



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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Date:	August 01, 2022

**Specification Title:**

**Microprocessor Crystal Unit  
Automotive Grade  
2.5 x 2.0 millimeter Surface Mount - 4 Pad  
General Product Specification**

**Series Name: C2E Auto Series**

**Electrical Specifications:**

Frequency Range		12.000 to 133.000	MHz
Mode of Oscillation	Fundamental	12.000 to 66.999	MHz
	Third Overtone	67.000 to 133.000	MHz
Frequency Tolerance at 25°C	Standard	±30	PPM Max (Note 1)
		±50	
	Optional	±20	
		±15	
Frequency Stability over Temperature Range	Standard	±10	PPM Max (Note 1)
		±50	
	Optional	±100	
		±30	
Operating Temperature Range	Standard	-40 to +85	°C
	Extended	-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

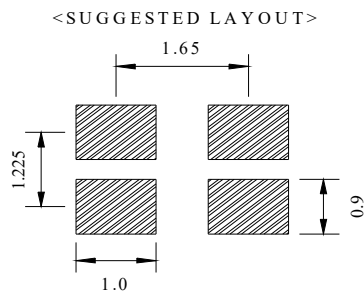
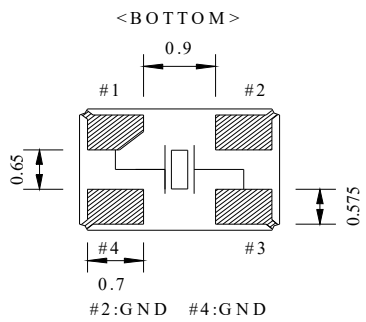
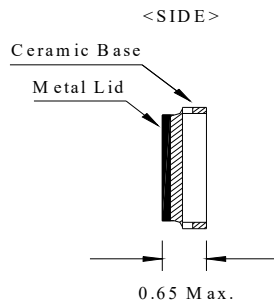
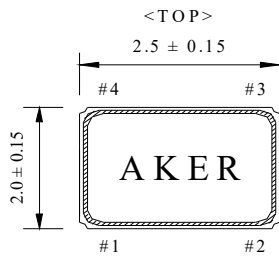
**Frequency Range and ESR Values:**

Frequency Range in MHz	ESR Ohm Max	Mode of Operation	Frequency Range in MHz	ESR Ohm Max	Mode of Operation
12.000 to 15.999	150	Fundamental	67.000 to 99.999	150	Third Overtone
16.000 to 19.999	80	Fundamental	100.000 to 133.000	100	Third Overtone
20.000 to 24.999	60	Fundamental			
25.000 to 29.999	50	Fundamental			
30.000 to 34.999	45	Fundamental			
35.000 to 66.999	40	Fundamental			

