

Description

Q-Tech's extreme high-temperature crystal oscillators consist of a SOI CMOS source clock square wave generator, logic output buffers and/or logic divider stages, and a round AT or IT-cut high-precision quartz crystal built in a hermetically sealed Dual-In-Line (DIP 14 or DIP 8) package.

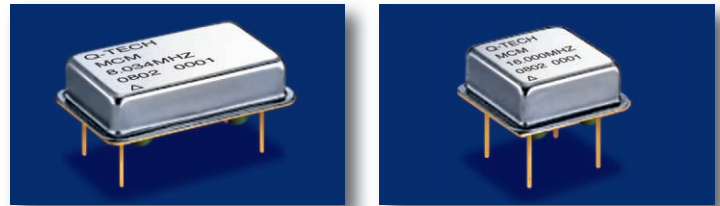
Features

- Made in the USA
- ECCN: EAR99
- DFARS 252-225-7014 Compliant:
Electronic Component Exemption
- USML Registration # M17677
- Silicon on Insulator (SOI) CMOS technology to operate at extreme high temperatures
- Compatibility of chip metal (Al) to wire bonding type (Al) to avoid Gold-Aluminum intermetallic effect
- Wide frequency range from 500kHz to 45MHz
- Wide operating temperature range -55°C to +225°C
- Operational up to +250°C
- HCMOS Output logic
- Supply voltages from 3.3Vdc to 5Vdc
- Low current
- Hermetically sealed package
- Fundamental mode designs
- A custom MCM part number will be assigned to each specific customer's application
- Q-Tech does not use pure lead or pure tin in its products
- RoHS compliant

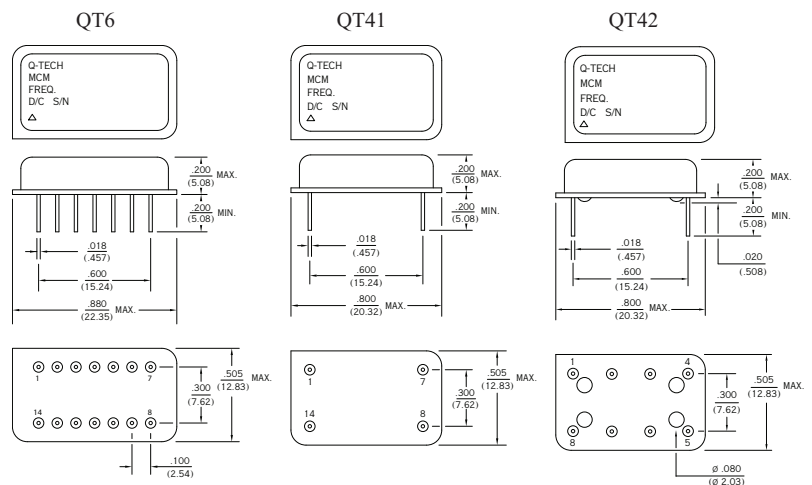


Applications

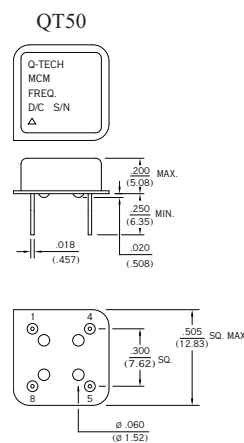
- Designed to meet today's requirements for all industries requiring extreme high-temperature applications of electronic circuits beyond +200°C
- Oil service industry
- Gas turbine controls
- Measurement while drilling, data-logging tools
- Industrial process controls
- Avionics
- Aircraft Engines



DIP 14



DIP 8



Pin No.		Function
DIP 14	DIP 8	
1	1	E/D or N/C
7	4	GND
8	5	OUTPUT
14	8	VDD

Package Information

- Package material (header and leads): Kovar
- Lead finish:
Gold Plated – 50μ ~ 80μ inches
Nickel Underplate – 100μ ~ 250μ inches
- Cover (DIP-14): Pure Nickel Grade A
(DIP-8): Stainless Steel
- Package to lid attachment: Resistance weld

Part Numbering System

Q-Tech Corporation assigns a custom MCM part number for each of the customer's specification or application. The unique part numbering system allows Q-Tech to design, select appropriate technology (packaging, supply current, operating temperature, vibration and shock requirement, etc.) to tailor customer's specific needs. The part is available in standard Full Military screening (-M) per MIL-PRF-55310, product level B. Sample part number MCM4524-2M

Technology

Package and Frequency

DIP-14: 500kHz to 45MHz

DIP-8: 500kHz to 27MHz

Logic

HCMOS

Supply Voltage

Standard 3.3Vdc \pm 5% (*) and 5Vdc \pm 10%

(*) Not all frequencies are offered at 3.3Vdc.
Please send inquiries to Q-Tech.

Supply Current

Q-Tech extreme high-temperature crystal oscillators were designed to assure low power consumption.

Standard typical no load supply current on extreme high-temperature oscillators:

QT6HC8M - 4MHz	1mA
QT6L8M - 44MHz	16mA
QT50L8M - 24MHz	7mA
QT50HC8M - 24MHz	12mA
QT6HC8M - 32MHz	10mA

Symmetry

45/55% max. for Fo < 4MHz

40/60% max. for Fo \geq 4MHz

Rise and Fall Times (10% to 90% Vdd)

3ns typical

Start-Up Time

3ms typical, 10ms max.

