

Description

Q-Tech's surface-mount QTCC353 oscillators consist of an IC 5Vdc, 3.3Vdc, 2.5Vdc, and 1.8Vdc clock square wave generator and a 3-point mount miniature strip AT quartz crystal built in a low profile ceramic package with gold plated contact pads.

Features

- ECCN: EAR99
- Broad frequency range of 1.000MHz to 125.000MHz and 32.768kHz. See page 3 for frequency ranges of each voltage option.
- Small footprint
- 3-Point Mount Crystal
- 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
- SONENT
- Microprocessor clock

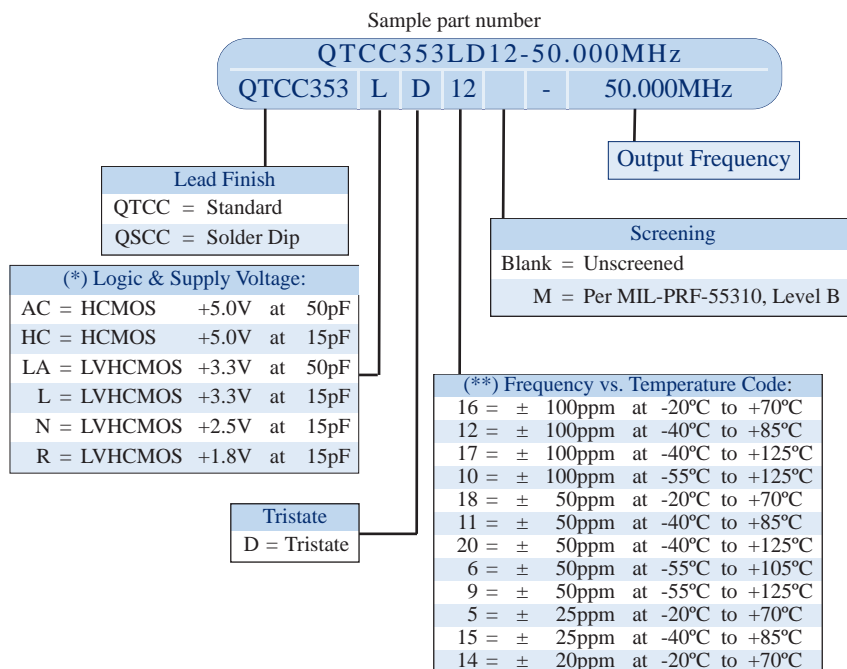
Stock List

See all Miniature Oscillator products [IN STOCK](#)
 Ordering is NOT limited to the IN STOCK list.
 Please consult with our sales managers to order custom frequencies.

Specifications subject to change without prior notice.
 For Non-Standard requirements, contact Q-Tech Corporation at Sales@Q-Tech.com

