



# CX1HGSM AT-CUT CRYSTAL

6 MHz to 250 MHz  
High Shock Surface Mount Quartz Crystal

Fundamental Mode 6 MHz - 250 MHz

## DESCRIPTION

STATEK's miniature CX1HGSM AT crystals in leadless ceramic packages are designed for surface mounting on printed circuit boards or hybrid substrates. These rugged crystals are designed for applications requiring exceptional shock and vibration survival.

## FEATURES

- High shock and vibration resistance
- Designed for surface mount applications using infrared vapor phase or epoxy mount techniques
- Low profile hermetically sealed ceramic package
- Custom designs available
- Full military testing available
- Designed and manufactured in the USA

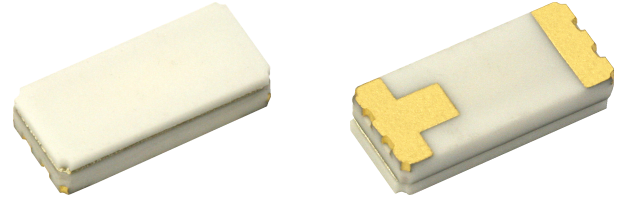
## APPLICATIONS

### Industrial

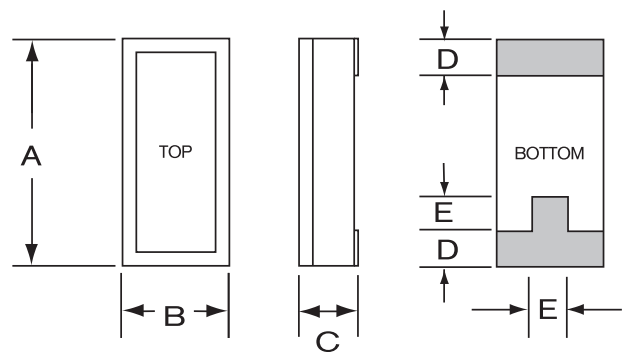
- Down-hole Data Recorder
- Process Control
- Environmental Control
- Engine Control
- Telemetry
- Ruggedized Instrumentation
- Automotive Control

### Military & Aerospace

- Smart Munitions
- Timing Devices (Fuzes)
- Surveillance Devices
- Missile Telemetry
- Ruggedized Communications
- Aviation Equipment

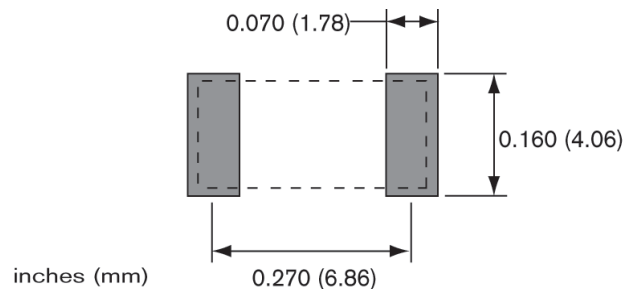


## PACKAGE DIMENSIONS



DIM	Termination	TYPICAL		MAXIMUM	
		inches	mm	inches	mm
A		0.315	8.00	0.330	8.38
B		0.140	3.56	0.155	3.94
C	SM1	—	—	0.070	1.78
C	SM2/SM4	—	—	0.072	1.83
C	SM3/SM5	—	—	0.075	1.90
D		0.045	1.14	0.055	1.40
E		0.060	1.52	0.070	1.78

## SUGGESTED LAND PATTERN



## SPECIFICATIONS

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

Fundamental Frequency	10 MHz	32 MHz	155.52 MHz
Motional Resistance $R_1$ ( $\Omega$ )	30	25	15
Motional Capacitance $C_1$ (fF)	5.5	6.2	4.0
Quality Factor Q (k)	100	30	30
Shunt Capacitance $C_0$ (pF)	2.2	2.3	2.3
Calibration Tolerance <sup>1</sup>	± 100 ppm, or tighter as required		
Load Capacitance <sup>2</sup>	20 pF for $f \leq 50$ MHz 10 pF for $f > 50$ MHz		
Drive Level	500 $\mu$ W MAX for $f \leq 50$ MHz 200 $\mu$ W MAX for $f > 50$ MHz		
Frequency-Temperature Stability <sup>1,3</sup>	± 50 ppm to ± 10 ppm (Commercial) ± 100 ppm to ± 20 ppm (Industrial) ± 100 ppm to ± 30 ppm (Military)		
Aging, first year <sup>4</sup>	10 ppm MAX		
Shock, survival <sup>5</sup>	10,000 g, 0.2 ms, 1/2 sine		
Vibration, survival <sup>6</sup>	20 g, 10-2,000 Hz swept sine		
Operating Temp. Range	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military)		
Storage Temp. Range	-55°C to +125°C		
Max Process Temperature	260°C for 20 sec.		

- Other tolerances available. Contact factory.
- Unless specified otherwise.
- Does not include calibration tolerance. The characteristics of the frequency stability over temperature follow that of the AT thickness-shear mode.
- 10 ppm MAX for frequencies below 40 MHz. For tighter tolerances and higher frequencies contact factory.
- Up to 100,000 g. Contact factory.
- Per MIL-STD-202G, Method 204D, Condition E. Random vibration testing also available.

## HOW TO ORDER CX1HGSM AT CRYSTALS

CX1	S	HG	C	SM1	—	32.0M	,	100	/	100	/	—	/	I
<b>Special</b> Blank = Standard S = Special or Custom		<b>Lid</b> C = Ceramic Lid		<b>Terminations</b> SM1 = Gold Plated (Lead Free) SM2 = Solder Plated SM3 = Solder Dipped SM4 = Solder Plated (Lead Free) SM5 = Solder Dipped (Lead Free)		<b>Frequency</b> M = MHz	<b>Calibration Tolerance @ 25°C</b> (in ppm)	<b>Frequency Stability over Temp. Range</b> (in ppm)	<b>Operating Temp. Range</b> C = -10°C to +70°C I = -40°C to +85°C M = -55°C to +125°C S = Customer Specified					

OR

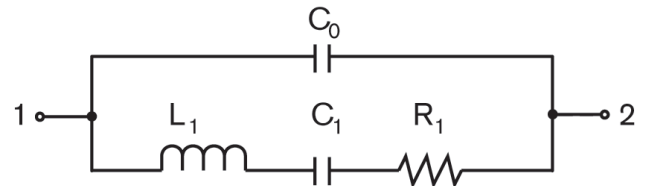
—	/	—	/	200	/	I
<b>Total Frequency Tolerance</b> (in ppm)				<b>Operating Temp. Range</b> C = -10°C to +70°C I = -40°C to +85°C M = -55°C to +125°C S = Customer Specified		

## TERMINATIONS

Designation	Termination
SM1	Gold Plated (Lead Free)
SM2	Solder Plated
SM3	Solder Dipped
SM4	Solder Plated (Lead Free)
SM5	Solder Dipped (Lead Free)

Max Process Temperature 260°C for 20 sec.

## EQUIVALENT CIRCUIT



$R_1$  Motional Resistance  $L_1$  Motional Inductance  
 $C_1$  Motional Capacitance  $C_0$  Shunt Capacitance

## PACKAGING OPTIONS

- Tray Pack
- 16mm tape, 7" or 13" reels  
Per EIA 481 (see Tape and Reel data sheet 10109)