Operating Temperature

Q-Tech extends its product offering to a wide operating temperature range from -55°C to +225°C. Consult factory for temperature ranges above +225°C.

Frequency Stability

Operating temperature and frequency dependent
Standard offerings:

0°C to +225°C \pm 350ppm

Other frequency stability is available. Please contact Q-Tech for details.

Design Information

Q-Tech Corporation used proprietary designs for thick-film substrate, quartz crystal properties, SOI IC technology, and wire bonding techniques to assure highest reliability over the life of the application.

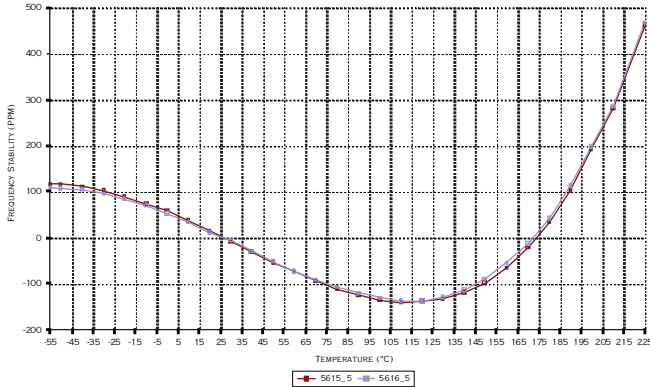
Options

- Screening to MIL-PRF-55310
- Tri-state Output (Enable low)

Please contact our factory or visit our website, www.q-tech.com for technical updates.

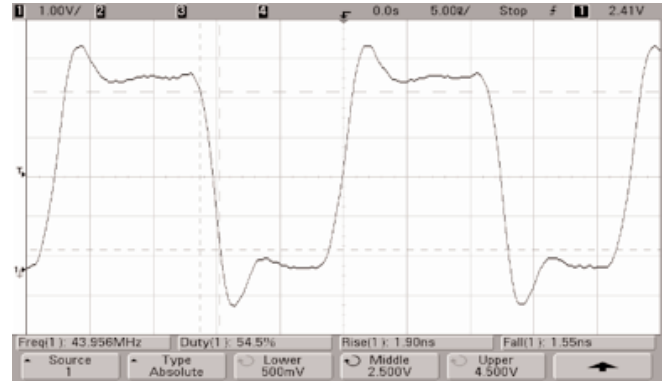
Frequency vs. Temperature Curve

Extreme High Temperature -55°C to +225°C QT50HC8M 24.000MHz



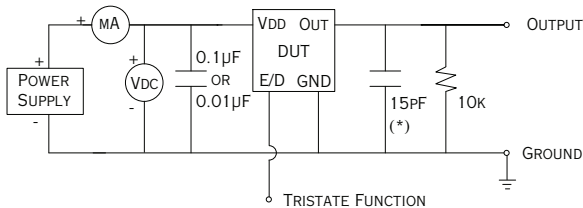
Output Waveform (Typical)

QT6HC8M 44.000MHz Output at +225°C



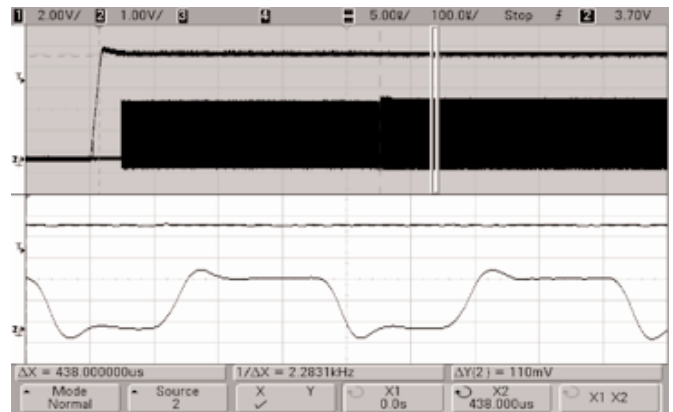
Test Circuit

TYPICAL TEST CIRCUIT FOR CMOS LOGIC



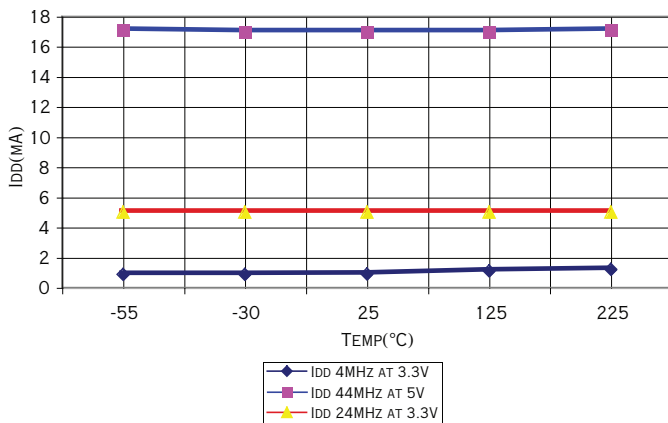
(*) CL INCLUDES PROBE AND JIG CAPACITANCE

QT6HC8M 44.000MHz Start-up Time at +225°C (0.44ms)



Supply Current

I_{DD} (mA) Over Temperature



QT50HC8M 4.000MHz Start-up Time at +25°C (1.64ms)