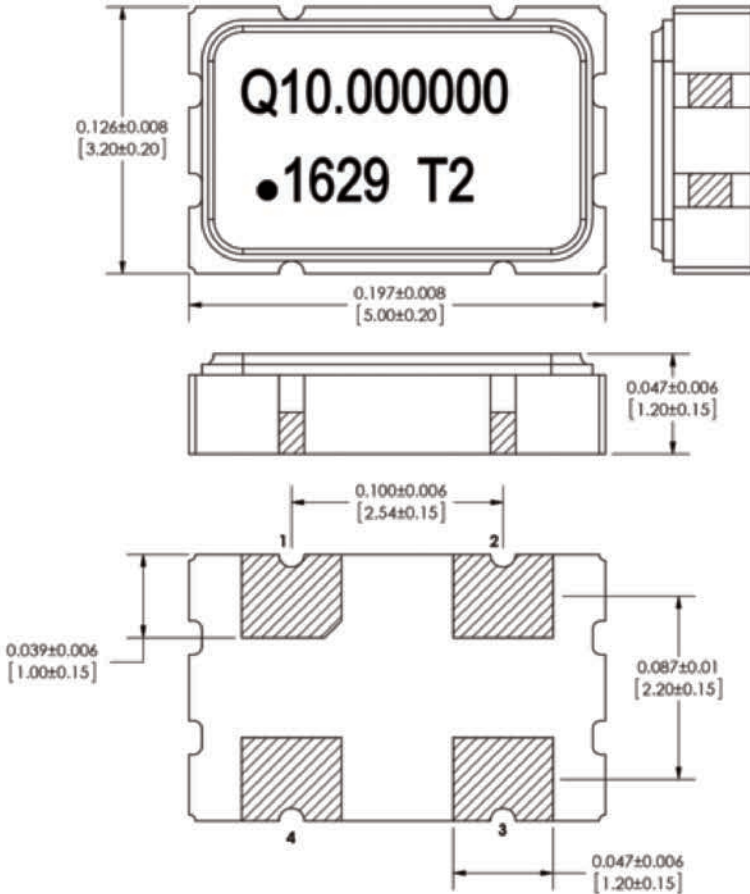


Ordering Information

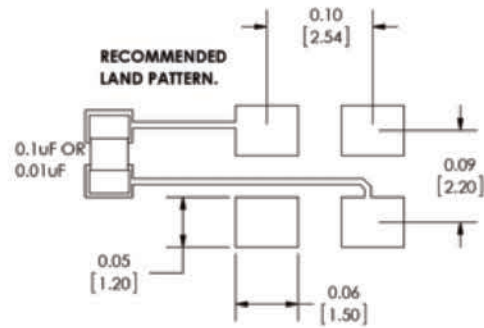


QTCC353 Product Map						
Voltage	Temperature Range	Frequency Range	Stability			
			±25ppm	±50ppm	±100ppm	
1.8V	-40°C to +85°C	32.768kHz, 1.544MHz to 170MHz	✓	✓	✓	
	-55°C to +125°C	32.768kHz, 1.544MHz to 125MHz 126MHz to 133MHz		✓	✓	
2.5V 3.3V	-40°C to +85°C	32.768kHz, 1MHz to 170MHz	✓	✓	✓	
	-55°C to +125°C	32.768kHz, 1MHz to 125MHz 126MHz to 133MHz		✓	✓	
5.0V	-40°C to +85°C	32.768kHz, 1.544MHz to 100MHz	✓	✓	✓	
	-55°C to +125°C	32.768kHz, 1.544MHz to 40MHz		✓	✓	

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
 Gold flash plate 0.3µm ~ 1.0µm
- Weight: 0.057g typ.

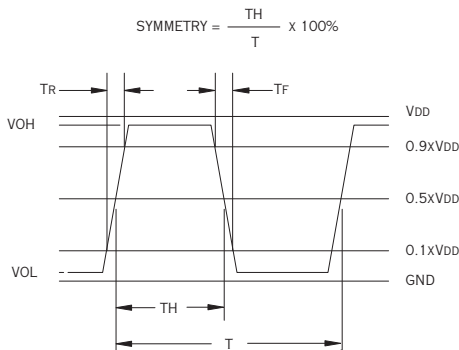
Electrical Characteristics

Parameters	QTC353AC	QTC353HC	QTC353LA	QTC353L	QTC353N	QTC353R
Output frequency range (Fo)	32.768kHz, 1.544MHz — 100.000MHz		32.768kHz, 1.000MHz — 125.000MHz		32.768kHz, 1.544MHz — 125.000MHz	
Supply voltage (Vdd)	5.0Vdc ± 10%		3.3Vdc ± 10%		2.5Vdc ± 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. - 30 mA max. - 40 mA max. -	≤ 20MHz ~ ≤ 50MHz ~ ≤ 100MHz	5 mA max. - 7 mA max. - 20 mA max. - 30 mA max. - 40 mA max. -	<1.5MHz ~ ≤ 20MHz ~ ≤ 50MHz ~ ≤ 100MHz ~ 125MHz	5 mA max. - 7 mA max. - 15 mA max. - 20 mA max. - 25 mA max. - 30 mA max. -	<1.5MHz ~ ≤ 20MHz ~ ≤ 50MHz ~ ≤ 75MHz ~ ≤ 100MHz ~ 125MHz
Symmetry (50% of output waveform)	45/55%					
Rise and Fall times	200ns max. - 32.768kHz 8 ns max. - 5 ns max. - 2 ns max. -		200ns max. - 32.768kHz 6 ns max. - 1.000MHz ~ ≤ 20MHz 4 ns max. - 20MHz ~ ≤ 50MHz 3 ns max. - 50MHz ~ ≤ 75MHz 2 ns max. - 75MHz ~ 125MHz 7 ns max. - 50pF Load (<40MHz)		200ns max. - 32.768kHz 6 ns max. - 1.000MHz ~ ≤ 20MHz 5 ns max. - 20MHz ~ ≤ 50MHz 3 ns max. - 50MHz ~ ≤ 75MHz 2 ns max. - 75MHz ~ 125MHz	
Output Load (Note 1)	50pF max.	15pF max.	50pF max.	8ms max.		15pF max.
Start-up time (Tstnp)	8ms max.					
Output voltage (Voh/Vol)	0.9Vdd min. / 0.1Vdd max.					
Output Current (Ioh/Iol)	± 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	
Aging			1MHz		-157 dBc/Hz	
			10MHz		-158 dBc/Hz	

