGE	DATE
6161	A	Add N and R logic options	1	2/3/17
		Storage temp changed -55C to -62C		
		Jitter information added	3	
		Add N and R Electrical Characteristics		
6728	B	Revise Rise and Fall times for 50pF load	3	4/24/17
		Fix Tape/Reel dimensions	4	
		Revise Aging	3	
		Removed jitter information and add phase noise data	3	