CXOXLPN OSCILLATOR

20 MHz to 50 MHz

Ultra-Miniature, Low Phase Noise & Low Jitter
High Shock Crystal Oscillator

DESCRIPTION

Statek's ultra miniature and ultra low phase noise and jitter oscillators consist of a CMOS/TTL compatible hybrid circuit and a state-of-the-art, miniature, fundamental-mode crystal. Typical RMS Jitter 12 kHz to 20 MHz - 153 femto seconds.

FEATURES

- High shock resistance (HG version) - 50,000 g option
- CMOS output with Enable/Disable
- Low phase noise and jitter
- Full military testing available
- Low acceleration sensitivity - 0.5 ppb/g or better option
- Wide supply voltage (1.8 V to 3.3 V)
- No PLL artifacts
- Hermetically sealed ceramic package
- Designed and manufactured in the USA

APPLICATIONS

Military & Aerospace

- Smart munitions
- Communications
- Navigation
- GPS

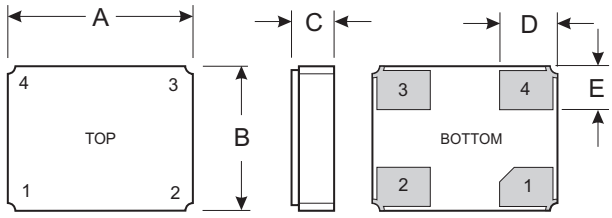
Industrial, Computer & Communications

- Miniature clock oscillator
- Handheld instrumentation
- PDA
- Transponder/Animal migration

Medical

- Test & diagnostic equipment
- Handheld devices

DIMENSIONS

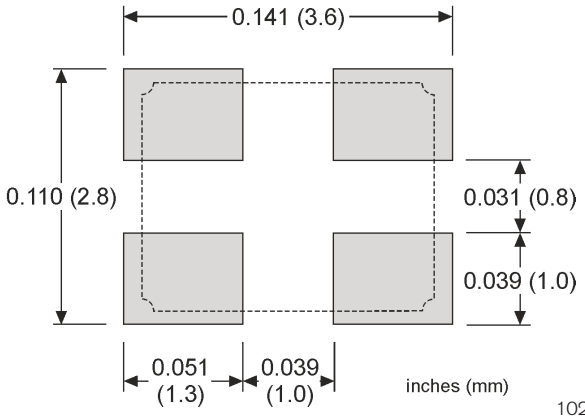


	TYPICAL		MAXIMUM	
DIM	inches	mm	inches	mm
A	0.126	3.20	0.136	3.40
B	0.099	2.50	0.107	2.70
C (SM1)	0.039	1.00	0.043	1.09
C (SM3/SM5)	0.044	1.12	0.048	1.21
D	0.040	1.00	0.041	1.10
E	0.030	0.75	0.031	0.85

PIN CONNECTIONS

1. Output Enable/Disable (E) or no connection (N)
2. Ground
3. Output
4. V_{DD}

SUGGESTED LAND PATTERN



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SPECIFICATIONS

Specifications below are examples. Specifications are subject to change without notice. Tighter specifications available. Please contact factory.

Frequency Range	20 MHz to 50 MHz
Supply Voltage	1.8 V to 3.3 V ± 10%
Calibration Tolerance[1]	± 50 ppm
Frequency Stability Over Temperature[2]	± 30 ppm for Industrial ± 50 ppm for Military

Supply Current (Typical)[3]	1.8 V	3.3 V	2.5 V
20 MHz	0.5 mA	1.4 mA	0.7 mA
30 MHz	0.6 mA	1.6 mA	0.8 mA
50 MHz	0.9 mA	2.1 mA	1.3 mA

Output Load (CMOS)	15 pF
Start-up Time	5 ms MAX
Rise/Fall Time	6 ns MAX
Duty Cycle	45% MIN 55% MAX
Aging, first year	3 ppm MAX
Shock, survival	STD: 5,000 g, 0.3 ms, ½ sine High Shock Options in "How to Order"
Vibration, survival[4]	20 g, 10-2,000 Hz swept sine
Operating Temp. Range	-10°C to 70°C (Commerical) -40°C to 85°C (Industrial) -55°C to 125°C (Military)

1. Tighter tolerances available.
2. Does not include calibration tolerances. Tighter tolerances available.
3. No Load 25°C.
4. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.

Note: All parameters are measured at ambient temperature with a 10 MΩ, 15 pF load.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{DD}	-0.3 V to 4.0 V
Storage Temperature	-55°C to 125°C
Maximum Process Temperature	260°C for 20 seconds

ENABLE/DISABLE OPTIONS (E/N)

Statek offers two enable/disable options: E and N. The E-version has a Tri-State output and stops oscillating internally when the output is put into the high Z state. The N-version does not have PIN 1 connected internally and so has no enable/disable capability. 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.

PACKAGING OPTIONS

CXOXLPN - Tray Pack
- 12 mm tape, 7" or 13" reels Per EIA 481

PHASE NOISE AND JITTER PERFORMANCE

Typical Phase Noise (dBc/Hz)		
Frequency Offset (Hz)	**Clock Frequency (MHz)**	
	25 MHz	**50 MHz**
10 Hz	-106	-93
100 Hz	-133	-124
1 kHz	-151	-149
10 kHz	-160	-159
100 kHz	-161	-162
1 MHz	-162	-162
5 MHz	-162	-162
20 MHz	- - -	-162

Integrated RMS Jitter (12 kHz to 20 MHz)[1]		
Frequency	**V_{DD} = 2.5V**	**V_{DD} = 3.3V**
25 MHz	160 femtosec.	151 femtosec.
50 MHz	179 femtosec.	153 femtosec.

