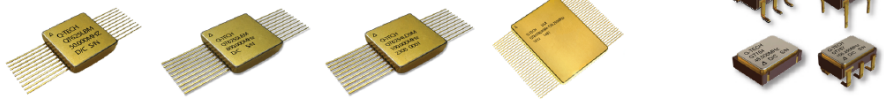
Protec GmbH
High-Rel Electronic Components

Q-TECH CORPORATION

SPACE COMPONENTS NEWSLETTER *March 2024*

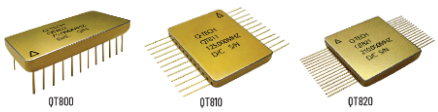
Crystal Oscillators for Traditional Space Applications

Crystal Oscillators (OCXOs)



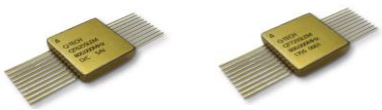
Product Line	QT625L/C	QT625xL/xN	QT625LW	QT697LW	Class B+
Frequency	750kHz - 150MHz	20 - 200MHz	15 - 200MHz		15kHz - 250MHz
Stability	±25ppm to ±50ppm				
Temperature Range	-55°C to 125°C				
Radiation	100kRad(Si) TID				
SEL (min)	93MeV-cm²/mg	117MeV-cm²/mg			110MeV-cm²/mg
Phase Noise (typ)	Consult Factory	-150dBc/Hz at 1MHz offset			Consult Factory
Crystal Type	Swept				
Crystal Mount	3-point / 4-point				
Screening	MIL-PRF-38534, Class K				MIL-PRF-55310, Level S or MIL-PRF-38534, Class K
Supply Voltage (Vdc)	3.3, 5.0	2.5, 3.3	3.3		1.8, 2.5, 3.3, 5.0
Output	CMOS	Up to 4 CMOS	Up to 4 LVDS	6 to 12 LVDS	CMOS, TTL, LVDS, LVPECL
Size	0.625 x 0.625 x 0.150 in			1.25 x 1.648 x 0.20 in	Consult Factory
Special Notes		Multiple, low-skew outputs drive multiple FPGAs with one clock			See Website for Complete List

Temperature Compensated Crystal Oscillators (TCXOs)



Product Line	QT800
Frequency	3 - 350MHz
Stability	As low as ±0.5 ppm
Temperature Range	-40°C to 85°C
Radiation	100kRad(Si) TID
SEL (min)	110MeV-cm²/mg
Phase Noise (typ)	-160dBc/Hz at 1MHz offset
Crystal Type	Swept
Crystal Mount	4-point
Supply Voltage (Vdc)	3.3, 5.0, 12, 15
Output	CMOS, Sine Wave
Screening	MIL-PRF-55310, Level S
Size	24-pin DIP: 1.280 x .790 x .300 in 24-pin Flat Pack: .975 x 1.275 x .210 in 32-pin Flat Pack: 1.015 x 1.015 x .200 in

Surface Acoutic Wave Crystal Oscillators (SAWs)



Product Line	QT625S	QT725S
Frequency	400MHz - 1.3GHz	
Stability / Absolute Pull Range (APR)	-200 to 50 ppm	±20 ppm
Temperature Range	-40°C to 85°C	
Radiation	300kRad(Si) TID	
SEL (min)	Immune	
Phase Noise (typ)	-135dBc/Hz, 10kHz offset -168dBc/Hz, 1MHz offset	
Supply Voltage (Vdc)	3.3, 5.0, 12	
Output	Sine Wave	
Screening	MIL-PRF-55310, Level S or MIL-PRF-38534, Class K	
Size	0.625 x 0.625 in	
Special Note		Voltage Controlled SAW Oscillator

Protec GmbH
High-Rel Electronic Components

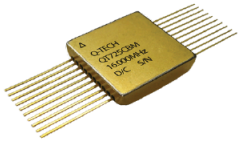
Q-TECH CORPORATION

SPACE COMPONENTS NEWSLETTER *March 2024*

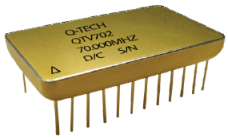
Crystal Oscillators for Traditional Space Applications

Voltage Controlled Crystal Oscillators (VCXOs)

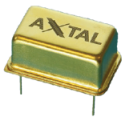
Product Line	QT725C	QTV700	AXIS45S
Frequency	3 - 100MHz	2 - 350MHz	10 - 100MHz
Frequency Pulling (min)	±110 ppm	±90 ppm	±15 ppm
Temperature Range	-55°C to 125°C	-40°C to 85°C	-20°C to 70°C
Radiation	100kRad(Si) TID		
SEL (min)	125MeV-cm²/mg		Insensitive
Phase Noise (typ)	Consult Factory		
Crystal Type	Swept	Swept	Swept
Crystal Mount	3-point	4-point	2-point
Supply Voltage (Vdc)	5.0	3.3, 5.0, 12, 15	5.0
Output	CMOS	CMOS, Sine Wave	Sine Wave
Screening	MIL-PRF-38534, Class K	MIL-PRF-55310, Level S	
Size	0.625 x 0.625 x 0.150 in	1.28 x 0.78 x 0.3 in 0.975 x 1.275 x 0.21 in 1.105 x 1.105 x 0.20 in	13.1 x 20.7 x 7.5 mm