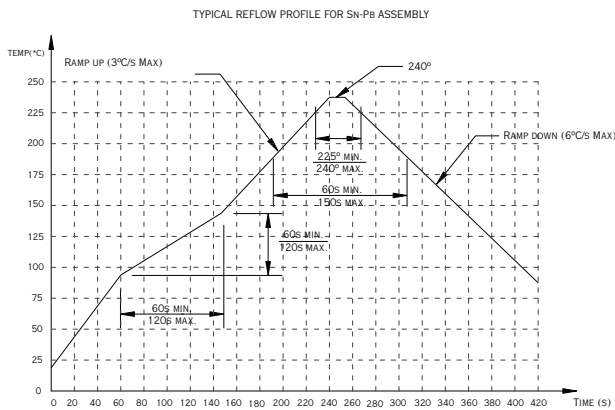
Note 1: 50pF Load is only available up to 50MHz

±5ppm max. First Year
±2ppm max. Each Year Thereafter

Output Waveform (Typical)

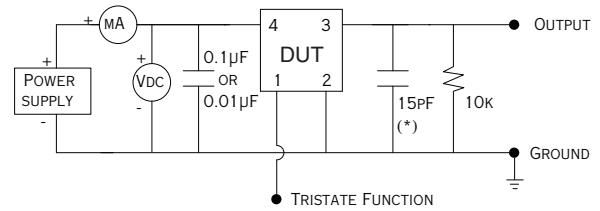


Reflow Profile



Test Circuit

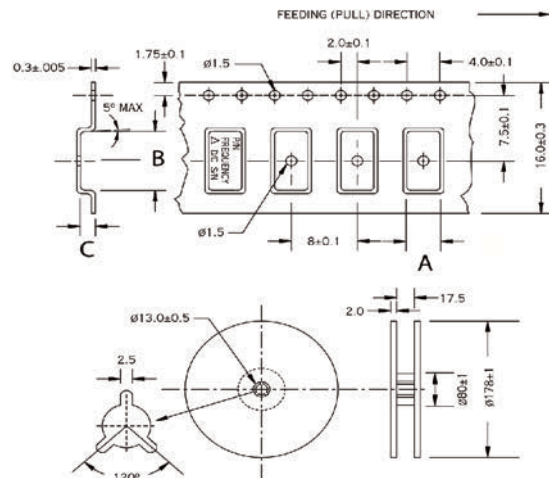
TYPICAL TEST CIRCUIT FOR CMOS LOGIC



(* 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.

Embossed Tape and Reel Information



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

Package	A	B	C
QTCC353	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



Q-TECH
CORPORATION



QTCC353 SERIES
3-POINT MOUNT LOW PROFILE 3.2 x 5mm MINIATURE SMD CRYSTAL OSCILLATORS
1.8, 2.5, 3.3 and 5.0Vdc - 32.768kHz, 1000MHz to 125.000MHz

DCO	REV	REVISION SUMMARY	PAGE	DATE
14210	-	Initial Release		11/12/2021