

RoHS Compliant Pb - Lead Free	Ltr	Revisions	Date	Appr

**Electrical Specifications:**

Frequency Range		12.000 to 60.000	MHz
Mode of Oscillation	Fundamental	12.000 to 60.000	MHz
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 Typ
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
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

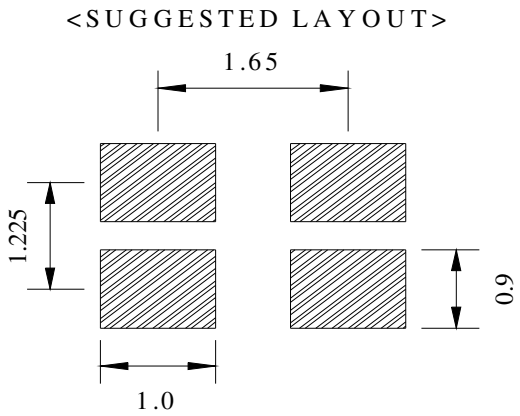
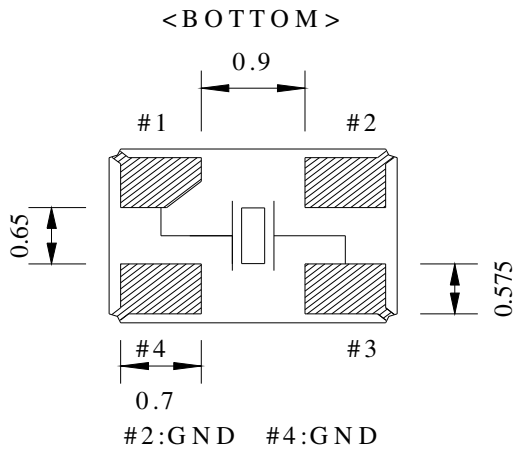
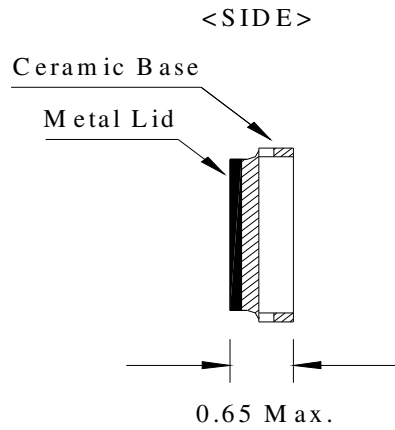
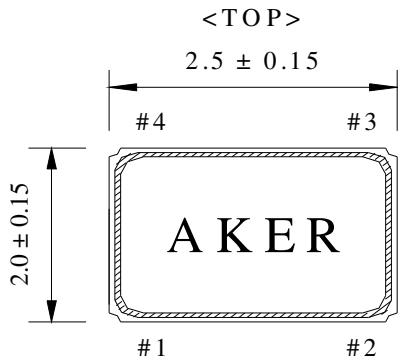
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**Specification Title:**