QT725C



QTV700



AXIS45S

Oven Controlled Crystal Oscillators (OCXOs)

Product Line	QT4100	QT4200	AXIOM6060
Frequency	1 - 125MHz		80 - 125MHz
Stability	as low as ±10 ppb		±50 ppb
Temperature Range	-40°C to 85°C	-40°C to 75°C	-30°C to 70°C
Radiation	100kRad(Si) TID		
SEL (min)	Immune		
Phase Noise (typ)	-110dBc/Hz @ 10Hz offset -160dBc/Hz @ 100kHz offset		-105dBc/Hz @ 10Hz offset -170dBc/Hz @ 100kHz offset
Crystal Type	Swept		
Crystal Mount	4-point		
Supply Voltage (Vdc)	3.3, 5.0, 12, 15		12
Output	CMOS, Sine Wave		Sine Wave
Screening	MIL-PRF-55310, Level S		
Size	2.56 x 2.00 x 1.56 in	2.00 x 1.00 x 0.75 in	60 x 60 x 30 mm

Protec GmbH
High-Rel Electronic Components

Q-TECH CORPORATION

SPACE COMPONENTS NEWSLETTER *March 2024*

Crystal Oscillators for New Space Applications

Crystal Oscillators (XOs)

Key Features

- Screening per MIL-PRF-55310, Level B, with PIND
- High Shock Resistant Tested Up to 20,000g
- Mechanical Shock, Half-Sine, 0.3ms, All Axes
- Voltage: 1V8, 2V5, 3V3, 5V
- Output Waveform: CMOS, LVDS
- Radiation: 50kRad(Si) TiD

Product Line	QT723 Series	QT735 Series	QT780 Series
Frequency	1.5 - 133MHz	1 - 250MHZ	225kHz - 162.5MHz
Stability	±25ppm (limited) ±50ppm (standard)		
Temperature Range	-55°C to 125°C		
Radiation	50kRad(Si) TID		
SEL	Contact Factory		
Phase Noise	Contact Factory		
Crystal Mount	2-point		2-point and 3-point
Size	2.5 x 3.2 mm	3.2 x 5.0 mm	5 x 7 to 7 x 9 mm

Oven Controlled Crystal Oscillators (OCXOs)

Key Features

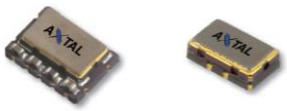
- Screening per MIL-PRF-55310, Level S
- Voltage: 5V, 12V
- Output Waveform: CMOS, LVDS
- Crystal Type: Non-Swept

Product Line	AXIOM70SL	AXIOM75SL	AXIOM75SH	AXIOM3838S
Frequency	10MHz		80 - 125MHz	10MHz
Stability	±10ppb	±10ppb	±50ppb	±10ppb
Temperature Range	-20°C to 70°C			
Radiation	10kRad(Si) TID	40kRad(Si) TID		
SEL	Consult Factory	Immune		
Phase Noise (@>10kHz)	Consult Factory			-160dBc/Hz
Crystal	Non-Swept	Swept on Request		
Crystal Mount	2-point			4-point
Size	25 x 25 x 13 mm			38 x 38 x 19 mm

Temperature Compensated Crystal Oscillators (TCXOs)

Key Features

- Screening per MIL-PRF-55310, Level S
- Voltage: 3V3
- Output : Clipped Sine Wave, CMOS on request
- Crystal Type: Non-Swept, Swept on request
- Crystal Mount: 2-point

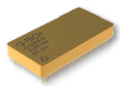


Product Line	AXLE7050S	AXLE5032S
Frequency	10 - 50MHz	
Stability	±1 to ±3ppm	
Temperature Range	-40°C to 85°C	
Radiation	40kRad(Si) TID	
SEL	120MeV-cm²/mg	
Phase Noise	Contact Factory	
Size	7.0 x 5.0 x 1.8 mm	5.0 x 3.2 x 1.7 mm

Microcomputer Compensated Crystal Oscillators (MCXOs)

Key Features

- Power Consumption: 90mW max
- Maximum Aging: ± 1.5ppm over 20 years
- Screening per MIL-PRF-55310, Level B (modified)
- Voltage: 3V3
- Output : Sine Wave, CMOS



Product Line	QT2020	QT2021
Frequency Range	5 - 100MHz	
Stability	±10ppb to ±30ppb	
Temperature Range	-40°C to 85°C	
Radiation	50kRad(Si) TID	
SEL	29MeV-cm²/mg	75MeV-cm²/mg
Phase Noise	Contact Factory	
Crystal	Swept	
Crystal Mount	4-point	
Size	1.0 x 2.0 x 0.33 in	