

RoHS Compliant Pb - Lead Free	Ltr	Revisions	Date	Appr

**Electrical Specifications:**

Frequency Range		8.000 to 150.000	MHz
Mode of Oscillation	Fundamental	8.000 to 64.000	MHz
	Third Overtone	60.000 to 150.000	
Frequency Tolerance at 25°C	Standard	±30	PPM Max (Note 1)
	Optional	±25	
		±20	
		±15	
		±10	
Frequency Stability over Temperature Range	Standard	±50	PPM Max (Note 1)
	Optional	±30	
		±25	
		±20	
		±15	
Operating Temperature Range	Standard	-10 to +70	° C
	Extended	-40 to +85	
Storage Temperature Range		-55 to +125	
Aging		±3	PPM Max/Year
Load Capacitance		7 to 32 and Series Resonance	pF
Shunt Capacitance		3.0	
Equivalent Series Resistance (ESR)		See ESR Table	Ohm
Drive Level		100	uW Max
Insulation Resistance		500 at 100 Vdc ± 15 Vdc	M Ohm

**Frequency Range and ESR Values:**

Frequency Range in MHz	ESR Ohm Max	Mode of Operation	Frequency Range in MHz	ESR Ohm Max	Mode of Operation
8.000 to 9.999	500	Fundamental	54.000 to 99.999	150	3rd Overtone
10.000 to 11.999	150	Fundamental	100.000 to 124.999	100	3rd Overtone
12.000 to 15.999	80	Fundamental	125.000 to 150.000	80	3rd Overtone
16.000 to 19.999	60	Fundamental			
20.000 to 24.999	50	Fundamental			
25.000 to 53.999	40	Fundamental			
54.000 to 64.000	30	Fundamental			



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All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

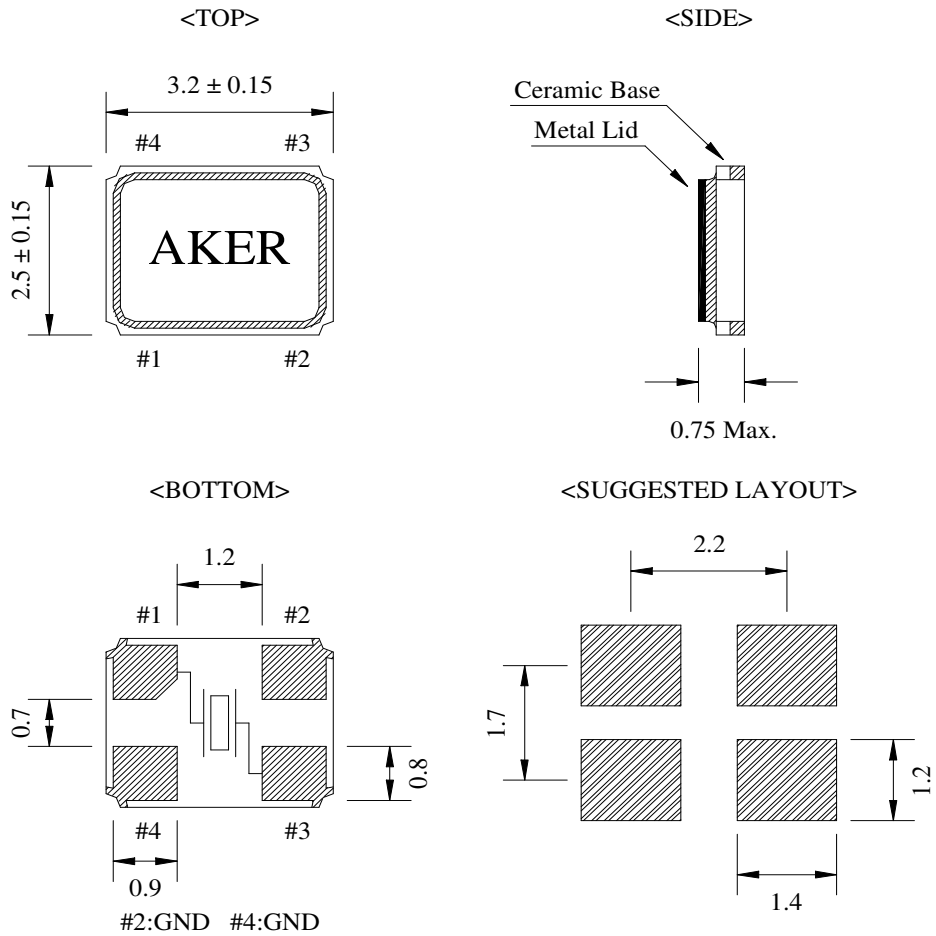
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Specification Title:

