STXO/STXOHG OSCILLATOR

10 MHz to 70 MHz

Surface Mount Quartz Crystal Oscillator

DESCRIPTION

Statek's STXO/STXOHG are small, low power, clean reference sources that fill the stability gap between conventional clock oscillators and TCXO reference sources. Manufactured for high-reliability applications that require a stable reference, these oscillators offer a total frequency tolerance as low as ±5 ppm over -40°C to +85°C as well as high-shock survivability and exceptionally low phase noise and jitter.

FEATURES

- 3.2 x 2.5 mm hermetically sealed ceramic package
- High shock resistance (HG version) up to 100,000 g
- Tight frequency stability and low phase noise
- Ultra-low Allan deviation and phase jitter
- Ultra-low period jitter (1.0 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

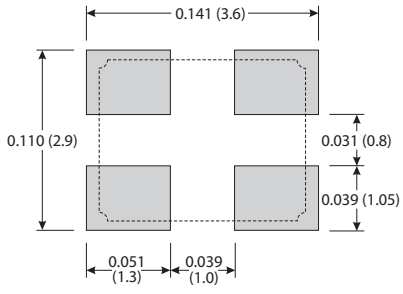
Industrial, Defense and Aerospace

- RF Telemetry
- Master Clock

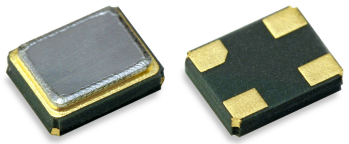
PACKAGING OPTIONS

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

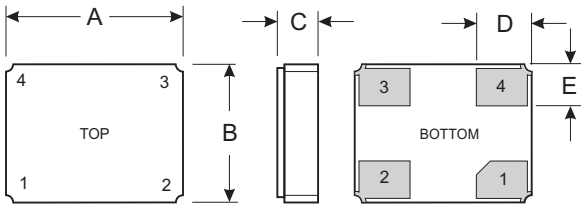
SUGGESTED LAND PATTERN



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	As low as ±5 ppm (Industrial)
Typical Supply Current[1]	3 mA
Output Voltage Levels	$V_{OH} > V_{DD}$ - 0.4V $V_{OL} < 0.4V$
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 MAX
Shock Survival[2]	STD: 5,000 g, 0.5 ms, ½ sine HG: Up to 100,000 g, 0.5 ms, ½ sine
Vibration Survival[3]	20 g, 10-2,000 Hz swept sine
Operating Temperature Ranges	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military)
Typical Period Jitter (rms)	1.0 ps over 10,000 cycles
Storage Temperature Range	-55°C to +125°C
Max Process Temperature	260°C for 20 seconds
MIN/MAX Supply Voltage (V_{DD})	-0.3V / 4.0V
MIN/MAX Enable/Disable Pin Voltage (V_{IN})	-0.3V / V_{DD} + 0.3V
Moisture Sensitivity Level (MSL)	This product is hermetically sealed and is not moisture sensitive.

1. V_{DD} = 3.3 V, 15 pF load, frequency at 40 MHz.
2. HG options for frequencies up to 50 MHz. Contact factory for HG options above 50 MHz.
3. Per MIL-STD-202, Method 204, Condition D. Random vibration testing also available.

PHASE NOISE AND JITTER PERFORMANCE

Typical phase noise for three oscillator frequencies [dBc/Hz]

Offset Frequency	20 MHz	32 MHz	40 MHz	50 MHz
10 Hz	-69	-67	-63	-63
100 Hz	-105	-96	-98	-99
1 kHz	-138	-129	-131	-131
10 kHz	-154	-150	-152	-151
100 kHz	-158	-159	-160	-159
1 MHz	-159	-161	-161	-160
5 MHz	-163	-162	-162	-161
20 MHz	—	-162	-160	-161

Integrated RMS phase jitter[1]

Frequency	V_{DD} = 3.3V
20 MHz	230 fs
32 MHz	255 fs
40 MHz	210 fs
50 MHz	200 fs

1. 12 kHz to 20 MHz, unless noted otherwise.

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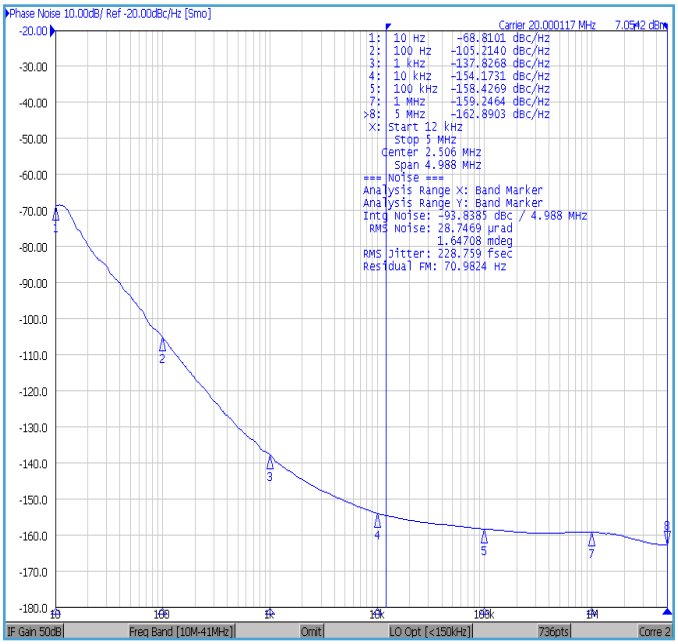

