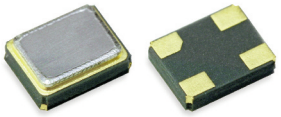
STXO/STXOHG OSCILLATOR

10 MHz to 70 MHz

Surface Mount Quartz Crystal Oscillator

DESCRIPTION

Miniature, high performance quartz crystal oscillator designed and manufactured for high-reliability applications requiring tight frequency stability and low phase noise and jitter.



FEATURES

- 3.2 x 2.5 mm hermetically sealed ceramic package
- High shock resistance (HG version) up to 75,000 g
- Tight frequency stability and low phase noise
- Ultra-low Allan Deviation and RMS phase jitter
- Ultra-low period jitter (1.4 ps RMS)
- Low acceleration sensitivity
- Low current consumption; 3.0 mA max no load across temperature
- Full military testing available
- CMOS output; enable/disable with Tri-State
- Fundamental frequency; no PLL artifacts
- IBIS model available
- Designed and manufactured in the USA

APPLICATIONS

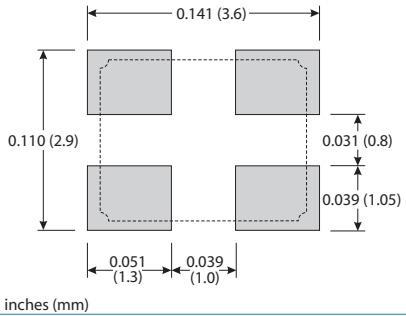
Industrial, Defense and Aerospace

- RF Telemetry
- Master Clock

PACKAGING OPTIONS

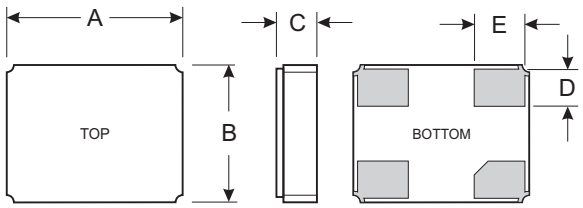
- Tray Pack
- Tape and Reel (per EIA 481). See Tape and Reel datasheet 10109.

SUGGESTED LAND PATTERN



inches (mm)

DIMENSIONS



DIM	Termination	TYPICAL		MAXIMUM	
		inches	mm	inches	mm
A		0.126	3.20	0.136	3.40
B		0.099	2.50	0.107	2.70
C	SM1 SM3/SM5	0.039 0.044	1.00 1.12	0.053 0.058	1.35 1.47
D		0.040	1.00	0.041	1.10
E		0.030	0.75	0.031	0.85

PIN CONNECTIONS

1. Output Enable/Disable (E)
2. Ground
3. Output
4. V_{DD}

ENABLE/DISABLE OPTION E

The E-version has a Tri-State output and stops oscillating internally when the output is put into the high Z state. The following table describes the Enable/Disable option E.

ENABLE/DISABLE OPTION E FUNCTION TABLE

	Enable (Pin 1 High*)	Disable (Pin 1 Low)
Output	Frequency Output	High Z State
Oscillator	Oscillates	Stops
Current	Normal	Very Low

*When PIN 1 is allowed to float, it is held high by an internal pull-up resistor.

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SPECIFICATIONS

Specifications are typical at 25°C unless otherwise noted. Specifications are subject to change without notice. Tighter specifications available.

Frequency Range	10 MHz to 70 MHz
Supply Voltage	2.5V to 3.3V ± 10%
Total Frequency Tolerance[1,2]	±5 ppm (Industrial)
Typical Supply Current[3]	3 mA
Output Voltage Levels	V_{OH}: V_{DD} -0.4V MIN V_{OL}: 0.4V MAX
Output Load (CMOS)	15 pF
Start-up Time	5 ms MAX
Rise/Fall Time	5 ns MAX
Duty Cycle	45 % MIN 55% MAX
Aging, First Year	2 ppm
Shock Survival	STD: 5,000 g, 0.5 ms, 1/2 sine HG: 75,000 g, 0.5 ms, 1/2 sine
Vibration Survival[4]	20 g, 10-2,000 Hz swept sine
Operating Temperature Range	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military)
Typical Period Jitter (RMS)[5]	1.4 ps over 10,000 cycles
Storage Temperature Range[6]	-55°C to +125°C
Max Process Temperature	260°C for 20 seconds
Max Supply Voltage V_{DD}	-0.3V to 4.0V
Max Input Voltage Range V_{IN}	-0.3V to V_{DD}+0.3V
Moisture Sensitivity Level (MSL)	This product is hermetically sealed and is not moisture sensitive.

1. Tighter tolerances available. Contact factory.
2. -40°C to 105°C available. Contact factory.
3. V_{DD} = 3.3V, 15 pF load, frequency at 40 MHz.
4. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.
5. Frequency at 20 MHz and 50 MHz.
6. Broader temperature ranges available. Contact factory.

PHASE NOISE AND JITTER PERFORMANCE AT 20 MHZ, 40 MHZ & 50 MHZ

Typical Phase Noise (dBc/Hz)			
Frequency Offset	**Clock Frequency (MHz)**		
	20 MHz	**40 MHz**	**50 MHz**
10 Hz	-69	-63	-63
100 Hz	-105	-98	-99
1 kHz	-138	-131	-131
10 kHz	-154	-152	-151
100 kHz	-158	-160	-159
1 MHz	-159	-161	-160
5 MHz	-163	-162	-161
20 MHz	—	-160	-161

Integrated RMS Jitter (12 kHz to 20MHz)[1]		
Frequency	**V_{DD} = 2.5V**	**V_{DD} = 3.3V**
20 MHz	255 femtoseconds	230 femtoseconds
40 MHz	230 femtoseconds	210 femtoseconds
50 MHz	240 femtoseconds	200 femtoseconds

1. 20 MHz integration point is Clock Frequency dependent.

