



# HIGH TEMPERATURE OSCILLATORS

## High Temperature/High Shock

### DESCRIPTION

An increasing number of applications require the use of high-temperature oscillators. For these applications, Statek offers the CXOHT, CXOMKHT, and CXOXHT oscillators. These oscillators are designed to operate at temperatures up to 200°C with high shock survivability.

### FEATURES

- High temperature operation up to 200°C
- Excellent stability over temperature
- Fast start-up
- High shock resistance
- CMOS and TTL compatible
- Optional output enable/disable
- Low EMI emission
- Hermetically sealed ceramic package

### APPLICATIONS

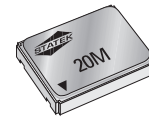
#### Industrial

- Downhole instrumentation
- Rotary shaft sensors
- Underground boring tools

**CXOHT**  
320 kHz - 50 MHz



**CXOMKHT**  
200 kHz - 50 MHz



**CXOXHT**  
1 MHz - 50 MHz



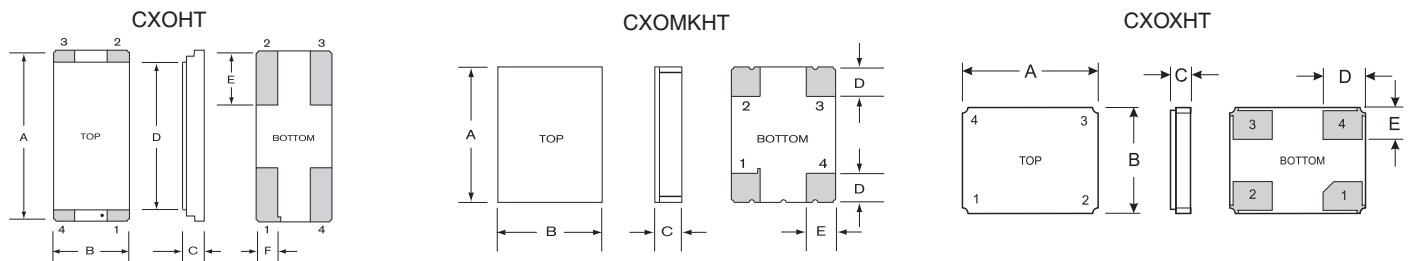
### PIN CONNECTIONS

1. Enable/Disable (E or T) or No Connection (N)
2. Ground
3. Output
4.  $V_{DD}$

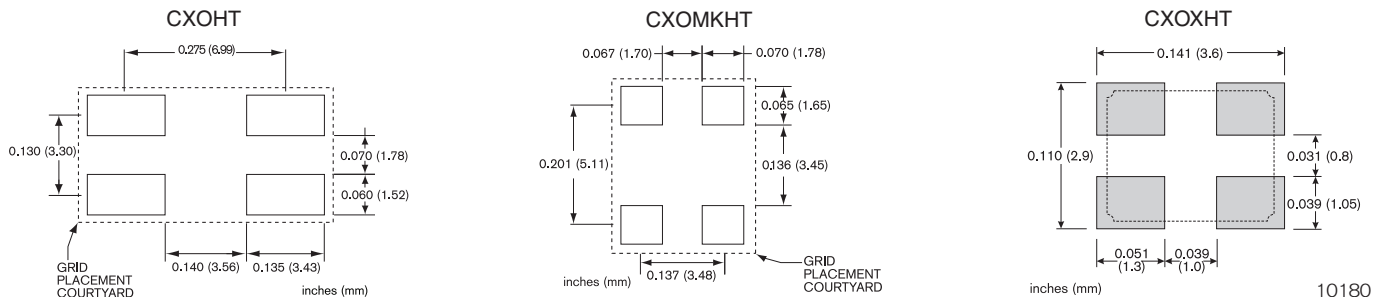
### DIMENSIONS

DIM	CXOHT		CXOMKHT		CXOXHT	
	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM
A	0.405	10.29	0.263	6.68	0.136	3.40
B	0.190	4.83	0.204	5.18	0.107	2.70
C (SM1)	0.055	1.40	0.060	1.52	0.043	1.09
C (SM3/SM5)	0.063	1.60	0.065	1.65	0.048	1.21
D	0.350	8.89	0.065	1.65	0.041	1.10
E	0.135	3.43	0.070	1.78	0.031	0.85
F	0.060	1.52	—	—	—	—

