

**RoHS Compliant  
Pb - Lead Free**

Ltr	Revisions	Date	Appr

**Electrical Specifications:**

<b>Frequency Range</b>		<b>12.000 to 60.000</b>	<b>MHz</b>
<b>Mode of Oscillation</b>	<b>Fundamental</b>	<b>12.000 to 60.000</b>	
<b>Frequency Tolerance at 25°C</b>	<b>Standard</b>	<b>±30</b>	<b>PPM Max (Note 1)</b>
		<b>±25</b>	
	<b>Optional</b>	<b>±20</b>	
		<b>±15</b>	
		<b>±10</b>	
<b>Frequency Stability over Temperature Range</b>	<b>Standard</b>	<b>±50</b>	<b>PPM Max (Note 1)</b>
		<b>±30</b>	
	<b>Optional</b>	<b>±25</b>	
		<b>±20</b>	
		<b>±10*</b>	
<b>Operating Temperature Range</b>	<b>Standard</b>	<b>-10 to +70</b>	<b>° C</b>
	<b>Extended</b>	<b>-40 to +85</b>	
<b>Storage Temperature Range</b>		<b>-55 to +125</b>	
<b>Aging per Year</b>		<b>±3</b>	<b>PPM Max</b>
<b>Load Capacitance</b>		<b>7 to 32 and Series Resonance</b>	<b>pF</b>
<b>Shunt Capacitance</b>		<b>5.0</b>	
<b>Equivalent Series Resistance (ESR)</b>		<b>See ESR Table</b>	<b>Ohms</b>
<b>Drive Level</b>		<b>100</b>	<b>uW Typ</b>

**Frequency Range and ESR Values:**

Frequency Range in MHz	ESR Ohm Max	Mode of Operation
<b>12.000 to 15.999</b>	<b>300</b>	<b>Fundamental</b>
<b>16.000 to 29.999</b>	<b>100</b>	<b>Fundamental</b>
<b>30.000 to 60.000</b>	<b>70</b>	<b>Fundamental</b>



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All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

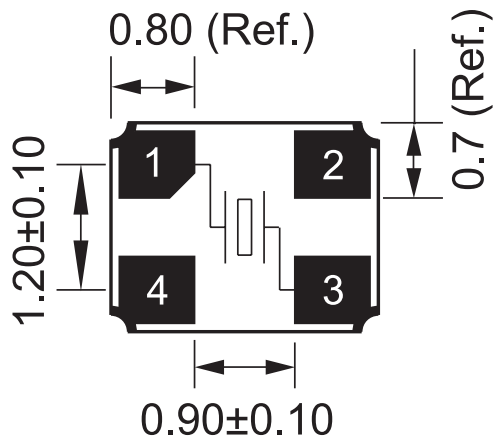
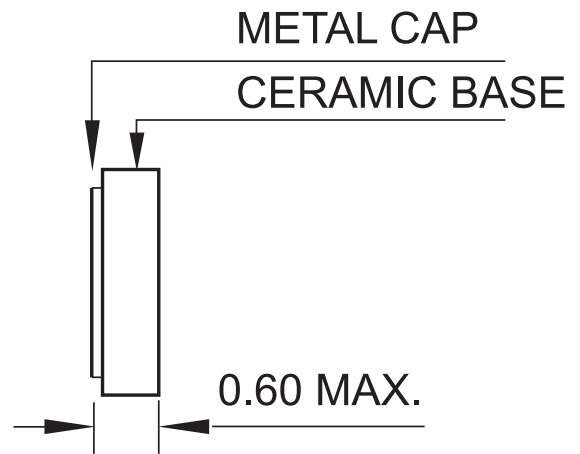
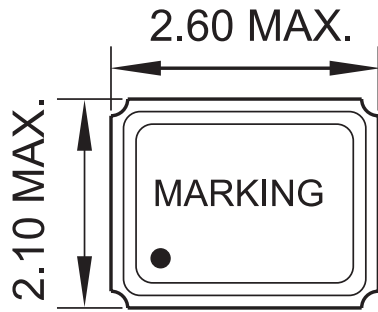
Page: 1/4 Date: May 1, 2013

Specification Title:

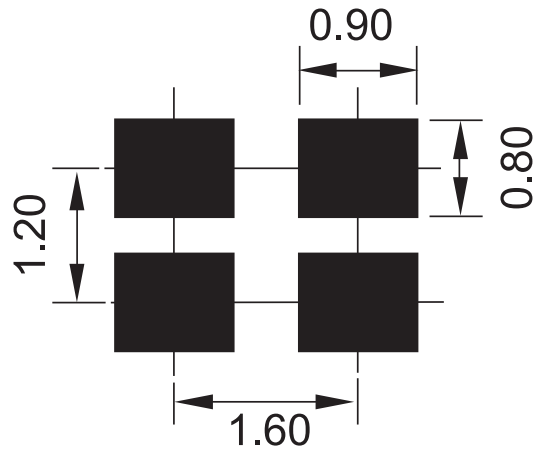
**Microprocessor Crystal Unit  
Low Profile  
2.0 x 2.5 millimeter Surface Mount  
General Product Specification**

