CX-1-SM CRYSTAL

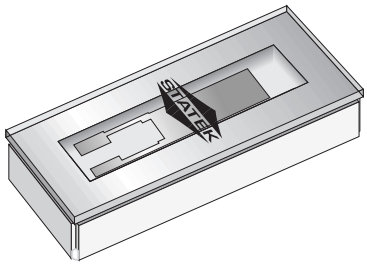
8 MHz to 160 MHz

Miniature AT-Cut Surface Mount Crystal

Fundamental Mode: 8 MHz - 70 MHz
Third Overtone Mode: 48 MHz - 160 MHz

DESCRIPTION

STATEK's miniature CX-1-SM AT-cut crystals in leadless ceramic packages are designed for surface mount on printed circuit boards or hybrid circuits. Due to its robust design, this product has gained wide acceptance in the industry. Maximum process temperature should not exceed 260°C.



actual size

side view

FEATURES

- Designed for surface mount applications using infrared, vapor phase, wave solder or epoxy mount techniques.
- Low profile hermetically sealed ceramic package
- Excellent aging characteristics
- Available with glass or ceramic lid
- High shock and vibration resistance
- Custom designs available
- Full military testing available
- Designed and manufactured in the USA

APPLICATIONS

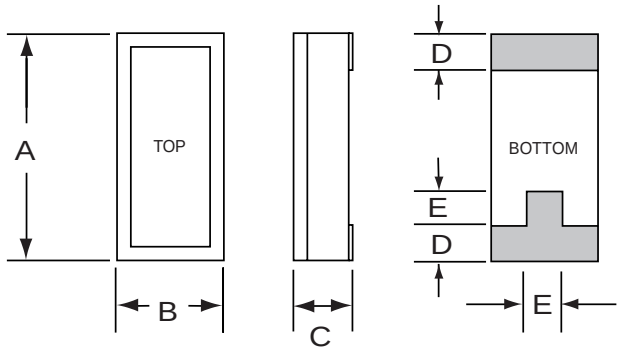
Industrial, Computer & Communications

- General Purpose clock oscillator
- PCMCIA (FAX, Modem and LAN)
- Smart card
- PDA and notebook computers

Military & Aerospace

- Airborne hybrid computer
- Military high speed modem

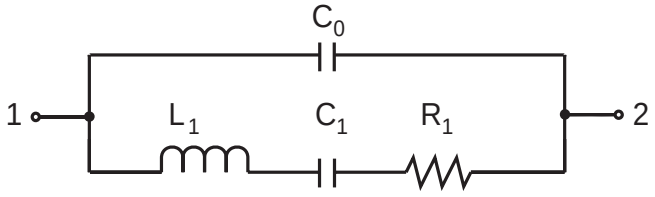
PACKAGE DIMENSIONS



	TYP.		MAX.	
DIM	INCHES	mm	INCHES	mm
A	.315	8.00	.330	8.38
B	.140	3.56	.155	3.94
C	-	-	see below	
D	.045	1.14	.055	1.40
E	.060	1.52	.070	1.78

DIM "C"	GLASS LID		CERAMIC LID	
MAX	INCHES	mm	INCHES	mm
SM1	.065	1.65	.O7O	1.78
SM2	.067	1.70	.072	1.83
SM3	.070	1.78	.075	1.90

EQUIVALENT CIRCUIT



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

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SPECIFICATIONS

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

	10 MHz	32MHz	155.52 MHz
Motional Resistance R_1 (Ω)	50	20	50
Motional Capacitance C_1 (fF)	5.5	7.8	0.5
Quality Factor Q (k)	80	36	41
Shunt Capacitance C_O (pF)	2.2	2.6	3.2

Calibration Tolerance*	A ± 0.01% (± 100ppm) B ± 0.1% C ± 1.0%
Load Capacitance	20 pF (Unless specified by customer)
Drive Level	500 μW MAX.
Frequency-Temperature Stability**	-10°C to +70°C from ± 10ppm -40°C to +85°C from ± 20ppm -55°C to +125°C from ± 30ppm
Aging, first year	5ppm MAX.
Shock, survival***	3,000g, .3 msec., 1/2 sine
Vibration, survival	20g rms, 10-2,000 Hz random
Operating Temperature	-10°C to +70°C Commercial -40°C to +85°C Industrial -55°C to +125°C Military
Storage Temperature	-55°C to +125°C
Max Process Temperature	260°C for 20 sec.

Note: The characteristics of the frequency temperature stability follow that of AT cut thickness-shear mode*

* Tighter tolerances available as low as ± 5 ppm

** Does not include calibration tolerance

*** Higher shock version available, refer to data sheet model CX-1HG (10108)

TERMINATIONS

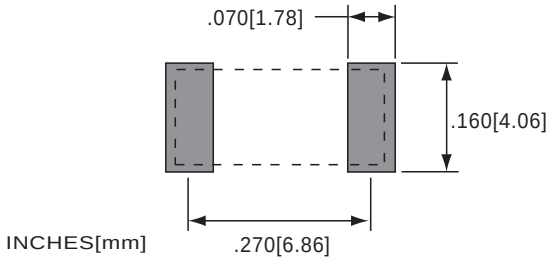
Designation	Termination
SM1	Gold Plated
SM2	Nickel, Solder Plated
SM3	Nickel, Solder Plated and Solder Dipped

