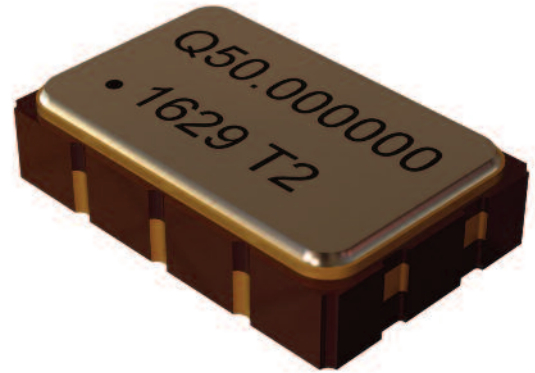


Description

Q-Tech's surface-mount QTCV356 VCXOs consist of an IC 5Vdc, 3.3Vdc clock square wave generator and a miniature strip AT quartz crystal built in a low profile ceramic package with gold plated contact pads.

Features

- Broad frequency range from 1.000MHz to 156.250MHz
- Small footprint
- HCMOS, LVHCMOS, LVPECL logic
- 5.0Vdc, 3.3Vdc supply
- Operating temperature -40°C to +85°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

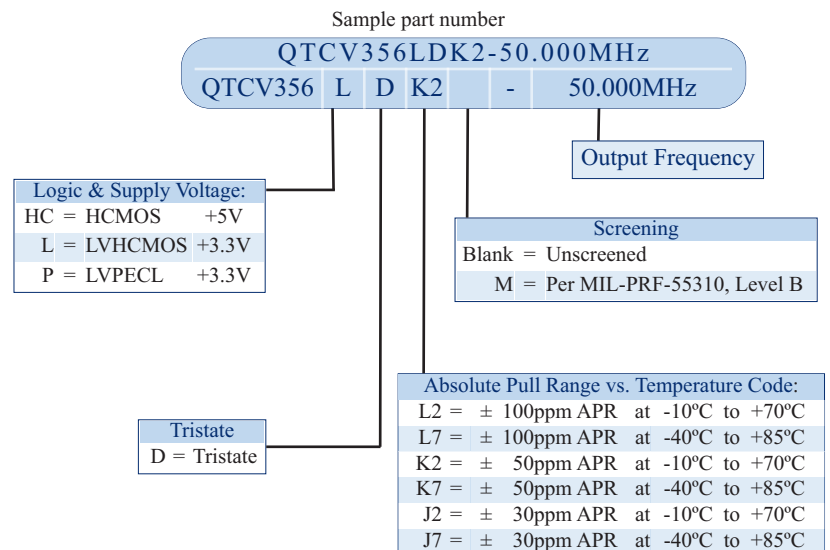


Applications

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

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

Ordering Information



Other Options Available For An Additional Charge

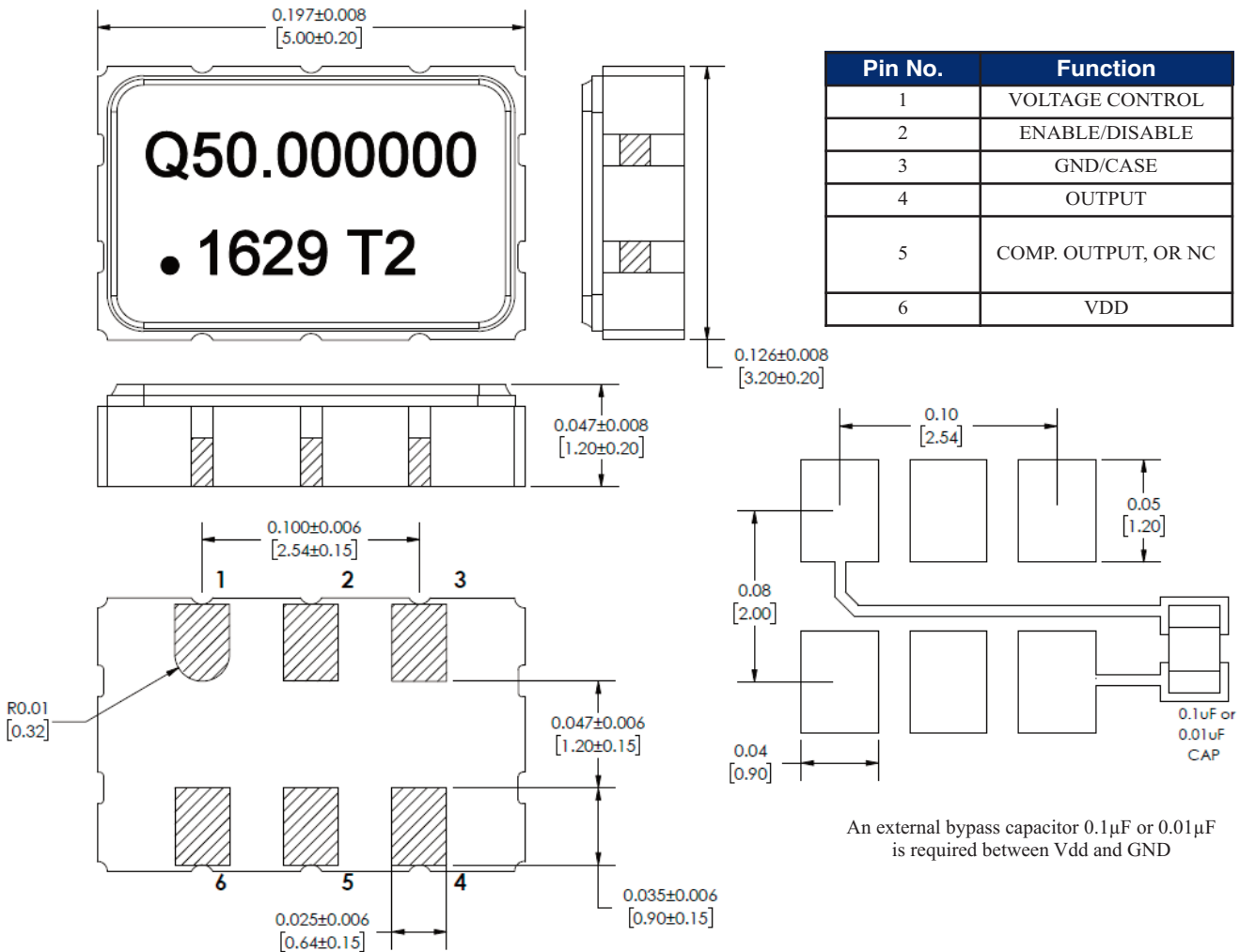
- Hot Solder Dip Sn60/Pb40 per MIL-PRF 55310

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)



