Q-TECH CORPORATION

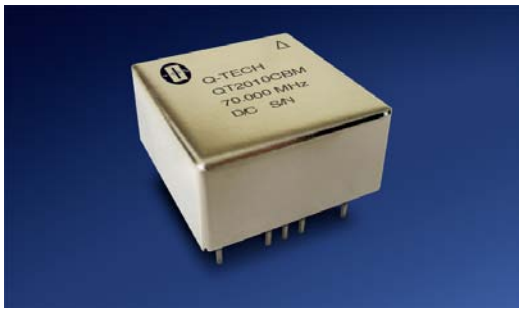
QT2010 MCXO

MICROCOMPUTER COMPENSATED CRYSTAL OSCILLATOR

3.3Vdc - 5 to 100MHz, 32.768kHz and 1PPS

Description

Q-Tech's microcomputer compensated crystal oscillator, MCXO, uses a high stability overtone SC-cut crystal with microprocessor controlled compensation. The self-temperature sensing resonator, using a dual-mode oscillator, virtually eliminates thermometry related errors. As a result, all basic TCXO and OCXO limitations are overcome or significantly reduced in the MCXO.



Features

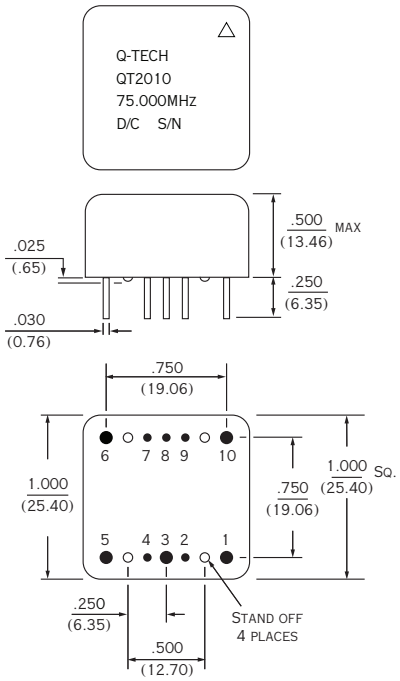
- Made in the USA
- ITAR
- DFARS 252-225-7014 Compliant: Electronic Component Exemption
- USML Registration # M17677
- Frequency Stability-Temperature: ±2 x 10^{-8} from -40ºC to +85ºC (Extended temperature range available)
- Outputs: 5 to 100MHz, 32.768kHz and 1PPS.Other frequency options available
- DC Power Input: 3.3Vdc, 105milliwatts max
- Inputs: Mode Control
  Calibration Reference Signal
  Sync (optional)
- Initialization: <5 seconds from power on to full performance
- Dual-Mode Oscillator: Specially developed for the MCXO
- Aging Correction: Auto calibration in the field
- Environmental: Inherently rugged design capable of full military screening
- Low Phase Noise and Jitter
- Small Form Factor
- G-Sensitivity 1PPB/G max.

Applications

- Satellite terminals
- Underwater monitors
- GPS
- Mobile equipment

ITAR Controlled

Package Outline - Dimensions are in inches (mm)



Pin No.	Function
1	RF OUTPUT
2, 4, 7	N/C
3	GND / CASE
5	VC / REF INPUT
6	PPS OUTPUT
8	MODE SELECT INPUT
9	STATUS
10	SUPPLY VOLTAGE

Package Material:

- .025 + .002/-.003 Cold Rolled Steel
- Bright Nickel Plated 500µ Solderable

Ordering Information

Sample part number

QT2010CBM-70.000MHz

QT	2	0	1	0	C	B	M	-	70.000MHz

Logic:
C = CMOS
S = Sine Wave

Screening Options:
Blank = No Screening
M = Per MIL-PRF-55310, Level B

Output frequency

Frequency vs. Temperature Code:						
A	= ±	5ppb	at	0ºC	to	+50ºC
B	= ±	10ppb	at	0ºC	to	+70ºC
C	= ±	30ppb	at	-40ºC	to	+85ºC
D	= ±	20ppb	at	-40ºC	to	+85ºC
E	= ±	30ppb	at	-55ºC	to	+105ºC
F	= ±	20ppb	at	-55ºC	to	+105ºC

For Non-Standard requirements, contact Q-Tech Corporation at Sales@Q-Tech.com

Electrical Characteristics

Pararmeters	Symbol	Conditions	Value	Unit
Frequency Mode Parameters				
Frequency Range	fo	-	**5.000-100.000**	MHz
Supply voltage, Nom.	Vs	Vs±5%	**3.3**	V
Power Consumption, max.	Ps	Vs, nom. / Ta=+25°C (No load)	**105**	mW
Nominal Tolerance	Fnom	Vs, nom. / Ta=+25°C	**±10**	ppb
Freq. Stability vs. Temperature	Δf/fc (Ta)	Ta=-40°C…+85°C	**±20**	ppb
Freq. Stability vs. Load Variation	Δfl	HCMOS: 10kΩ//15pF ±5% Load Change; SINE WAVE: 50Ω±5%	**±20**	ppb
Freq. Stability vs. Voltage Supply Variation	Δfv	±5% Input Voltage Change	**±20**	ppb
Aging (Max)	Δf/fo	Per Day Over 10 Years Over 20 Years	**±1.0** **±1.0** **±1.5**	ppb ppm ppm
Output Waveform			HCMOS **3.3V**; SINE WAVE **3dBm±3dBm**	
Symmetry		Ta=-40°C…+85°C	**50±5**	%
Rise/Fall Time (Max)		Ta=-40°C…+85°C	**3**	nSec
Startup Time (Max)		Ta=-40°C…+85°C, to ±50.0 ppm	**20**	mSec
Stabilization Time (Max)		Ta=-40°C…+85°C, to ±0.03 ppm	**3**	Sec
Phase Noise (10MHz)		10Hz	**-110**	dBc/Hz
		100Hz	**-135**	dBc/Hz
		1kHz	**-145**	dBc/Hz
		10kHz	**-155**	dBc/Hz
		100kHz	**-160**	dBc/Hz
Phase Noise Jitter		1kHz to 20MHz	**1**	pSec
Spurious (Max)		Ta=-40°C…+85°C, >1kHz offset	**-100**	dBc
Aging Adjustment (10MHz ref)		Ta=+25°C, stable environment	**±0.02**	ppm
Timekeeping Mode Parameters				
Frequency Nom.	Ft	Ta=-40°C…+85°C	**1**	PPS
Power Consumption, max.	Ps	Vs, nom. / Ta=+25°C (No load)	**90**	mW
Freq. Stability vs. Temperature	Δf/Ft (Ta)	Ta=-40°C…+85°C	**±20**	ppb
Output Waveform			**HCMOS 3.3V**	
Symmetry		Ta=-40°C…+85°C	**50±5**	%
Rise/Fall Time (Max)		Ta=-40°C…+85°C	**100**	nSec
Startup Time (Max)		Ta=-40°C…+85°C ,to ±120.0 ppm	**500**	mSec
Stabilization Time (Max)		Ta=-40°C…+85°C, to ±0.03 ppm	**3**	Sec
Period Jitter			**5**	nSec