PACKAGING

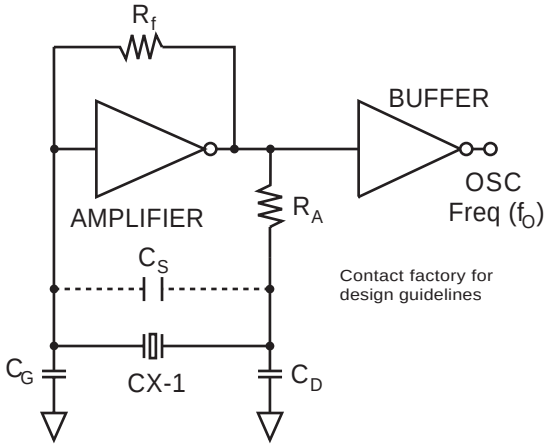
CX-1-SM - Tray Pack (Standard)

- 16mm tape, 7" or 13" reels (Optional) Per EIA 481 (see data sheet 10109)

SUGGESTED LAND PATTERN



CONVENTIONAL CMOS PIERCE OSCILLATOR CIRCUIT



HOW TO ORDER CX-1-SM CRYSTALS

CX-1 ____ ____ ____ ____ SM1 32 MHz (25ppm / 25ppm / 50ppm / I)

"S" if special or custom design. Blank if Std.	O.T.=3RD O.T. Mode Blank=Fundamental Mode	C=Ceramic Lid Blank=Glass Lid	SM1 SM2 SM3	Frequency	Calibration Tolerance* @25°C (A) (B) (C)	Frequency Stability over Temp. Range	Total Frequency Tolerance	Temp. Range: C = Commercial I = Industrial M = Military S = Specify

*Other calibration fill in ppm.

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TAPE AND REEL

Surface Mount Miniature Quartz Crystal

Tape and Reel Packaging for STATEK's Surface Mount Quartz Crystals, per EIA-481A

REEL SELECTION

Unless otherwise specified, the following reel sizes will be used for the quantities listed.

PACKAGE STYLE	REEL SIZE AND MAX QUANTITIES	
	7 in. [180mm]	13 in.[330mm]
CX-1	1000	4000
CX-2	2000	8000
CX-3	2000	8000
CX-4	3000	12,000
CX-6	2000	8000
CX-7	3000	12,000

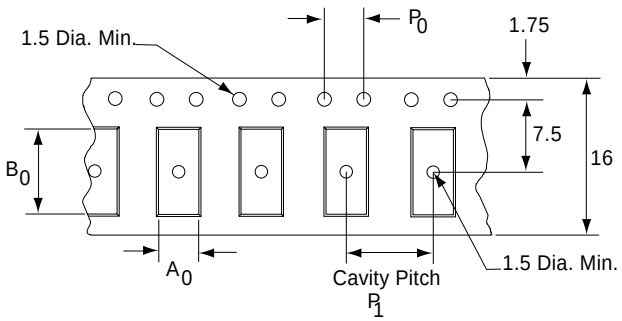
	ORIENTATION (Standard unless otherwise specified)
CX-1	Random*
CX-2	Single pad toward holes
CX-3	Random*
CX-4	Random*
CX-6	Random*
CX-7	Random*

* T-pads toward holes if specified.

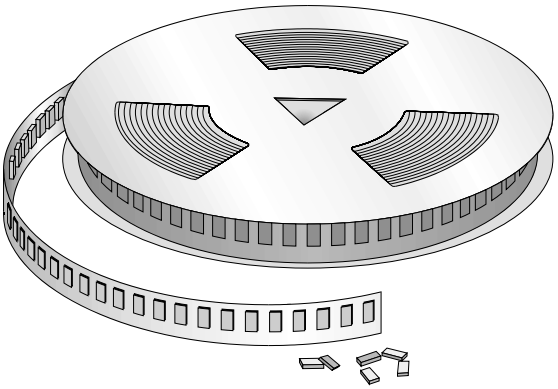
PART TO PART INDEXING P_1 AND A_o & B_o DIMENSIONS

	P_1	A_0	B_0
CX-1	8.0	4.0	8.4
CX-2	4.0	2.8	7.1
CX-3	4.0	2.8	7.1
CX-4	4.0	2.1	5.5
CX-6	4.0	2.8	7.1
CX-7	4.0	2.1	5.5

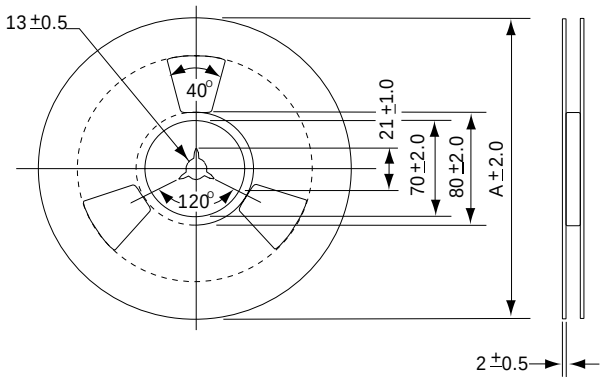
Note: Dimensions are in millimeters.



The indexing holes are at a standard 4mm pitch (P_0)
Standard Tape Carrier: for CX-1, CX-2, CX-3, CX-6: 2701 Non conductive (Polyester)
for CX-4, CX-7: 3000 Black conductive (Polycarbonate)



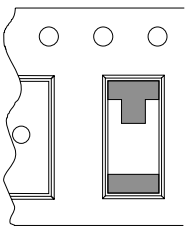
THERMAL PLASTIC WHEEL



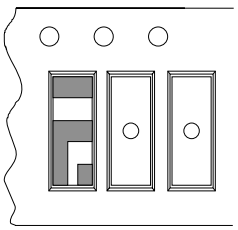
Notes:
1. Reel sketch and dimensions are in mm and are for reference only.
2. Dimension "A" is reel size diameter.
3. The center hole (hub hole) diameter is the EIA-481 standard 13 mm size.

BOTTOM VIEW

Showing crystal package in carrier tape cavity



Example: CX-1 T-pads toward holes when specified



Example: CX-2 standard orientation

10109 - Rev B

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