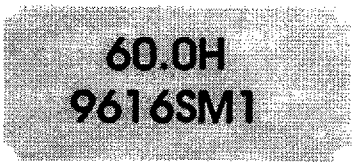


Actual Size Side View

CX-1H-SM CRYSTAL
10 kHz to 600 kHz

MINIATURE SURFACE MOUNT QUARTZ CRYSTAL FOR SERIES OSCILLATORS

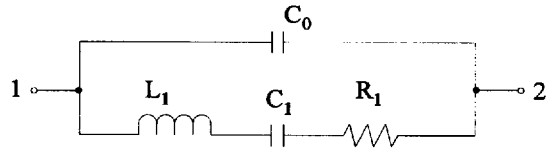
DESCRIPTION

The CX-1H quartz crystal is a high quality tuning fork resonator for use in series (two cascaded inverters) oscillators. The CX-1H is hermetically sealed in a rugged, miniature ceramic package. The CX-1H crystal is manufactured using the Statek-developed photolithographic process, and was designed utilizing the experience acquired by producing millions of crystals for industrial, commercial and military applications. Maximum process temperature should not exceed 260°C.

FEATURES

- **Miniature tuning fork design**
- **High shock resistance**
- **Designed for low power applications**
- **Compatible with hybrid or PC board packaging**
- **Low aging**
- **Full military testing available**
- **Ideal for battery operated applications**
- **Designed and manufactured in the USA**

FIGURE 1. Equivalent Circuit



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

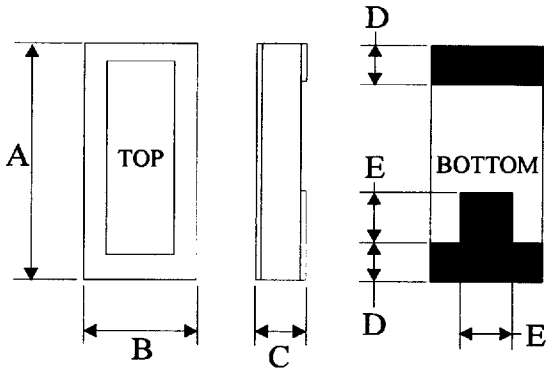
PACKAGING

CX-1 -16mm Tape, 7" or 13" Reels,
Per EIA 481A (See data sheet 10109)
-Tray Pack
-Bulk Pack

TERMINATIONS

Designation	Termination
SM1	Gold Plated
SM2	Nickel, Solder Plated
SM3	Nickel, Solder Plated and Solder Dipped

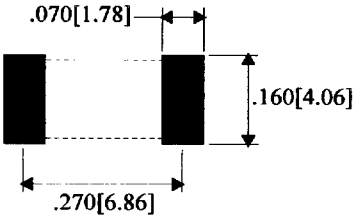
PACKAGE DIMENSIONS



DIM	TYP. INCHES	TYP. mm	MAX. INCHES	MAX. mm
A	.315	8.00	.335	8.51
B	.140	3.56	.160	4.06
C	----	----	SEE BELOW	
D	.045	1.14		
E	.060	1.52		

DIM "C"	GLASS LID		CERAMIC LID	
MAX.	INCHES	mm	INCHES	mm
SM1	.065	1.65	.070	1.78
SM2	.067	1.70	.072	1.83
SM3	.070	1.78	.075	1.91

SUGGESTED LAND PATTERN



INCHES[mm]

STATEK CORPORATION 512 North Main Street, Orange, California 92868 (714) 639-7810 FAX (714) 997-1256

8891940 0000404 808

SPECIFICATIONS

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

Frequency	10 to 600 kHz	
Calibration Tolerance* (see Table 1)	A, B, or C	
Motional Resistance (R_1)	Figure 2 MAX.: 10-169.9 kHz, 2x Typ. 170-600 kHz, 2.5x Typ.	
Motional Capacitance (C_1)	Figure 3	
Quality Factor (Q)	Figure 4 Min. is 0.25x Typ.	
Shunt Capacitance (C_O)	1.6 pF	
Drive Level	10-24.9 kHz 1.5 µW MAX. 25-600 kHz 3.0 µW MAX.	
Turning Point (T_0)**	Figure 5	
Temperature Coefficient (k)	-0.035 ppm/°C^2	
Aging, first year	5ppm MAX.	
Shock, survival***	1,000g 1msec., ½ sine	
Vibration, survival***	20g rms 10-2,000 Hz	
Operating Temperature	-10°C to +70°C -40°C to +85°C -55°C to +125°C	Commercial Industrial Military
Storage Temperature	-55°C to +125°C	
Maximum Process Temperature	260°C for 20 sec.	

