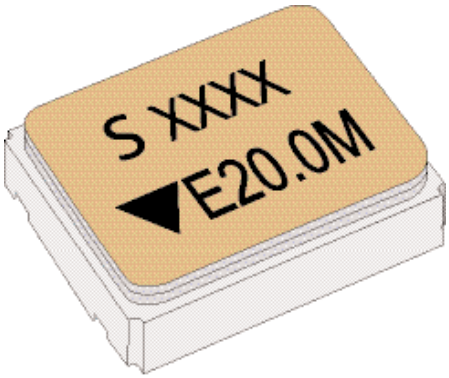
HFXO OSCILLATOR

220 kHz to 100 MHz

High Precision & High Shock, Low Profile Miniature Surface Mount Crystal Oscillator

DESCRIPTION

Statek's high shock HFXO oscillators, available in tight frequency tolerances, consist of a Statek miniature quartz crystal and a CMOS/TTL compatible hybrid circuit in a ceramic package. Each crystal used in the HFXO oscillator is pre-qualified before assembly through electrical tests and characterization over temperature.



FEATURES

- Mechanical shock survivability of 75,000 g up to 50 MHz
- Tight frequency tolerance
- Low acceleration sensitivity
- Low aging (Double Hermetic Seal)
- Low jitter
- Optional Output Enable/Disable with Tri-State
- Low EMI emission
- Full military testing to MIL-PRF-55310 available
- Low power consumption

APPLICATIONS

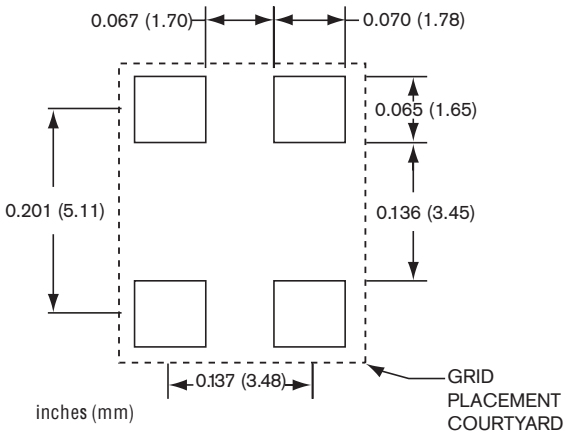
Military & Aerospace

- Smart Munitions
- Cockpit Systems
- Navigation

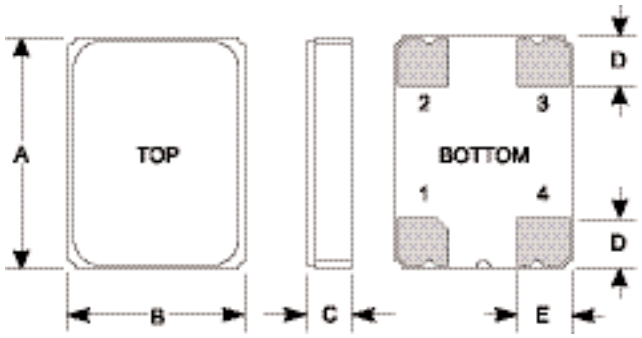
Industrial, Computer & Communications

- Industrial Controls
- Instrumentation
- Down-hole Drilling

SUGGESTED LAND PATTERN



DIMENSIONS



	TYPICAL		MAXIMUM	
DIM	inches	mm	inches	mm
A	0.256	6.50	0.263	6.68
B	0.197	5.00	0.204	5.18
C (SM1)	0.065	1.65	0.068	1.73
C (SM3/SM5)	0.069	1.75	0.075	1.91
D	0.055	1.40	0.065	1.65
E	0.060	1.52	0.070	1.78

PIN CONNECTIONS

1. Enable/Disable (E or T) or not connected (N)
2. Ground
3. Output
4. V_{DD}

STATEK CORPORATION 512 N. MAIN ST., ORANGE, CA 92868 714-639-7810 FAX: 714-997-1256 **www.statek.com**