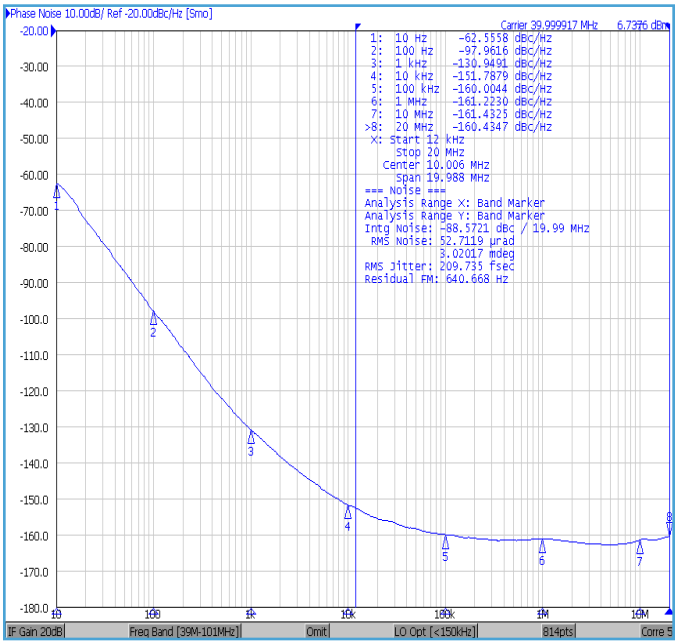

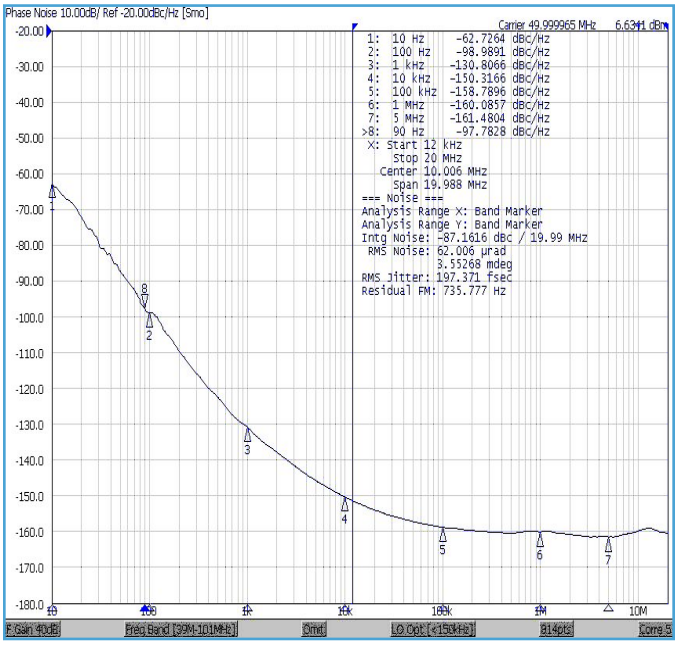

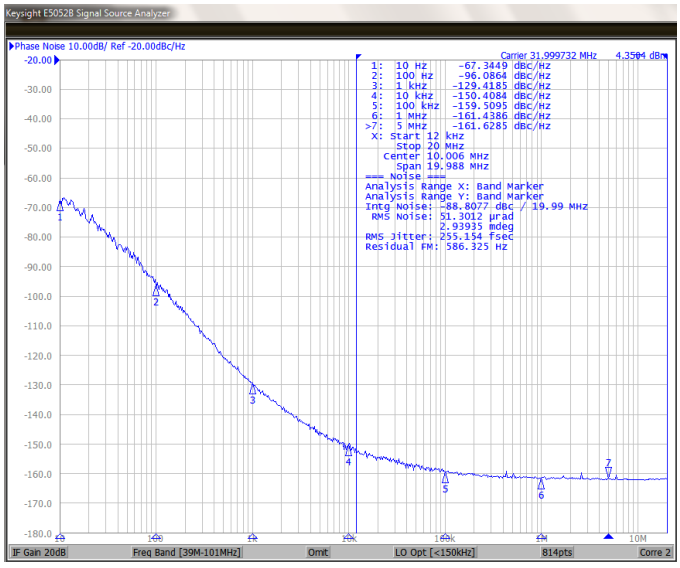

HOW TO ORDER STATEK STXO/STXOHG OSCILLATORS

STXO — A — HG — 4 — B — S — E — SM3 — 40.0M , — / — / 10 / 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
H = 100,000 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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