



No.11-3 Jianguo Rd., T.E.P.Z. 42760 Taiwan, ROC

All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

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Specification Title:

Microprocessor Crystal Unit

Automotive Grade

3.2 x 2.5 millimeter Surface Mount - 4 Pad

General Product Specification

AEC-Q200 Qualified

IATF 16949 Certified

Series Name: C3E Auto Series

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 150.00	
Frequency Tolerance at 25°C	Standard	±30	PPM Max (Note 1)
	Optional	±50	
		±20	
		±15	
		±10	
Frequency Stability over Temperature Range	Standard	±50	PPM Max (Note 1)
	Optional	±100	
		±30	
		±25	
		±20	
Operating Temperature Range	Standard	-40 to +85	°C
	Optional	-40 to +105	
	Optional	-40 to +125	
Storage Temperature Range		-55 to +150	
Aging		±3	PPM Max/Year
Load Capacitance		6 to 47 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	60.000 to 99.999	150	Third Overtone
10.000 to 11.999	150	Fundamental	100.000 to 124.999	100	Third Overtone
12.000 to 15.999	80	Fundamental	125.000 to 150.000	80	Third Overtone
16.000 to 19.999	60	Fundamental			
20.000 to 24.999	50	Fundamental			
25.000 to 49.999	40	Fundamental			
50.000 to 64.000	30	Fundamental			

RoHS Compliant

Pb - Lead Free

AEC-Q200 Qualified

IATF 16949 Certified

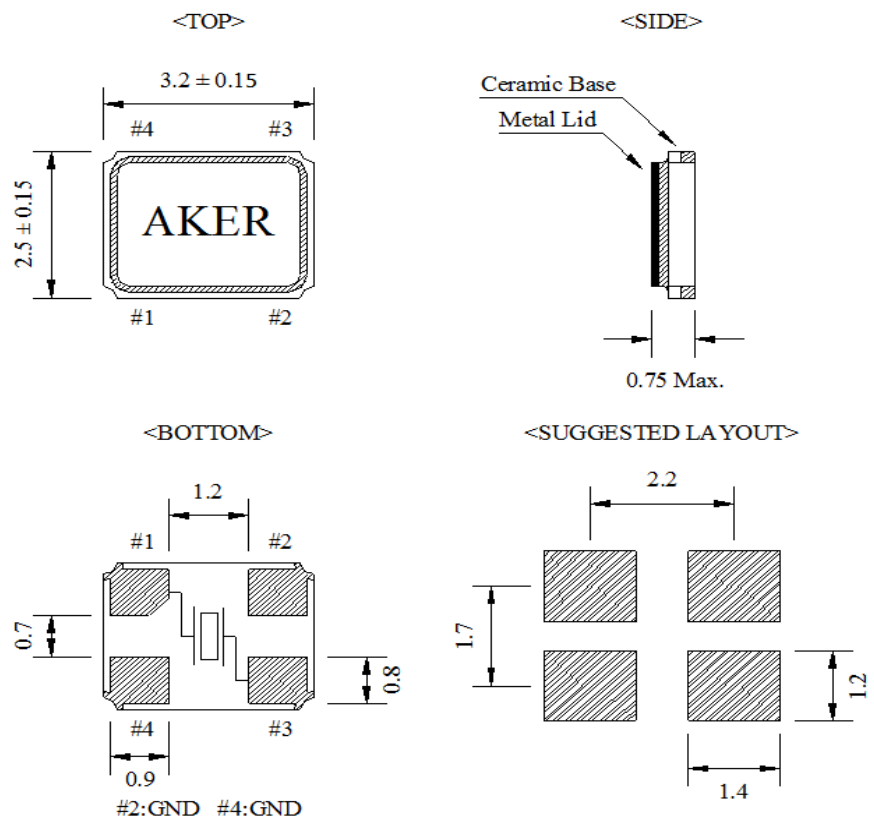
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Revisions