Marking

Line 1: QXXX.XXXXXXX (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

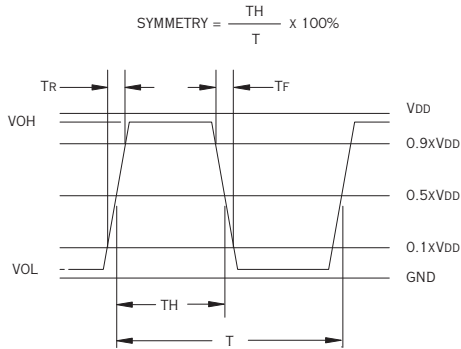
Package Information

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

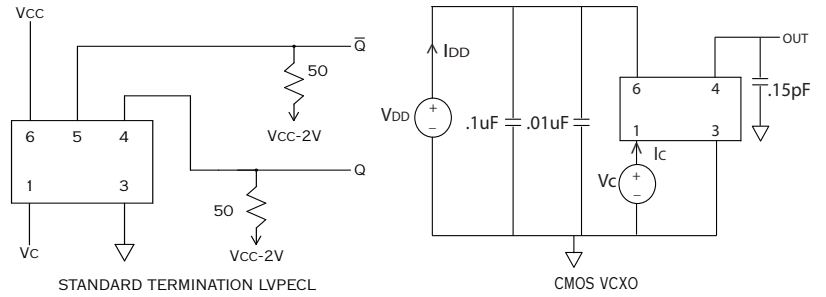
Electrical Characteristics

Parameters	QTCV356HC	QTCV356L	QTCV356P
Output frequency range (Fo)	1.544MHz — 125.000MHz	1.000MHz — 150.000MHz	78.000MHz — 156.250MHz
Logic	HCMOS	LVC MOS	LVPECL
Supply voltage (Vdd)	5.0Vdc ± 10%	3.3Vdc ± 5%	
Absolute Pull Range (APR)	See Part Number on Page 1		
Linearity	5% typ.		
Operating temperature (Topr)	See Part Number on Page 1		
Storage temperature (Tsto)	-62°C to + 125°C		
Operating supply current (No Load)	18mA typ. 50mA max.	15mA typ. 40mA max.	50mA typ. 90mA max.
Symmetry (50% of output waveform)	45/55%		
Rise and Fall times	5ns max.		0.3ns typ. 0.5ns max.
Output Load	15pF max.		50Ω into Vdd-2V
Start-up time (Tstup)	10ms max.		
Output Enable/Disable (Vih/Vil)	0.9*Vdd min. / 0.1*Vdd max.		
Control Voltage Range for Pull Range (Vc)	0.5V min. 4.5V max.	0.3V min. 3.0V max.	
Control Voltage Input Impedance (Zin)	1MΩ min.		10MΩ min.
Control Voltage Modulation BW	10 kHz min.		20 kHz min.
Period Jitter Typical Pk-Pk (61.44 MHz) RMS (61.44 MHz)	23ps 3.0ps		N/A
Jitter, RMS (12kHz to 20MHz)	N/A		0.2ps typ. 0.5ps max.
