



ETXO OSCILLATOR

20 MHz to 125 MHz
High Frequency Quartz Crystal Oscillator

DESCRIPTION

Statek's ETXO is a 5 x 7.5 mm, rugged, high frequency, ultra-low jitter, ultra-low phase-noise crystal oscillator. Ideal for demanding applications requiring a pure signal clock reference, the ETXO delivers best-in-class timing and phase-noise performance for advanced networking applications.

FEATURES

- Higher frequencies available (170 MHz)
- Fundamental frequency, no PLL artifacts
- Ultra-low period jitter (1 ps rms) @125 MHz
- Ultra-low phase noise (-166 dBc/Hz floor) @125 MHz
- CMOS output / Output enable/disable
- Internal decoupling capacitor
- Testing to MIL-PRF-55310 product level B available
- Double hermetically sealed ceramic package
- SM1 and SM5 versions are Pb-free
- Designed and manufactured in the USA

APPLICATIONS

- Battlefield imaging platforms
- Rugged networking and ethernet links
- Ground control stations
- Flight control guidance systems
- Rugged laptop and computer systems
- Rugged portable and hand held instrumentation

PACKAGING OPTIONS

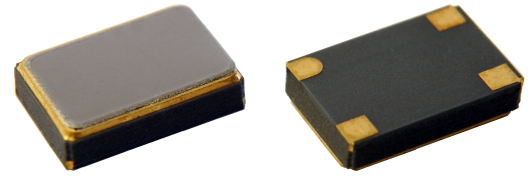
- Tray Pack
- Tape and Reel (per EIA 481)

PIN CONNECTIONS

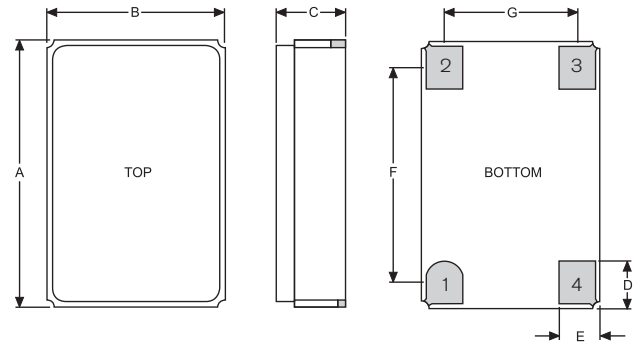
1. Output Enable/Disable (E) or no connection (N)
2. Ground (connected to lid)
3. Output
4. V_{DD}

ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{DD}	-0.3 V to +4.0 V
Min./Max. Input Voltage (Pin 1)	-0.3 V / $V_{DD} + 0.3$ V
Storage Temperature	-55°C to +125°C
Maximum Process Temperature	260°C for 20 seconds

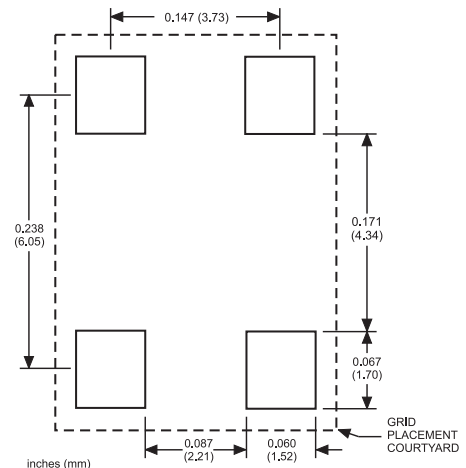


PACKAGE DIMENSIONS



DIM (mm)	Termination	MINIMUM	TYPICAL	MAXIMUM
A		7.33	7.50	7.67
B		4.82	5.00	5.18
C	SM1	1.63	1.78	1.93
	SM3/SM5	1.90	1.95	2.00
D			1.20	
E			1.00	
F			6.05	
G			3.73	

SUGGESTED LAND PATTERN



SPECIFICATIONS

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

Frequency	20 MHz to 125 MHz
Supply Voltage (V)	1.8 V ±5% 2.5 V and 3.3 V ±10%
Calibration Tolerance	±50 ppm, or tighter as required
Frequency-Temperature Stability ^{1,2}	±30 ppm (Commercial) ±40 ppm (Industrial) ±50 ppm (Military)
Typical Supply Current (at 125.0 MHz and 5.0 pF load)	5.8 mA @ 1.8 V 7 mA @ 2.5 V 9 mA @ 3.3 V
Output Load (CMOS)	15.0 pF MAX
Output Voltage (V _{OH} / V _{OL})	0.9 V _{DD} / 0.1 V _{DD}
Start-up Time (ms)	1 ms Typical, 5 ms MAX
Rise/Fall Time (ns) Typical	2.0 ns @125 MHz
Duty Cycle	45% to 55%
Aging, First Year	5.0 ppm MAX
Shock Survival	Up to 30,000 g, 0.5 ms, ½ sine
Vibration Survival ³	20 g, 10 to 2,000 Hz, swept sine
Standard Operating Temperature Ranges	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military)
Moisture Sensitivity Level (MSL)	This product is hermetically sealed and is not moisture sensitive.

- Does not include calibration tolerance. Tighter as required.
- Frequency over temperature relative to nominal frequency.
- Per MIL-STD-202G, Condition D. Random vibration testing also available.