20 MHz integration point is Clock Frequency dependent.

Period Jitter (Typical) 10,000 cycles		
Frequency	**RMS**	**Peak to Peak**
25 MHz	**1.15** Pico seconds	**9.6** Pico seconds
50 MHz	**1.02** Pico seconds	**8.1** Pico seconds

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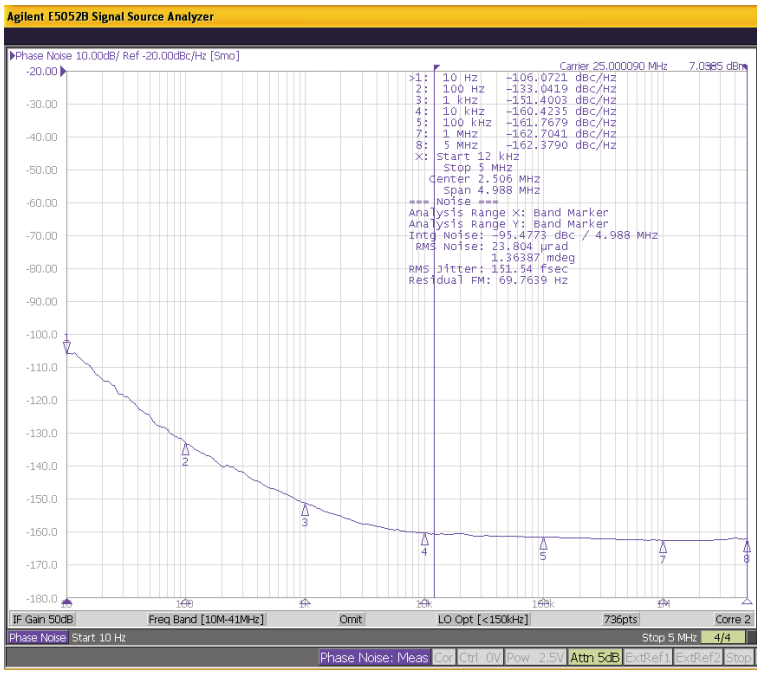
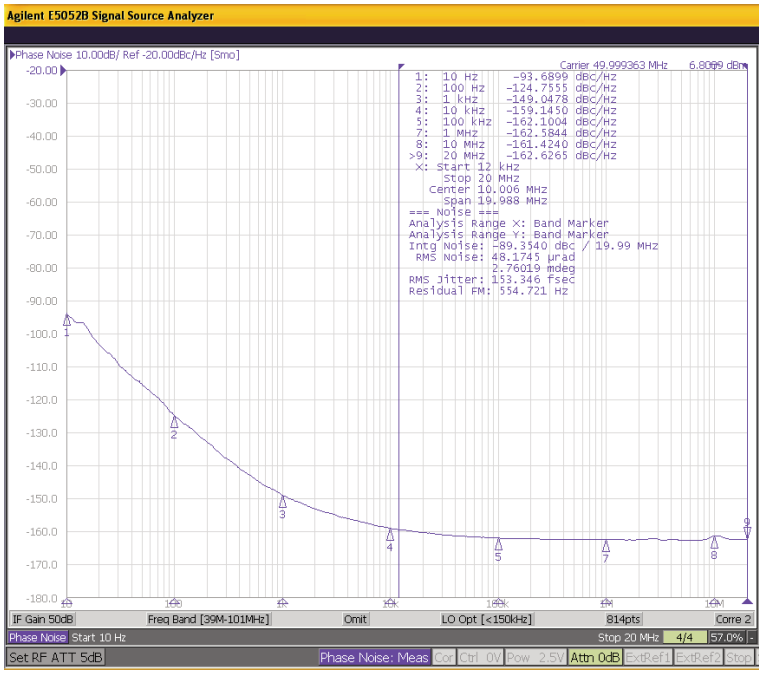
PHASE NOISE PERFORMANCE AT 25 MHZ AND 50 MHZ





HOW TO ORDER CXOXLPN SURFACE MOUNT CRYSTAL OSCILLATORS

CXOXLPN 4 D S N SM3 — 25.0M , 50 / 50 / — / I

- 4 — Supply Voltage: 1 = 1.8 V; 2 = 2.5 V; 3 = 3.0 V; 4 = 3.3 V
- D — Shock Level: A = 5,000 g; B = 10,000 g; C = 20,000 g; D = 30,000 g; F = 50,000 g
- S — "S" if special or custom design. Blank if Std.
- N — Enable/Disable Option: E or N
- SM3 — Terminations: Blank = SM1 = Gold Plated (Lead Free); SM3 = Solder Dipped; SM5 = Solder Dipped (Lead Free)
- 25.0M — Frequency: M = MHz
- 50 — Calibration Tolerance @ 25°C (in ppm)
- 50 — Frequency Stability over Temp. Range (in ppm)
- I — Temp. Range: C = -10°C to +70°C; I = -40°C to +85°C; M = -55°C to +125°C; S = Customer Specified

OR

— / — / 100 / I

- 100 — Total Frequency Tolerance (in ppm)
- I — 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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