Part Number: **C2E Series**

**Mechanical Outline:**



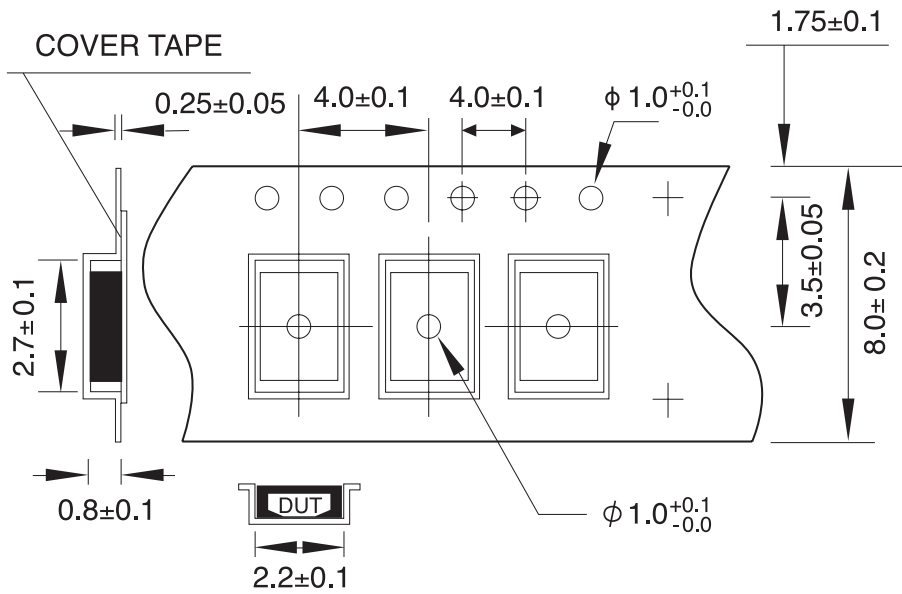
#2 & #4 : GND  
Bottom



(Recommended Solder Pad Layout)

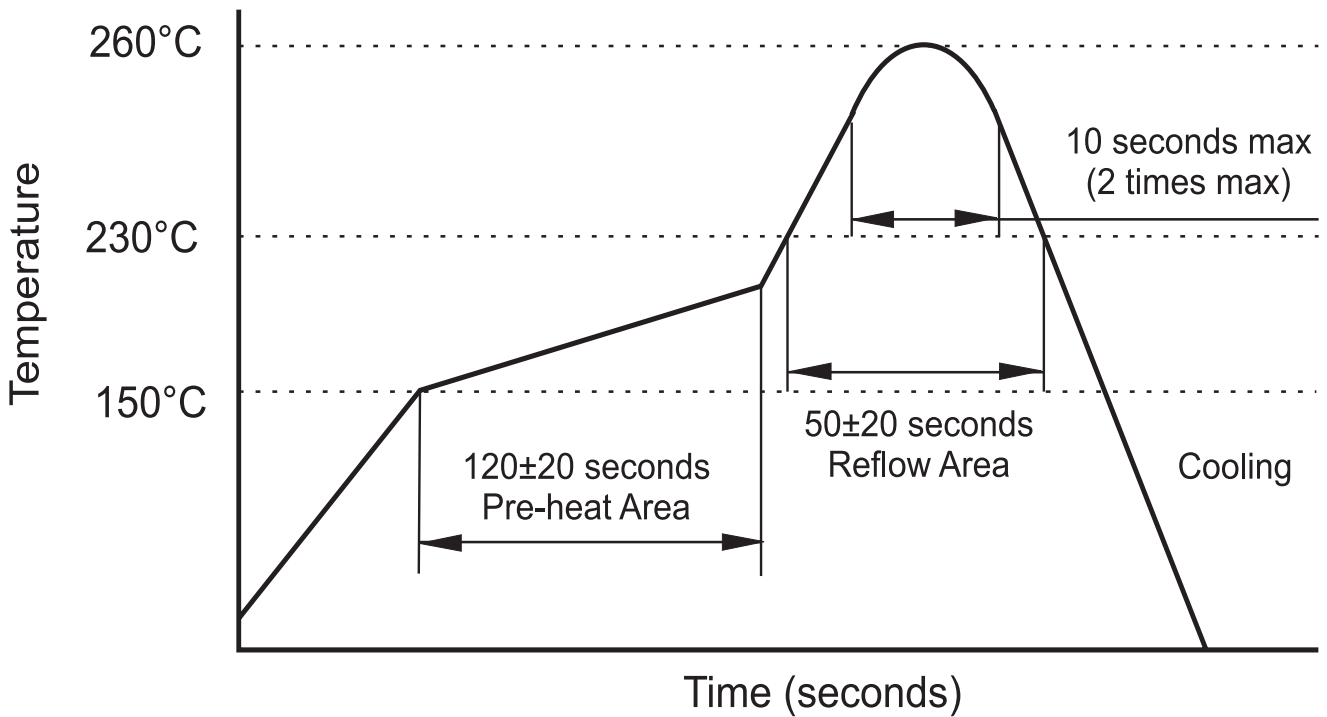
**Package is Seam Sealed Ceramic-Metal.  
Dimensions are millimeters.**

**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>7 pF</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>±30 PPM</b>
	<b>Option</b>	<b>25</b>	<b>±25 PPM</b>
		<b>20</b>	<b>±20 PPM</b>
		<b>15</b>	<b>± 15 PPM</b>
		<b>10</b>	<b>±10 PPM</b>
<b>Frequency Stability (Note 1)</b>	<b>Standard</b>	<b>50</b>	<b>±50 PPM</b>
	<b>Option</b>	<b>30</b>	<b>±30 PPM</b>
		<b>25</b>	<b>±25 PPM</b>
		<b>20</b>	<b>±20 PPM</b>
		<b>15</b>	<b>±15 PPM</b>
		<b>10</b>	<b>±10 PPM*</b>
		-	
<b>Temperature Range</b>	<b>Standard</b>	<b>See Notes</b>	<b>-10 to +70 °C</b>
	<b>Extended</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.**