ENABLE/DISABLE OPTION E FUNCTION TABLE

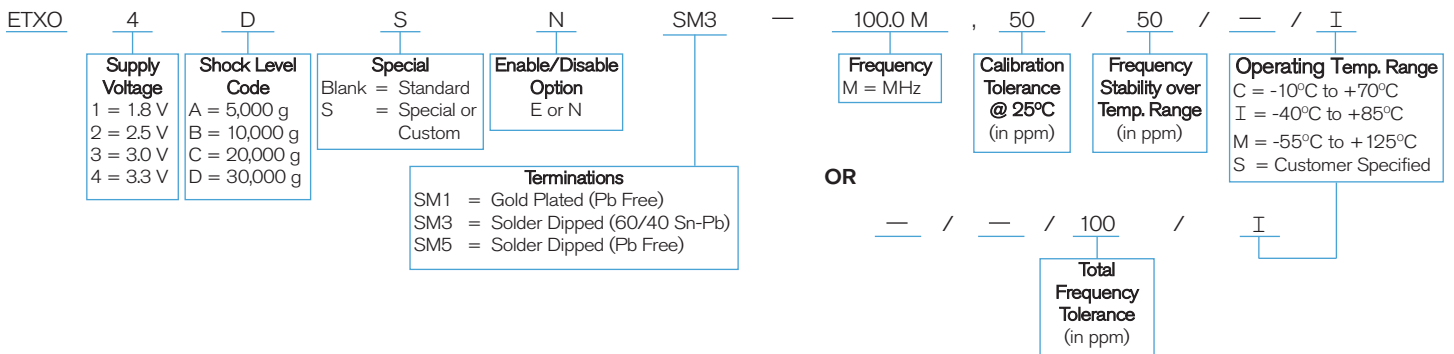
	Enable (Pin 1 High*)	Disable (Pin 1 Low)
Output	Frequency Output	High Z State
Oscillator	Oscillates	Stops
Current	Normal	Very Low

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

ENABLE/DISABLE OPTIONS (E/N)

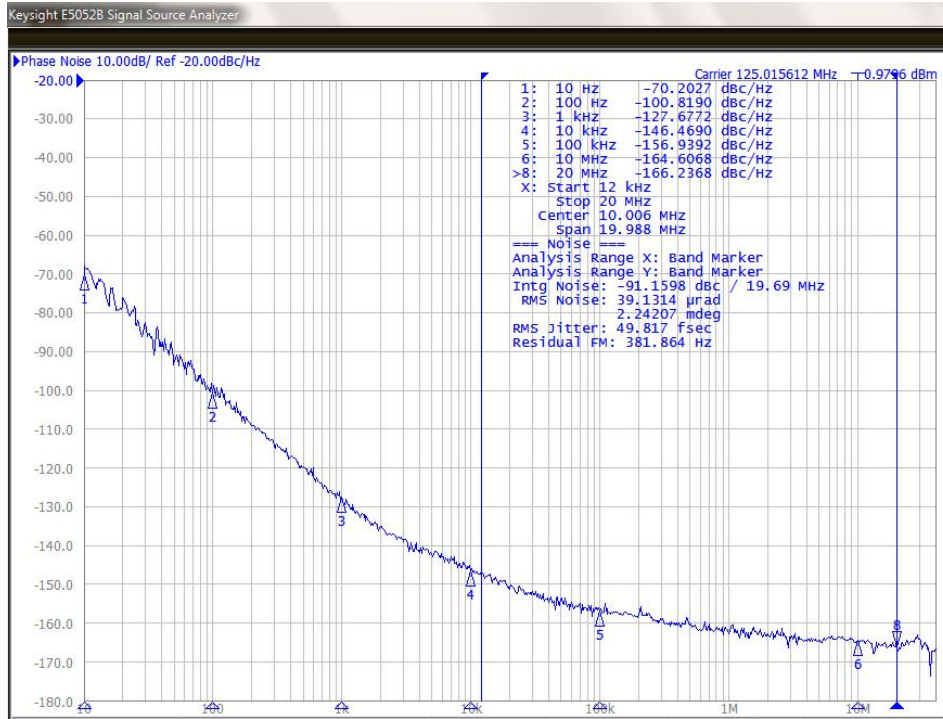
Statek offers two enable/disable options: E and N. The E-version has a tri-state output and stops oscillating internally when the output is put into the high Z state. The N-version does not have PIN 1 connected internally and so has no enable/disable capability. The following table describes the Enable/Disable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

HOW TO ORDER ETXO SURFACE MOUNT CRYSTAL OSCILLATORS



PHASE NOISE AND JITTER PERFORMANCE

Static Phase Noise Plot for 125 MHz 3.3 V ETXO



Typical Phase Noise for 125 MHz 3.3 V ETXO

Frequency Offset	Phase Noise (dBc/Hz)
10 Hz	-66
100 Hz	-99
1 kHz	-125
10 kHz	-145
100 kHz	-154
1 MHz	-160
10 MHz	-164
20 MHz	-166

Typical Integrated RMS Jitter (12 kHz to 20 MHz)

Frequency (Voltage)	Jitter
125 MHz (3.3 V)	50 fs

Typical Period Jitter 10,000 cycles

Frequency (Voltage)	RMS Jitter	Peak to Peak Jitter
125 MHz (3.3 V)	1.0 ps	8.0 ps

