

**RoHS Compliant**  
**Pb - Lead Free**  
**AEC-Q200 Qualified**

Ltr	Revisions	Date	Appr

#### Electrical Specifications:

Frequency Range	12.000 to 60.000	MHz
Mode of Oscillation	Fundamental	
Frequency Tolerance at 25°C	±50	PPM Max
Frequency Stability over Temperature Range	±100	
Operating Temperature Range	-40 to +125	° C
Storage Temperature Range	-55 to +125	
Aging per Year	±3	PPM Max
Load Capacitance	7 to 32 and Series Resonance	pF
Shunt Capacitance	3.0	
Equivalent Series Resistance (ESR)	See ESR Table	Ohms
Drive Level	100	uW Typ
Insulation Resistance	500 at 100 Vdc ± 15 Vdc	M Ohms

#### Frequency Range and ESR Values:

Frequency Range in MHz	ESR Ohm Max	Mode of Operation
12.000 to 13.999	200	Fundamental
14.000 to 15.999	150	Fundamental
16.000 to 19.999	90	Fundamental
20.000 to 23.999	70	Fundamental
24.000 to 24.999	60	Fundamental
25.000 to 44.999	50	Fundamental
45.000 to 60.000	40	Fundamental



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All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

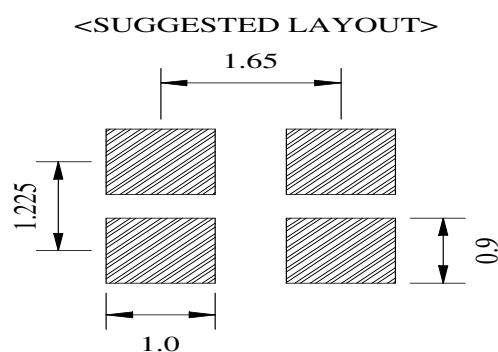
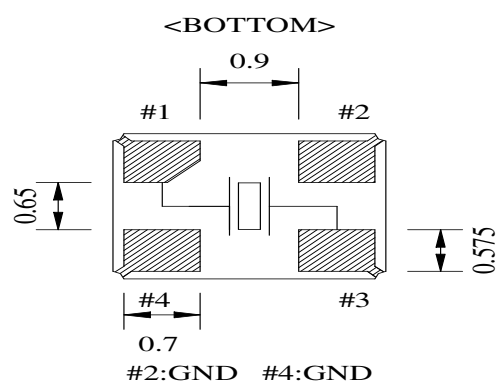
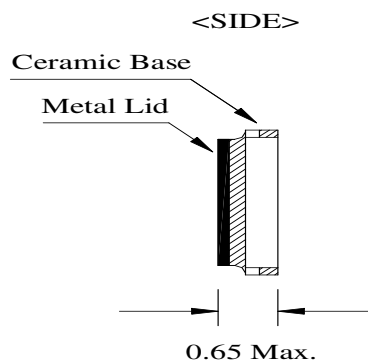
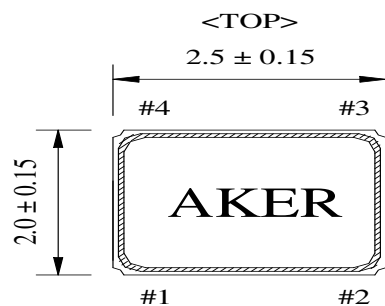
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#### Specification Title:

**Microprocessor Crystal Unit**  
**Automotive Temperature Range**  
**2.5 x 2.0 millimeter Surface Mount**  
**General Product Specification**