*Tighter frequency calibration available.
**Other turning point available.
***Higher shock and vibration available.

TABLE 1. CX-1H Crystal Calibration Tolerance at 25°C

Calibration	Frequency Range (kHz) 10-74.9	75-169.9	170-249.9	250-600
A	±0.003%	±0.005%	±0.01%	±0.02%
B	±0.01%	±0.01%	±0.02%	±0.05%
C	±0.1%	±0.1%	±0.2%	±0.5%

HOW TO ORDER CX-1H CRYSTALS

CX-1H ___ ___ - SM1 32.768 kHz (A / I)

- "S" if special or custom design. Blank if Std.
- Blank=Glass Lid, C=Ceramic Lid
- SM1, SM2, SM3
- Frequency
- *Calibration Tolerance @25°C (A) (B) (C)
- Temp. Range: C = Commercial, I = Industrial, M = Military

*Other calibration fill in ppm

FIGURE 2. CX-1H Typical Motional Resistance (R_1)

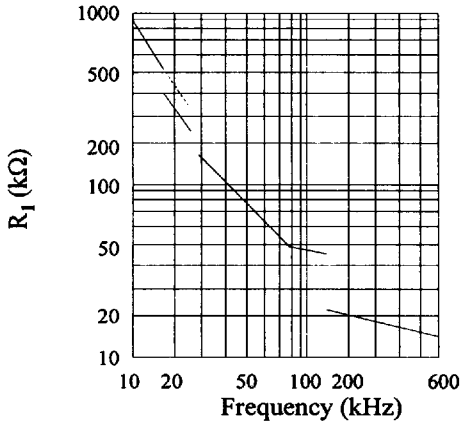


FIGURE 3. CX-1H Typical Motional Capacitance (C_1)

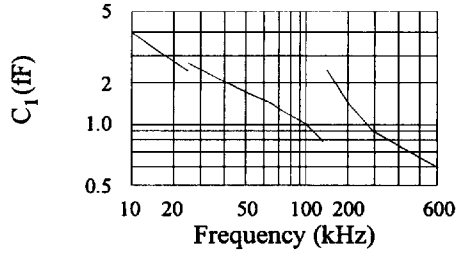


FIGURE 4. CX-1H Typical Quality Factor (Q)

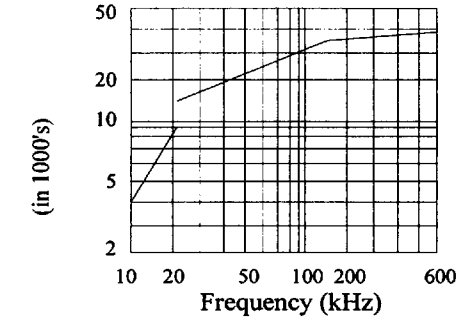
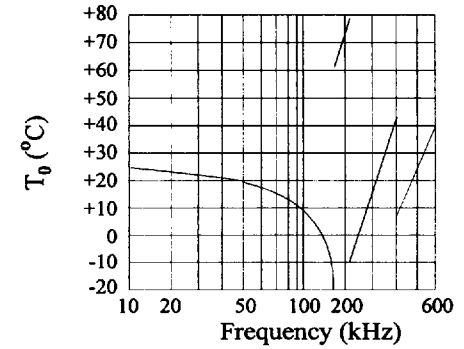


FIGURE 5. CX-1H Typical Turning Point Temperature



Note: Frequency deviation from frequency @ turning point temp.

$$\frac{f-f_0}{f_0} = k(T-T_0)^2$$

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