Phase Noise Typical 10 Hz 100 Hz 1 kHz 10 kHz 100 kHz 1 MHz 10 MHz	-63 dBc/Hz -97 dBc/Hz -129 dBc/Hz -144 dBc/Hz -157 dBc/Hz -159 dBc/Hz -164 dBc/Hz		(at 122.88 MHz) -68 dBc/Hz -98 dBc/Hz -125 dBc/Hz -148 dBc/Hz -157 dBc/Hz -157 dBc/Hz -167 dBc/Hz
Aging	10 years aging included in Frequency Stability		

CMOS Output Waveform (Typical)

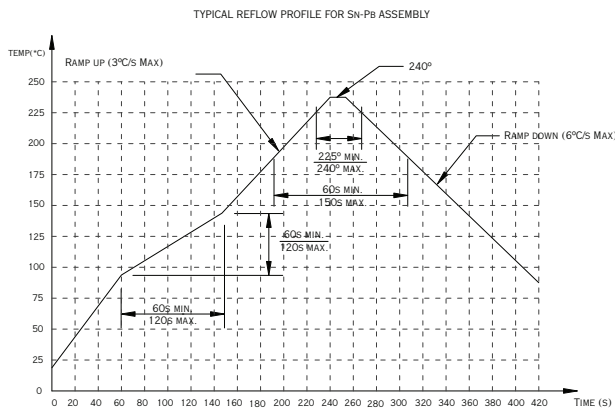


Test Circuit

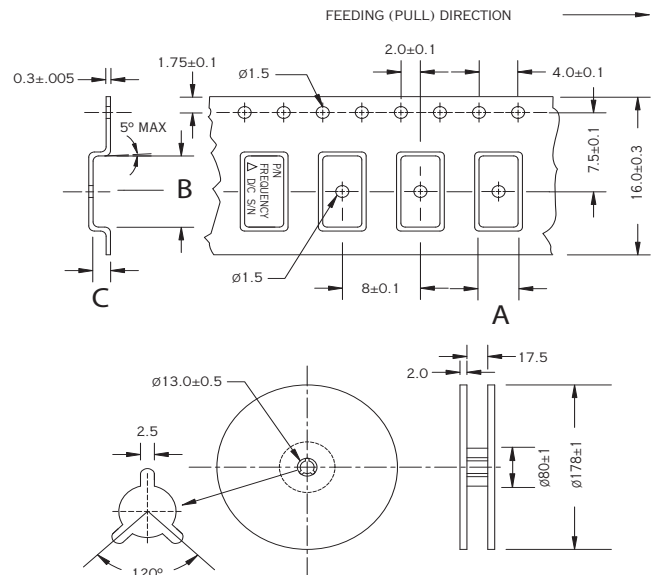


The Tristate function on pin 2 has a built-in pull-up resistor so it can be left floating or tied to Vdd without deteriorating the electrical performance.

Reflow Profile



Embossed Tape and Reel Information



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

Package	A	B	C
QTCV 356	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



QTCV356 SERIES
LOW PROFILE 3.2 x 5mm MINIATURE SMD VOLTAGE CONTROLLED CRYSTAL
OSCILLATORS
3.3 and 5.0Vdc - 1.000MHz to 156.250MHz

DCO	REV	REVISION SUMMARY	PAGE	DATE
6166	A	Replace LVDS test circuit with CMOS test circuit (LVDS not offered)	4	2/3/2017
		Add Linearity to table	3	
		Supply current changed to 18/50 15/40 50/90 from 50/90 for all 3		
		Control voltage impedance changed to 1k typ/1M min from 2M min		
		Add jitter and phase noise information		
8041	B	Fix Package Outline (bypass capacitor had incorrect connections) Was: Connected to pins 3 and 5 Is Now: Connected to pins 3 and 6	2	3/29/2018
		Fix CMOS VCXO Test Circuit pinout numbers, add missing Ground	4	