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

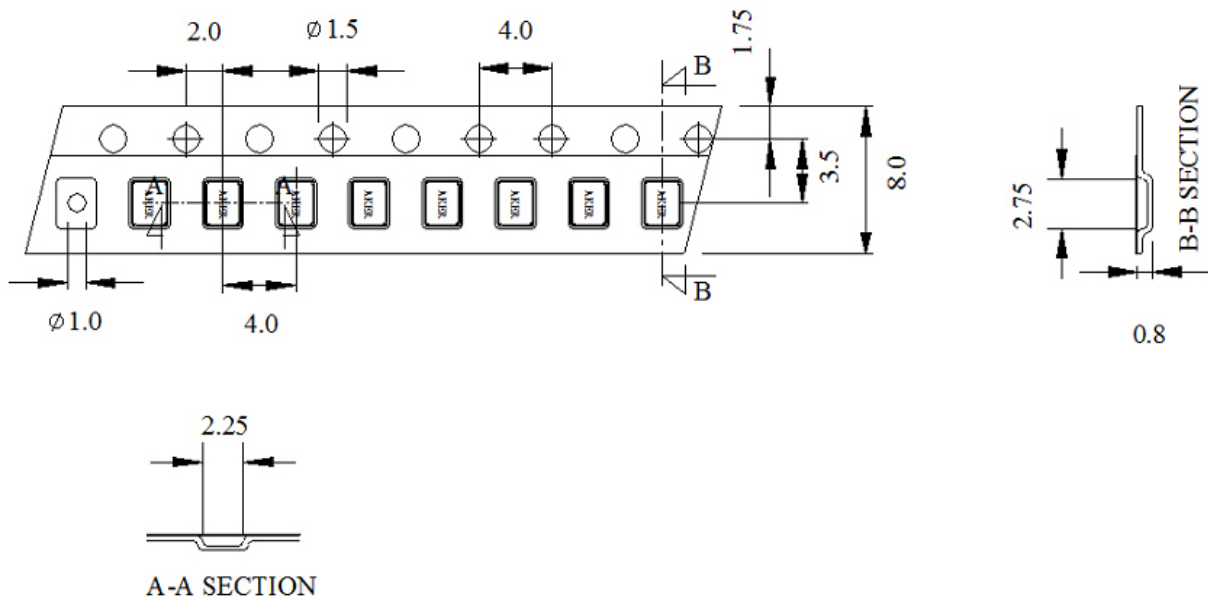
**Part Number: C2E Series**

**Mechanical Outline:**



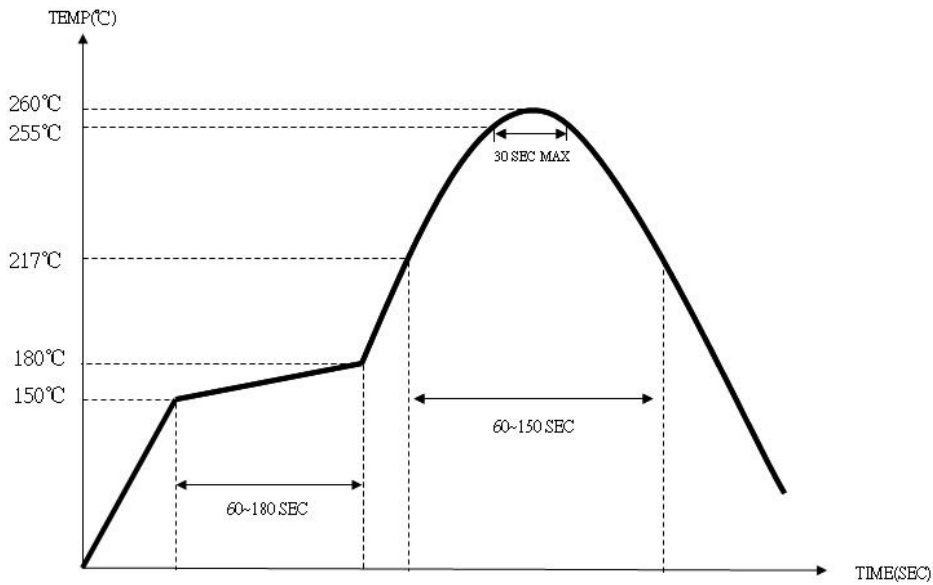
**Package is Seam Sealed Ceramic-Metal.  
 Dimensions are millimeters.**

**Carrier Tape Dimensions:**



Dimensions are millimeters.

**Solder Reflow Characteristics:**



**How to build a Part Number:**

<b>Series</b>		<b>C</b>	<b>Parameter</b>
<b>Package</b>		<b>2E</b>	<b>2.5 x 2.0 mm</b>
-			
<b>Frequency</b>		<b>12.000 to 60.000</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>25</b>	<b>±25PPM</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>30</b>	<b>±30PPM</b>
		<b>25</b>	<b>±25PPM</b>
		<b>20</b>	<b>±20PPM</b>
		<b>15</b>	<b>±15PPM</b>
		<b>10</b>	<b>±10PPM*</b>
-			
<b>Temperature Range</b>	<b>Standard</b>	<b>See Notes</b>	<b>-10 to +70 °C</b>
	<b>Option</b>	<b>X</b>	<b>-40 to +85 °C</b>
-			
<b>Packaging</b>		<b>R</b>	<b>Tape and Reel</b>

**Part Number Example:**

**C2E-50.000-18-3050-R**  
**C2E- 2.0 x 2.5 mm SMD Seam Seal Crystal Unit**  
**50.000 MHz Nominal Frequency**  
**18 pF Load Capacitance**  
**3050: ±30 PPM Frequency Tolerance and ±50 PPM Frequency**  
**Stability Fundamental Mode**  
**-10 to +70° C Temperature Range**  
**R: Tape and Reel Packaging**

**Notes:**

- 1- Frequency Tolerance and Stability options are limited due to physical size.  
 \* ±10 PPM Temperature Stability is only available from -30 to +85° C.
- 2- Standard Temperature Range does not need to be included in Part Number description.
- 3- Product is shipped in Tape and Reel configuration. Each reel contains 3000 pieces.
- 4- Quantities less than 3000 are shipped bulk in ESD pouches.
- 5- Specification subject to change without notice.

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