



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

All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

Page: 1/4 Date: August 01, 2022

**Specification Title:**

**Microprocessor Crystal Unit  
Low Profile  
2.0 x 1.6 millimeter Surface Mount - 4 Pad  
General Product Specification**

**Series Name: C1E Series**

**Electrical Specifications:**

|   |                    |                                     |                             |
|---|--------------------|-------------------------------------|-----------------------------|
| <b>Frequency Range</b>                                |                    | <b>16.000 to 96.000</b>             | <b>MHz</b>                  |
| <b>Mode of Oscillation</b>                            | <b>Fundamental</b> | <b>16.000 to 96.000</b>             | <b>MHz</b>                  |
| <b>Frequency Tolerance at 25°C</b>                    | <b>Standard</b>    | <b>±30</b>                          | <b>PPM Max<br/>(Note 1)</b> |
|   |                    | <b>±50</b>                          |                             |
|   | <b>Optional</b>    | <b>±20</b>                          |                             |
|   |                    | <b>±15</b>                          |                             |
|   |                    | <b>±10</b>                          |                             |
| <b>Frequency Stability over<br/>Temperature Range</b> | <b>Standard</b>    | <b>±50</b>                          | <b>PPM Max<br/>(Note 1)</b> |
|   |                    | <b>±100</b>                         |                             |
|   | <b>Optional</b>    | <b>±30</b>                          |                             |
|   |                    | <b>±25</b>                          |                             |
|   |                    | <b>±20</b>                          |                             |
| <b>Operating Temperature Range</b>                    | <b>Standard</b>    | <b>-20 to +70</b>                   | <b>°C</b>                   |
|   | <b>Optional</b>    | <b>-40 to +85</b>                   |                             |
|   | <b>Optional</b>    | <b>-40 to +105</b>                  |                             |
|   | <b>Optional</b>    | <b>-40 to +125</b>                  |                             |
| <b>Storage Temperature Range</b>                      |                    | <b>-55 to +125</b>                  |                             |
| <b>Aging</b>  |                    | <b>±3</b>                           | <b>PPM Max/Year</b>         |
| <b>Load Capacitance</b>                               |                    | <b>6 to 47 and Series Resonance</b> | <b>pF</b>                   |
| <b>Shunt Capacitance</b>                              |                    | <b>3.0</b>                          |                             |
| <b>Equivalent Series Resistance(ESR)</b>              |                    | <b>See ESR Table</b>                | <b>Ohm</b>                  |
| <b>Drive Level</b>                                    |                    | <b>100</b>                          | <b>uW Max</b>               |
| <b>Insulation Resistance</b>                          |                    | <b>500 at 100 Vdc ± 15 Vdc</b>      | <b>M Ohm</b>                |

**Frequency Range and ESR Values:**

| Frequency Range in MHz | ESR Ohm Max | Mode of Operation |
|------------------------|-------------|-------------------|
| 16.000 to 19.199       | 200         | Fundamental       |
| 19.200 to 21.999       | 100         | Fundamental       |
| 22.000 to 35.999       | 80          | Fundamental       |
| 36.000 to 96.000       | 60          | Fundamental       |