SPECIFICATIONS

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

Supply Voltages[1]	0.9 V to 5.0 V
Calibration Tolerance	± 10 ppm and up
Frequency Stability	± 10 ppm for Commercial
Over Temperature[2]	± 20 ppm for Industrial
	± 40 ppm for Military
Total Frequency[3]	± 15 ppm and up for Commercial
Tolerance	± 20 ppm and up for Industrial
	± 50 ppm and up for Military
Output Load (CMOS)[4]	15 pF
Start-up Time	5 ms MAX
Rise/Fall Time	10 ns MAX
Duty Cycle[5]	40% MIN, 60% MAX
Aging, first year	5 ppm
Shock, survival[6]	0.5 ms, 1/2 sine up to 75,000 g
Vibration, survival	20 g, 10-2,000 Hz swept sine
Operating Temp Ranges[7]	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to + 125°C (Military)

1. Not all frequencies are available in certain voltages. Contact factory for details.
2. Does not include calibration tolerance
3. Frequency over temperature relative to nominal frequency.
4. Higher CMOS loads available. Contact factory.
5. Tighter Duty Cycles available. Contact factory.
6. 5000 g maximum available for frequencies above 50 MHz.
7. Higher temp available (up to 200°C). Contact factory.
8. The T-version is not available for all frequencies. Contact factory.

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

PACKAGING OPTIONS

HFXO -Tray Pack
-16mm tape, 7" or 13" reels
(Reference tape and reel data sheet 10109)

ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{DD}	-0.5 V to 7.0 V*
Storage Temperature	-55°C to +125°C
Maximum Process Temperature	260°C for 20 seconds

*The supply voltage range is -0.5 V to +4.0 V for some products. Contact Factory.

ENABLE/DISABLE OPTIONS (E/T/N)

Statek offers three enable/disable options: E, T, and N. Both the E-version and T-version have Tri-State outputs and differ in whether the oscillator continues to run internally when the output is put into the high Z state: it stops in the E-version and continues to run in the T-version. So, the E-version offers very low current consumption when the oscillator is disabled and the T-version offers very fast output recovery when the oscillator is re-enabled. The N-version does not have PIN 1 connected internally and so has no enable/disable capability. The following table summarizes the three options.

COMPARISON OF ENABLE/DISABLE OPTIONS E AND T

	E	T[8]
When enabled (PIN 1 is high)*		
Output	Freq. output	Freq. output
Oscillator	Oscillates	Oscillates
Current consumption	Normal	Normal
When disabled (PIN 1 is low)		
Output	High Z state	High Z state
Oscillator	Stops	Oscillates
Current consumption	Very low	Lower than normal
When re-enabled (PIN 1 changes from low to high)		
Output recovery	Delayed	Immediate

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

HOW TO ORDER HFXO SURFACE MOUNT CRYSTAL OSCILLATORS

HFXO 3 D S T SM3 — 20.0M , 30 / 50 / — / I

- 3 — Supply Voltage: 9 = 0.9V, 1 = 1.8V, 2 = 2.5V, 3 = 3.0V, 4 = 3.3V, 5 = 5.0V
- D — Shock Level: A = 5,000 g, B = 10,000 g, C = 20,000 g, D = 30,000 g, F = 50,000 g, G = 75,000 g
- S — Blank = Standard, S = Special or custom
- T — Enable/Disable Option: E, T, or N
- SM3 — Termination: Blank = SM1 = Gold Plated (Pb Free), SM3 = Solder Dipped, SM5 = Solder Dipped (Pb Free)
- 20.0M — Frequency: K = kHz, M = MHz
- 30 — Calibration Tolerance @ 25°C (in ppm)
- 50 — Frequency Stability over Temp.Range (in ppm)
- I — Temperature 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 — Temperature Range: C = -10°C to +70°C, I = -40°C to +85°C, M = -55°C to +125°C, S = Customer Specified

Note: The HFXO oscillator with SM1 or SM5 termination is Pb free. The HFXO oscillator with SM3 termination contains Pb.

10189 Rev C