



- ▶ Low Profile
- ▶ 3.2 x 2.5 mm Footprint
- ▶ Extended Temp. Range Option
- ▶ RoHS Compliant

# ECX-32 SMD CRYSTAL

The sub miniature ECX-32 is a compact SMD Crystal. The 3.2 x 2.5 x 0.7 mm ceramic package is ideal for today's SMD manufacturing environment.

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

PARAMETERS	CONDITIONS	ECX-32			UNITS
		MIN	TYP	MAX	
Frequency	Fundamental Mode	12.000		60.000	MHz
Frequency Tolerance	@ +25°C			± 50 *	ppm
Frequency Stability (ref @ 25°C)	-20 ~ +70°C			± 50 *	ppm
Shunt Capacitance				5.0	pF
Load Capacitance	Specify in P/N		20		pF
Equivalent Series Resistance	12.000 ~ 29.999 MHz			100	Ω
Equivalent Series Resistance	30.000 ~ 60.000 MHz			50	Ω
Drive Level				100	μW
Operating Temperature	T <sub>opr</sub>	-20		+70	°C
Storage Temperature	T <sub>stg</sub>	-40		+85	°C
Aging Characteristics (Per Year)	@ +25°C ± 3°C			± 5	ppm

## PACKAGE DIMENSIONS (mm)

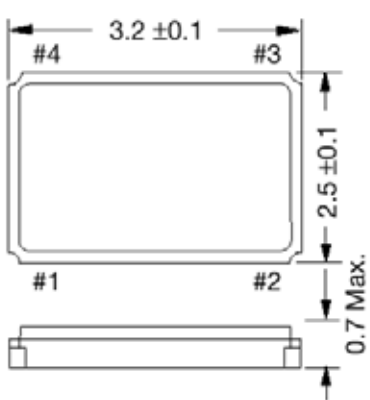


Figure 1) Top, Side and End Views

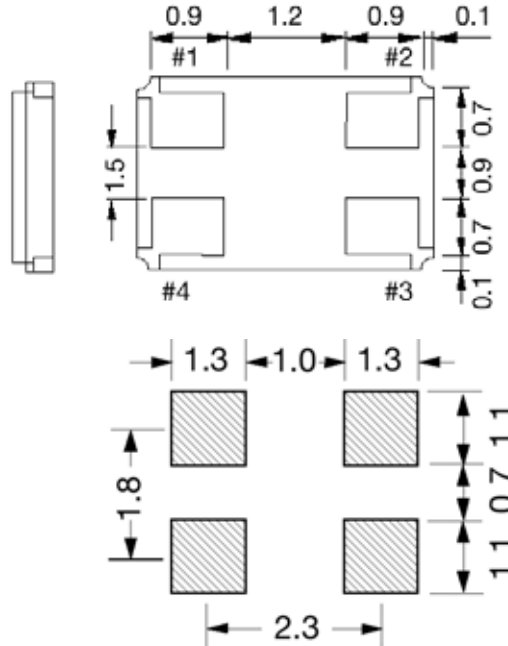
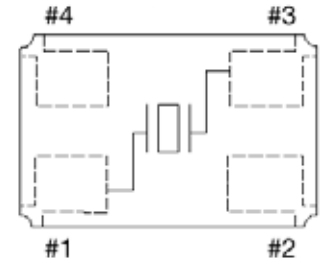


Figure 2) Bottom View and Suggested Land



Pad Connections	
1	In/Out
2	Gnd
3	In/Out
4	Gnd

Figure 3) Internal Connections (Top View)

## PART NUMBERING GUIDE: Example ECS-160-20-33-TR

ECS - Frequency Abbreviation - Load - Package Type - Tolerance - Stability - Temp Range - Packaging

160 = 16.000 MHz  
See P/N Guide for Std Frequencies

20 = 20 pF  
S = Series

-33 =  
ECX-32

A = ± 25 ppm  
C = ± 10 ppm

D = ± 100 ppm  
E = ± 50 ppm  
G = ± 30 ppm  
H = ± 25 ppm  
K = ± 10 ppm

L = -10 ~ +70°C  
M = -20 ~ +70°C  
N = -40 ~ +85°C  
P = -40 ~ +105°C

-TR =  
Tape & Reel  
1K/Reel

\* Tighter Tolerance/Stability Options Available (see custom options)  
Not all stabilities are available at all temp ranges, consult ECS.