**RoHS Compliant  
Pb - Lead Free**

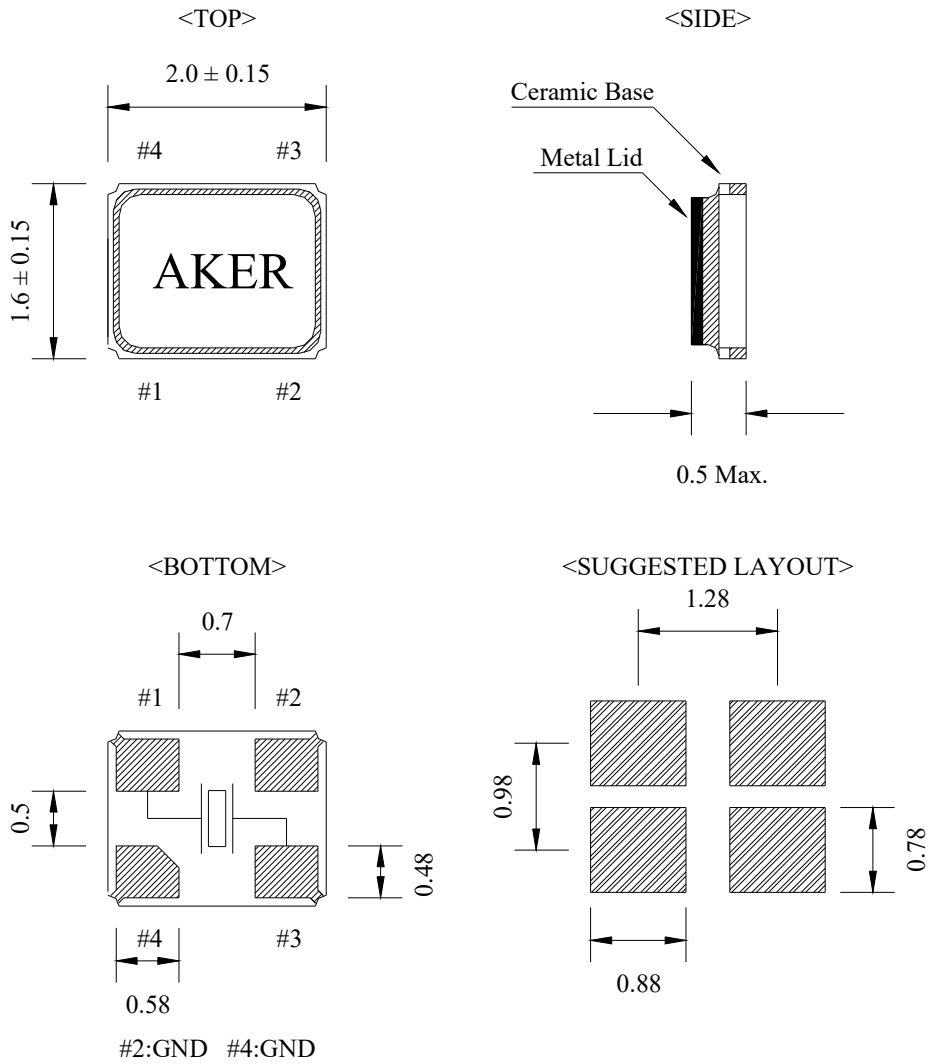
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Revisions

Date

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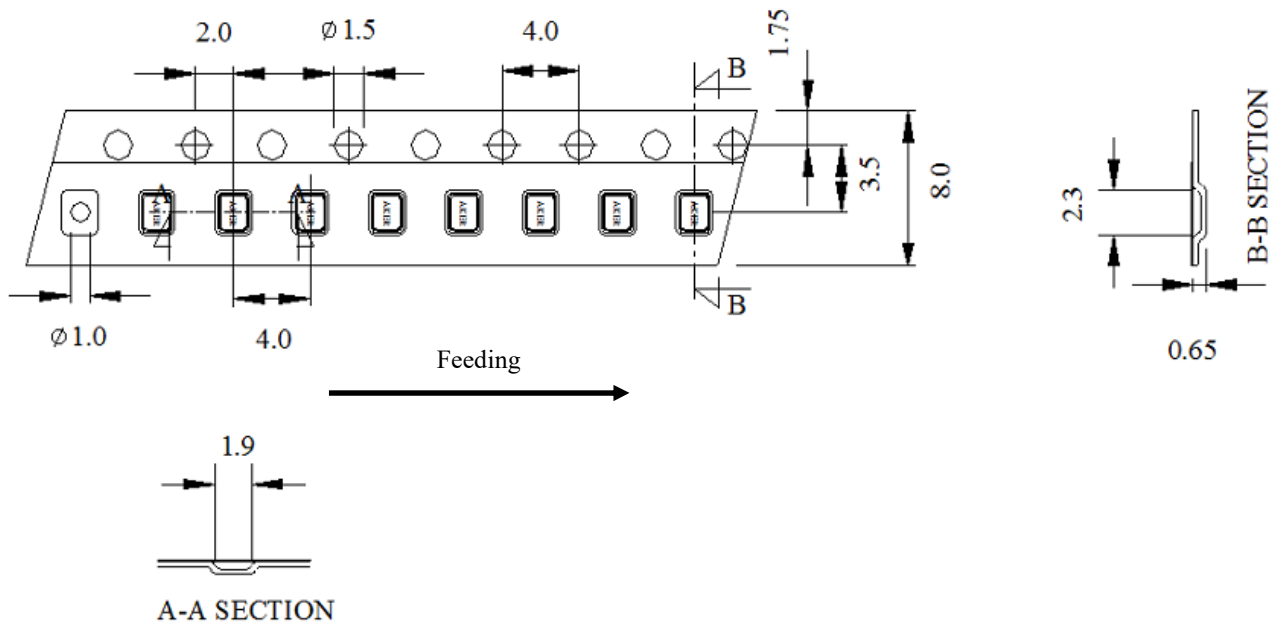
**Mechanical Outline:**