Date

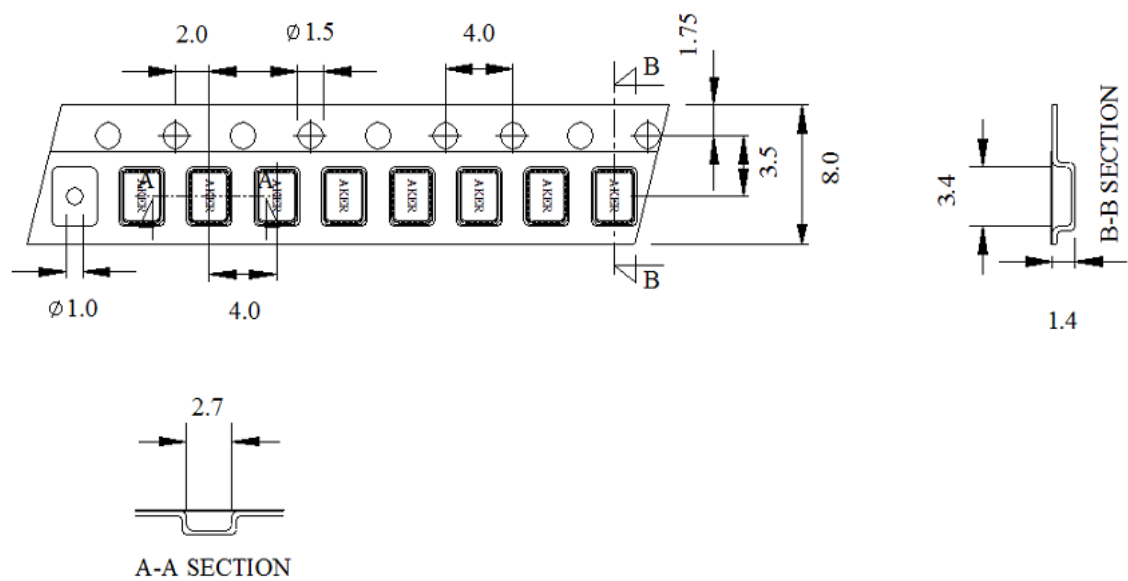
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Mechanical Outline:



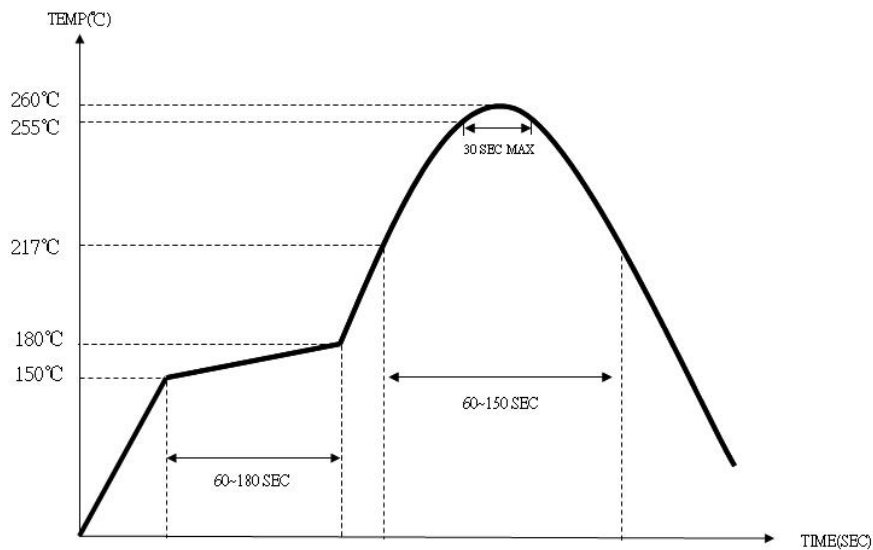
**Package is Seam Sealed Ceramic-Metal.
Dimensions are millimeters.**

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 - 4 Pad
			-
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	±30PPM
	Option	50	±50PPM
		20	±20PPM
		15	±15PPM
		10	±10PPM
Frequency Stability (Note 1)	Standard	50	±50PPM
	Option	100	±100PPM
		30	±30PPM
		25	±25PPM
		20	±20PPM
			-
Mode of Oscillation		See Notes	Fundamental
		3	Third Overtone
			-
AECQ-200		A	Automotive
			-
Temperature Range	Standard	X	-40 to +85 °C
	Option	X1	-40 to +125 °C
	Option	X2	-40 to +105 °C
	Option	X3	-40 to +150 °C
			-
Packaging		M	250pcs Reel
		R	1000pcs Reel
		R3	3000pcs Reel

Part Number Example:**C3E-24.000-18-3050-A-X-R****C3E- 3.2 x 2.5 mm SMD Seam Seal Crystal Unit - 4 Pad****24.000 MHz Nominal Frequency****18 pF Load Capacitance****3050: ±30 PPM Frequency Tolerance and ±50 PPM Frequency Stability****A: Automotive Grade****Fundamental Mode****X: -40 to +85° C Temperature Range****R: Tape and Reel Packaging - 1000pcs Reel****Notes:**

- 1- Product is shipped in Tape and Reel configuration.
- 2- Quantities less than 250pcs are shipped in tape.
- 3- Specification subject to change without notice.
- 4- Fundamental mode does not need to be included in Part Number description.

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C3E Auto Series