**Microprocessor Crystal Unit  
Low Profile  
3.2 x 2.5 millimeter Surface Mount  
General Product Specification**

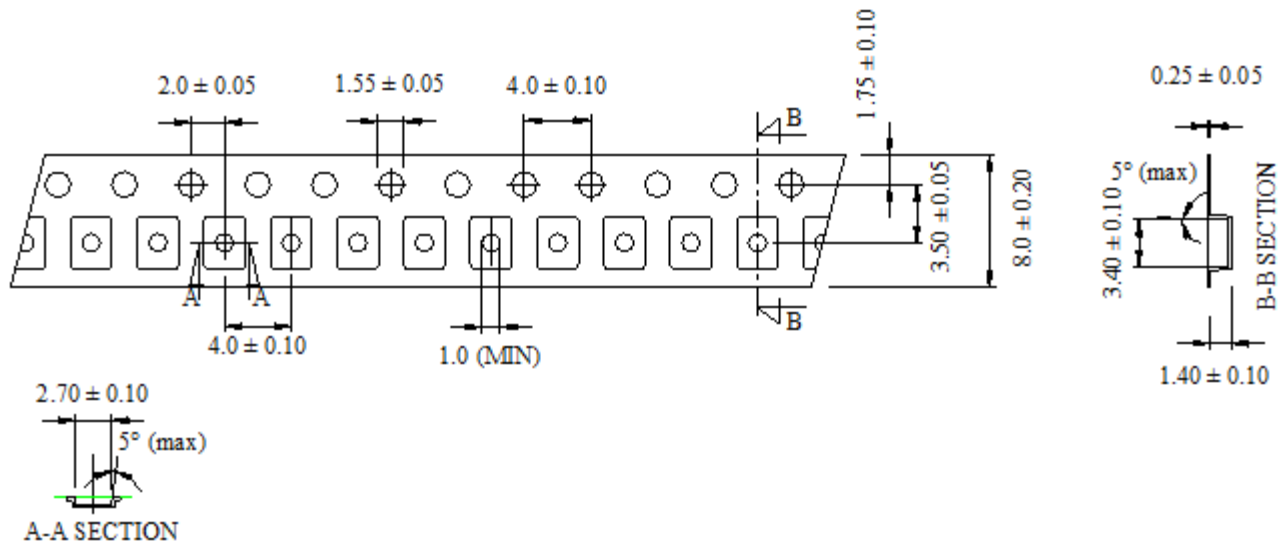
Part Number: **C3E Series**

**Mechanical Outline:**



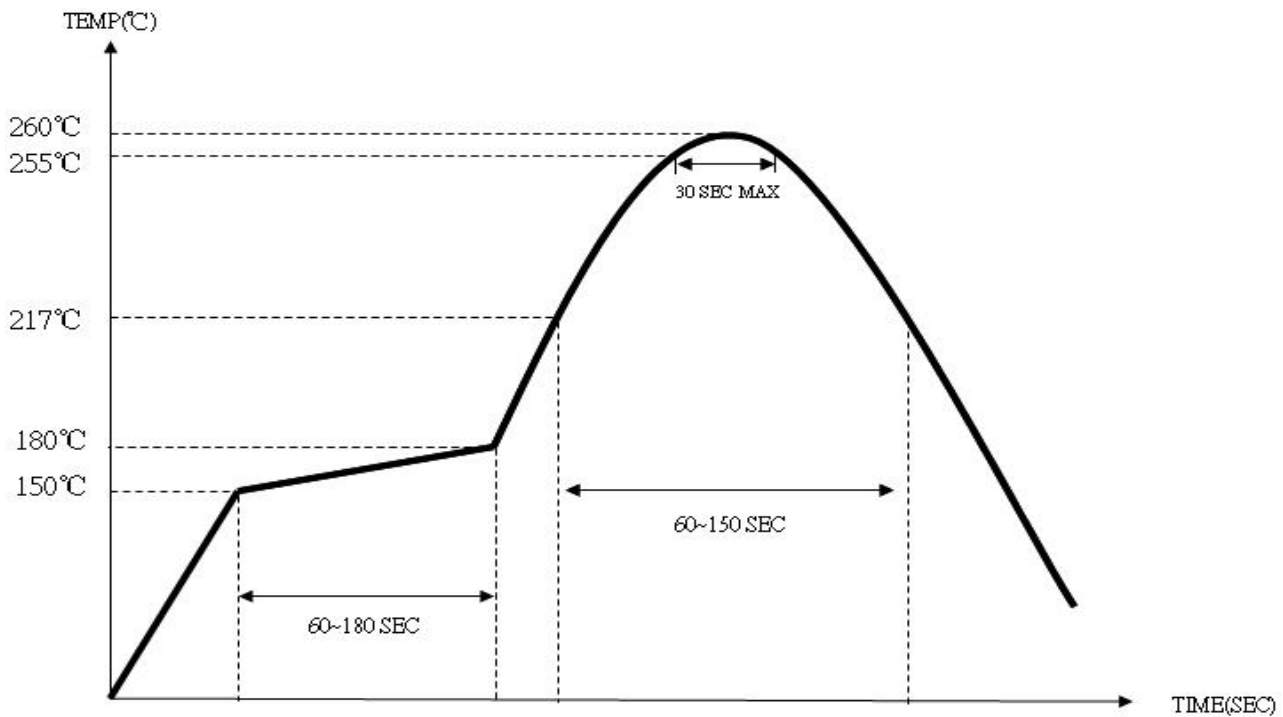
**Package is Seam Sealed Ceramic-Metal.  
Dimensions are millimeters.**

### Carrier Tape Dimensions:



Dimensions are millimeters.

### Solder Reflow Characteristics:



## How to build a Part Number:

Series		C	Parameter
Package		3E	3.2 x 2.5 mm
		-	
Frequency		8.000 to 150.000	MHz
		-	
Load Capacitance		7	7 pF
		10	10 pF
		12	12 pF
		16	16 pF
		18	18 pF
		20	20 pF
		32	32 pF
		-	
Frequency Tolerance (Note 1)	Standard	30	±30 PPM
	Option	25	±25 PPM
		20	±20 PPM
		15	± 15 PPM
		10	±10 PPM
Frequency Stability (Note 1)	Standard	50	±50 PPM
	Option	30	±30 PPM
		25	±25 PPM
		20	±20 PPM
		15	±15 PPM
		10	±10 PPM*
		-	
Mode of Oscillation		See Notes	Fundamental
		3	Third Overtone
		-	
Temperature Range	Standard	See Notes	-10 to +70 °C
	Extended	X	-40 to +85 °C
		-	
Packaging		M	250pcs Reel
		R	1000pcs Reel
		R3	3000pcs Reel

### Part Number Example:

**C3E-24.000-18-3050-X-R**

**C3E- 2.5 x 3.2 mm SMD Seam Seal Crystal Unit**

**24.000 MHz Nominal Frequency**

**18 pF Load Capacitance**

**3050: ±30 PPM Frequency Tolerance and ±50 PPM Frequency Stability**

**Fundamental Mode**

**X: -40 to +85° C Temperature Range**

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

#### Notes:

- 1- Frequency Tolerance and Stability options are limited due to physical size.  
\* ±10 PPM Temperature Stability is only available from -20 to +85° C.
- 2- Standard Temperature Range does not need to be included in part number description.
- 3 - Fundamental mode does not need to be included in part number description
- 4- Quantities less than 250pcs are shipped in tape only.
- 5- Specification subject to change without notice.