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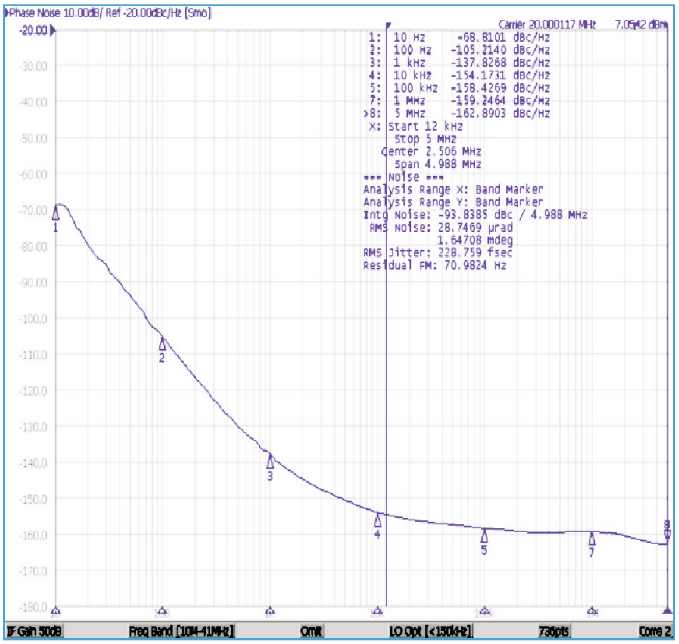

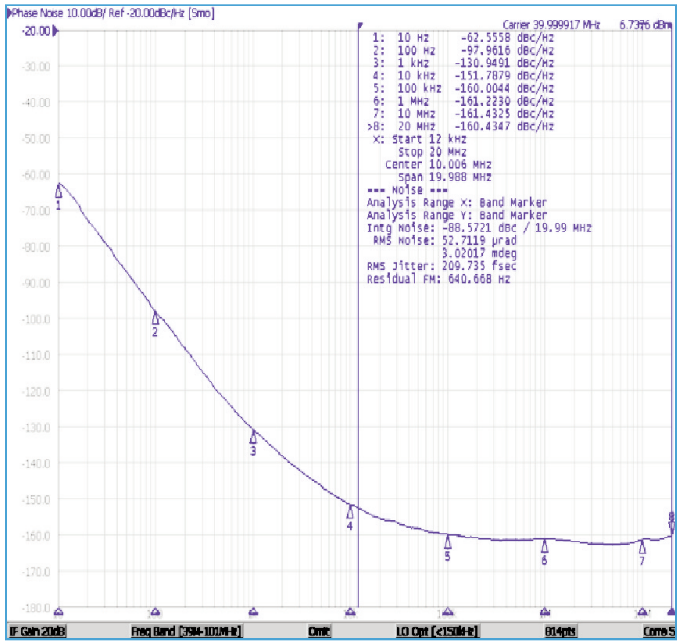

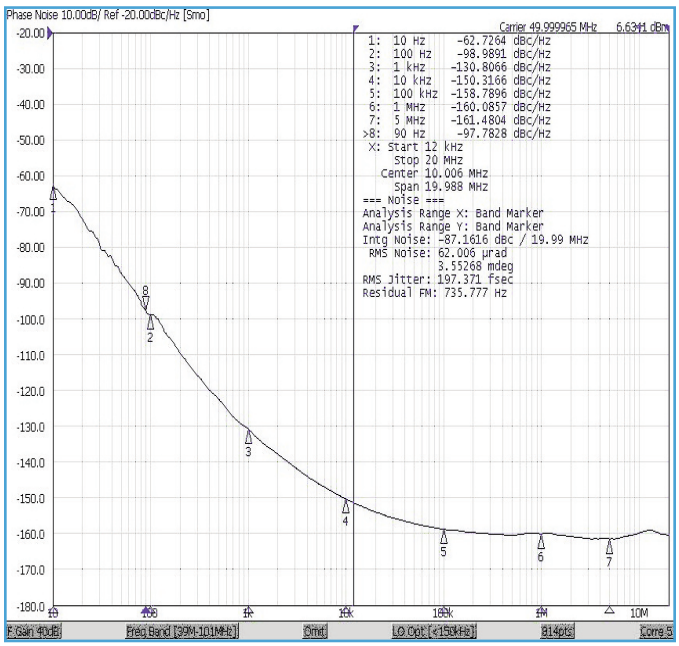

HOW TO ORDER STATEK STXO/STXOHG OSCILLATORS

STXO A HG 4 B S E SM3 — 40.0M , — / — / 5 / I

Package Size
A = 3.2 x 2.5 mm

High Shock
HG = High Shock
Blank = Standard

Supply Voltage
2 = 2.5 V
3 = 3.0 V
4 = 3.3 V

Shock Level Code
Blank = 5,000 g
B = 10,000 g
C = 20,000 g
D = 30,000 g
F = 50,000 g
G = 75,000 g

Special
Blank = Standard
S = Special or Custom

Enable/Disable Option
E = Enable/Disable

Terminations
Blank = Gold Plated (Lead Free)
SM3 = Solder (60/40 Sn-Pb)
SM5 = Solder (Lead Free)

Frequency
M = MHz

Total Frequency Tolerance
(in ppm)

Operating Temp. Range
C = -10°C to +70°C
I = -40°C to +85°C
M = -55°C to +125°C
S = Customer Specified

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