**RoHS Compliant  
Pb - Lead Free**

Ltr	Revisions	Date	Appr

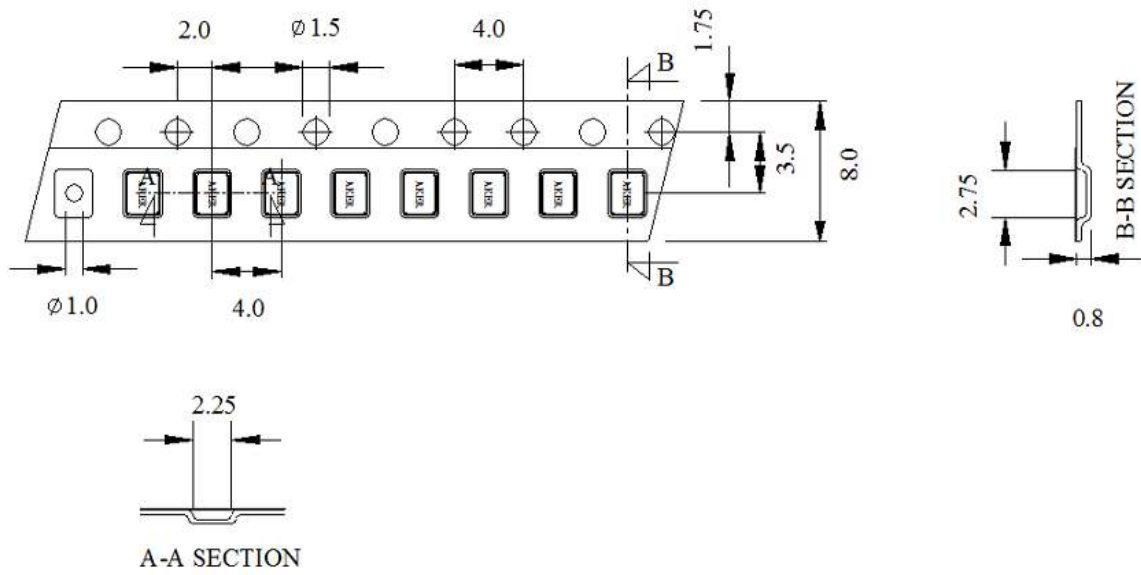
**Mechanical Outline:**



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

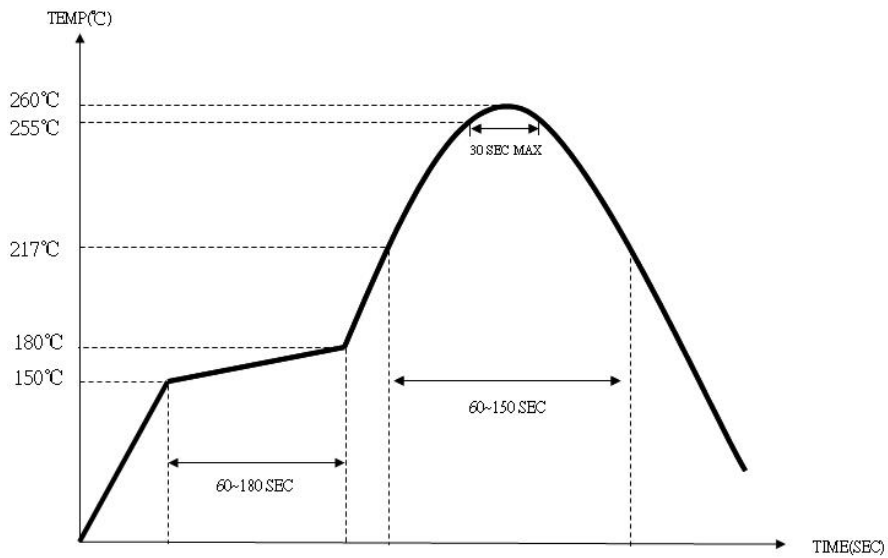
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**Carrier Tape Dimensions:**



Dimensions are millimeters.

**Solder Reflow Characteristics:**



**How to build a Part Number:**

<b>Series</b>		<b>C</b>	<b>Parameter</b>
<b>Package</b>		<b>2E</b>	<b>2.5 x 2.0 mm - 4 Pad</b>
		-	
<b>Frequency</b>		<b>12.000 to 133.000</b>	<b>MHz</b>
		-	
<b>Load Capacitance</b>		<b>7</b>	<b>7pF</b>
		<b>10</b>	<b>10 pF</b>
		<b>12</b>	<b>12 pF</b>
		<b>16</b>	<b>16 pF</b>
		<b>18</b>	<b>18 pF</b>
		<b>20</b>	<b>20 pF</b>
		<b>32</b>	<b>32 pF</b>
		<b>S</b>	<b>Series</b>
		-	
<b>Frequency Tolerance (Note 1)</b>	<b>Standard</b>	<b>30</b>	<b>±30PPM</b>
	<b>Option</b>	<b>50</b>	<b>±50PPM</b>
		<b>20</b>	<b>±20PPM</b>
		<b>15</b>	<b>±15PPM</b>
		<b>10</b>	<b>±10PPM</b>
<b>Frequency Stability (Note 1)</b>	<b>Standard</b>	<b>50</b>	<b>±50PPM</b>
	<b>Option</b>	<b>100</b>	<b>±100PPM</b>
		<b>30</b>	<b>±30PPM</b>
		<b>25</b>	<b>±25PPM</b>
		<b>20</b>	<b>±20PPM</b>
		-	
<b>AECQ-200</b>		<b>A</b>	<b>Automotive</b>
		-	
<b>Temperature Range</b>	<b>Standard</b>	<b>X</b>	<b>-40 to +85 °C</b>
	<b>Option</b>	<b>X1</b>	<b>-40 to +125 °C</b>
	<b>Option</b>	<b>X2</b>	<b>-40 to +105 °C</b>
		-	
<b>Packaging</b>		<b>M</b>	<b>250pcs Reel</b>
		<b>R</b>	<b>1000pcs Reel</b>
		<b>R3</b>	<b>3000pcs Reel</b>

**Part Number Example:**

**C2E-50.000-18-3050-A-X-R**

**C2E- 2.5 x 2.0 mm SMD Seam Seal Crystal Unit - 4 Pad**

**50.000 MHz Nominal Frequency**

**18 pF Load Capacitance**

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

**A: Automotive Grade**

**Fundamental Mode**

**-40 to +85° C Temperature Range**

**R: Tape and Reel Packaging**

**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 only.**

**4- Specification subject to change without notice.**

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