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

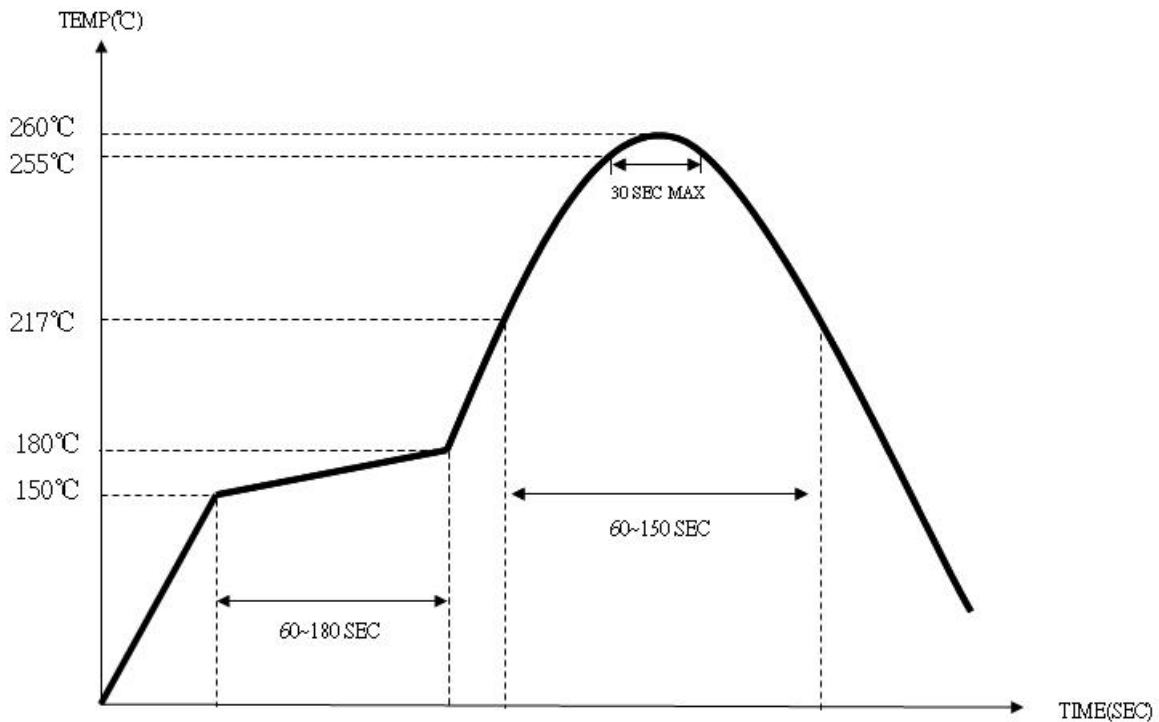
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|-------|-----|-----------------------|------|-------------------|--|

**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>1E</b>               | <b>2.0 x 1.6 mm - 4 Pad</b> |
| -                                       |                 |                         |                             |
| <b>Frequency</b>                        |                 | <b>16.000 to 96.000</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<br/>(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<br/>(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>Temperature Range</b>                | <b>Standard</b> | <b>See Notes</b>        | <b>-20 to +70 °C</b>        |
|   | <b>Option</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:**

**C1E-50.000-10-3050-R3**

**C1E- 2.0 x 1.6 mm SMD Seam Seal Crystal Unit - 4 Pad**

**50.000 MHz Nominal Frequency**

**10 pF Load Capacitance**

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

**Fundamental Mode**

**-20 to +70°C Temperature Range**

**R3: Tape and Reel Packaging - 3000pcs**

**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.**

**4- Quantities less than 250pcs are shipped in tape only.**

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

|       |     |                       |      |                   |
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