### Developed Frequencies

FREQUENCY MHz	CODE
16.000	160
18.432	184
19.6608	196
20.000	200
24.000	240
25.000	250
27.000	270
30.000	300
32.000	320
36.000	360
40.000	400
48.000	480

Sample P/N: ECS-200-20-33  
 ECS = Mfg Code  
 200 = Frequency Code 20.000 MHz  
 -20 = Load Capacitance 20 pF  
 -33 = Package, ECX-32

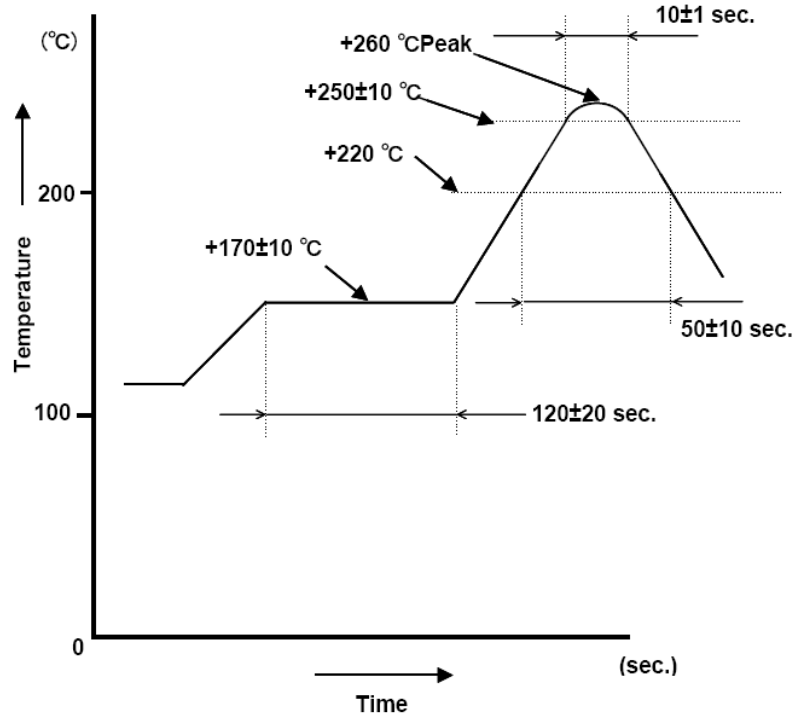
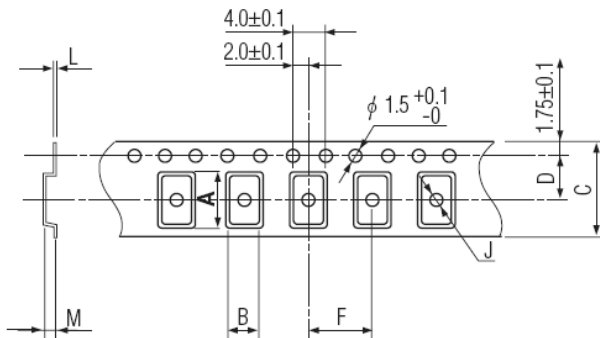


Figure 1) Suggested Reflow Profile

### POCKET TAPE DIMENSIONS (mm)



A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
3.5	2.8	8.0	3.5	4.0	1.1	0.25	1.0	180	1000

Package Data	
Item	Description
Lid	Metal
Base	Ceramic
Sealing	Seam/EB
Terminal	Tungsten (metalized)
Plating	Gold/Nickel Surface/Under
RoHS	Compliant (Pb Free)

Figure 2) Pocket Tape Dimensions