### PACKAGE DIMENSIONS



### SUGGESTED LAND PATTERN



10180 - Rev D



## SPECIFICATIONS

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

Supply Voltage <sup>1</sup>	3.3 V ± 10%		5.0 V ± 10%	
Calibration Tolerance	± 50 ppm, or tighter as required			
Frequency Stability	± 100 ppm for 25°C to 150°C			
Over Temperature	± 150 ppm for 25°C to 175°C			
	± 175 ppm for 25°C to 200°C			
Total Tolerance <sup>2</sup>	± 200 ppm for 25°C to 200°C			
Supply Current (Typical)		<u>3.3 V</u>		<u>5.0 V</u>
	24 MHz	3.0 mA		8.0 mA
	32 MHz	5.0 mA		10.0 mA
	50 MHz	6.0 mA		14.0 mA
Output Load (CMOS)	15 pF			
Start-up Time	5 ms MAX			
Rise/Fall Time	10 ns MAX			
Duty Cycle*	40% MIN, 60% MAX			
Aging, first year	5 ppm MAX at 25°C			
Aging	100 ppm MAX at 200°C			
Shock, survival <sup>3</sup>	Std: 3,000 g, 0.3 ms, 1/2 sine			
	HG: 10,000 g, 0.3 ms, 1/2 sine			
Vibration, survival <sup>4</sup>	20 g, 10-2,000 Hz swept sine			
Operating Temp Range <sup>5</sup>	-55°C up to 200°C			

1. All frequencies, voltages, temperature ranges and enable/disable options may not be available. Contact factory.

2. Total Tolerance = Calibration Tolerance + Frequency Stability over temperature.

3. For CXOHT and CXOMHT oscillators only. The specification for std. CXOXHT oscillators is 5,000 g and for CXOXHTHG it is 10,000 g.

4. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing available.

5. Expected life at 200°C is in excess of 1,500 hours.

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

\*Tighter duty cycle available. Contact factory.

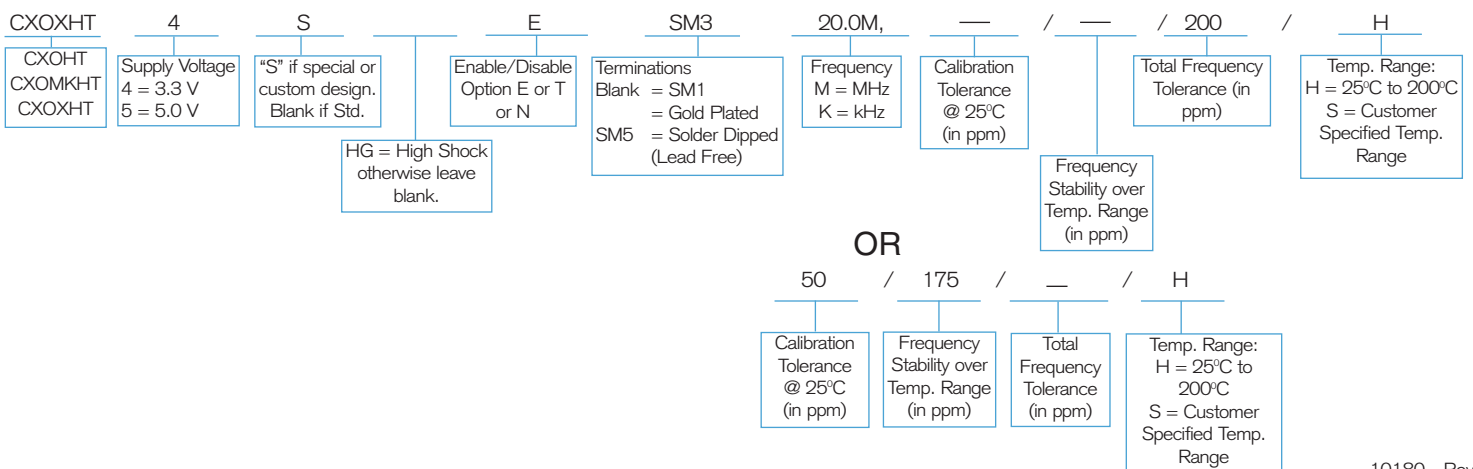
## PACKAGING OPTIONS

CXOHT, CXOMKHT, CXOXHT - Tray Pack

- 16 mm tape, 7" or 13" reels

Per EIA 481 (see Tape and Reel data sheet # 10109)

## HOW TO ORDER CXOHT, CXOMKHT and CXOXHT OSCILLATORS



## 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, 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
<i>When enabled (PIN 1 is high*)</i>		
Output	Freq. output	Freq. output
Oscillator	Oscillates	Oscillates
Current consumption	Normal	Normal
<i>When disabled (PIN 1 is low)</i>		
Output	High Z state	High Z state
Oscillator	Stops	Oscillates
Current consumption	Very low	Lower than normal
<i>When re-enabled (PIN 1 changes from low to high)</i>		
Output recovery	Delayed	Immediate

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