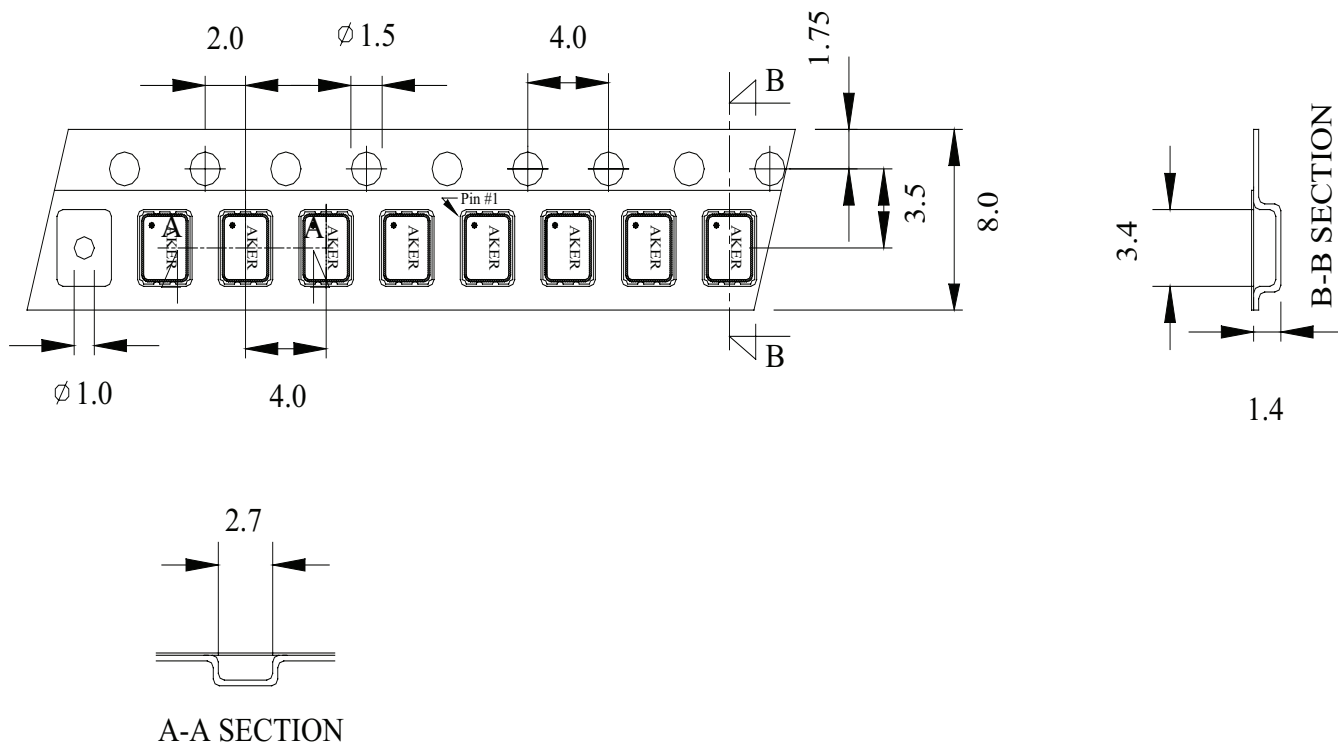
Part Number: **C2E X1 Series**

## Mechanical Outline:

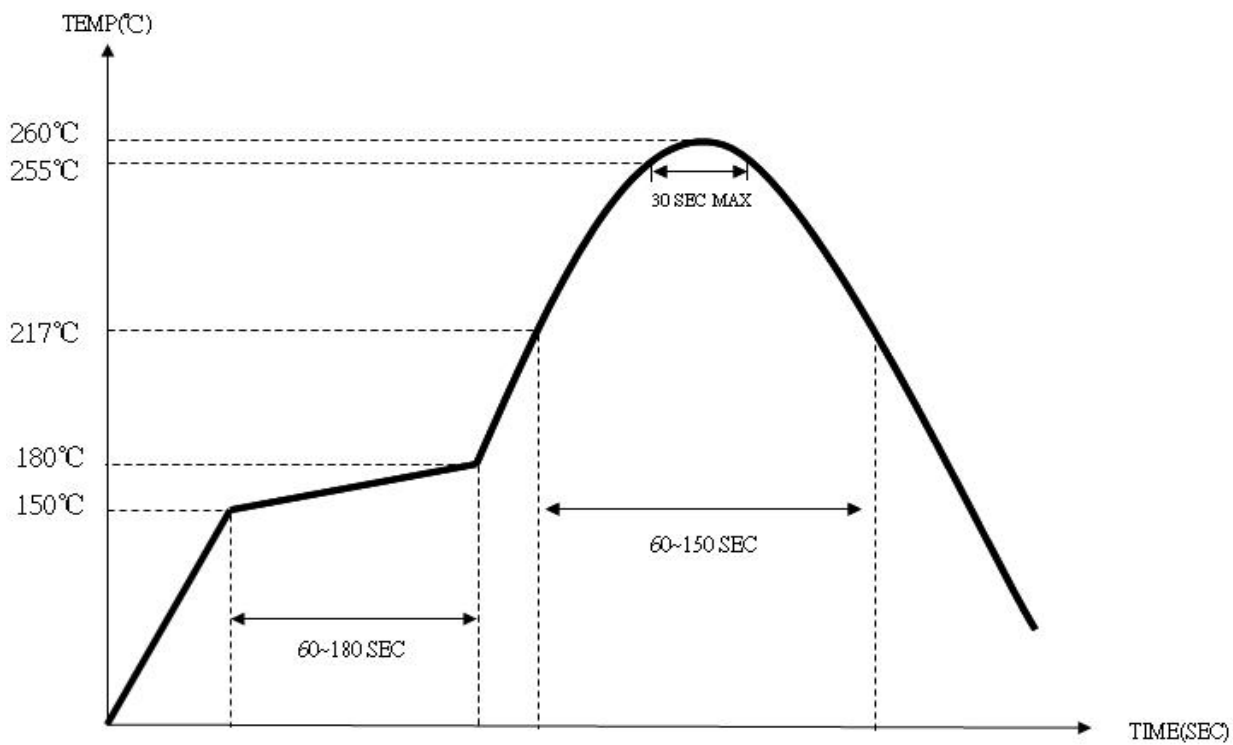


**Package is Seam Sealed Ceramic-Metal.  
Dimensions are millimeters.**

### Carrier Tape Dimensions:



### Solder Reflow Characteristics:



### How to build a Part Number:

Series		C	Parameter
Package		2E	2.5 x 2.0 mm
			-
Frequency		12.000 to 60.000	MHz
			-
Load Capacitance		7	7 pF
		10	10 pF
		12	12 pF
		16	16 pF
		18	18 pF
		20	20 pF
		32	32 pF
		S	Series
			-
Frequency Tolerance		50	±50 PPM
Frequency Stability		100	±100 PPM
			-
Temperature Range		X1	-40 to +125 °C
			-
Packaging		M	250pcs Reel
		R	1000pcs Reel
		R3	3000pcs Reel

### Part Number Example:

**C2E-50.000-18-50100-X1-R**

**C2E- 2.0 x 2.5 mm SMD Seam Seal Crystal Unit**

**50.000 MHz Nominal Frequency**

**18 pF Load Capacitance**

**50100: ±50 PPM Frequency Tolerance and ±100 PPM Frequency Stability**

**X1: -40 to +125° C Temperature Range**

**R: Tape and Reel Packaging - 1000pcs Reel**

### Notes:

- 1- Frequency Tolerance and Stability options are limited due to physical size.
- 2- Product is shipped in Tape and Reel configuration.
- 3- Quantities less than 250pcs are shipped in tape.
- 4- Specification subject to change without notice.