

**EUPA25-4.000M**
[Click part number to visit Part Number Details page](#)
**REGULATORY COMPLIANCE** (Data Sheet downloaded on Nov 22, 2016)
[Click badges to download compliance docs](#)

Regulatory Compliance standards are subject to updates by governing bodies. Click the badges to download the latest compliance docs for this part number directly from Ecliptek.

**ITEM DESCRIPTION**

Quartz Crystal Resonator HC49/U Thru-Hole Metal Resistance Weld Seal 4.000MHz  $\pm 10$ ppm at 25°C,  $\pm 15$ ppm over -20°C to +70°C 25pF Parallel Resonant

**ELECTRICAL SPECIFICATIONS**

|                               |                                                        |
|-------------------------------|--------------------------------------------------------|
| Nominal Frequency             | 4.000MHz                                               |
| Frequency Tolerance/Stability | $\pm 10$ ppm at 25°C, $\pm 15$ ppm over -20°C to +70°C |
| Aging at 25°C                 | $\pm 5$ ppm/year Maximum                               |
| Load Capacitance              | 25pF Parallel Resonant                                 |
| Shunt Capacitance             | 7pF Maximum                                            |
| Equivalent Series Resistance  | 100 Ohms Maximum                                       |
| Mode of Operation             | AT-Cut Fundamental                                     |
| Drive Level                   | 2mWatts Maximum                                        |
| Storage Temperature Range     | -40°C to +125°C                                        |
| Insulation Resistance         | 500 Megaohms Minimum (Measured at 100Vdc)              |

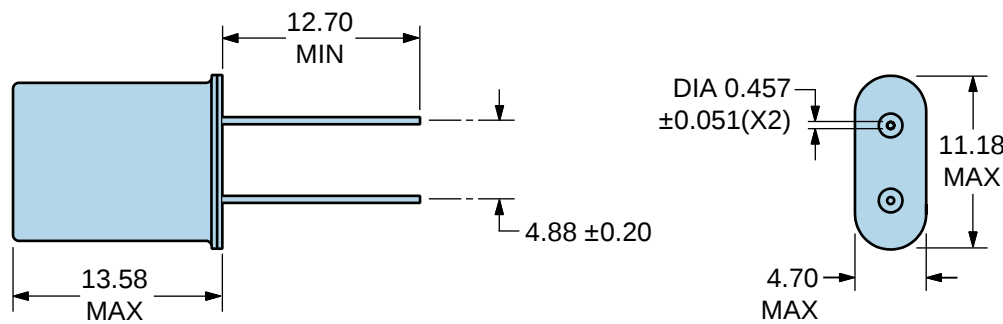
**ENVIRONMENTAL & MECHANICAL SPECIFICATIONS**

|                              |                                               |
|------------------------------|-----------------------------------------------|
| ESD Susceptibility           | MIL-STD-883, Method 3015, Class 1, HBM: 1500V |
| Fine Leak Test               | MIL-STD-883, Method 1014, Condition A         |
| Flammability                 | UL94-V0                                       |
| Gross Leak Test              | MIL-STD-883, Method 1014, Condition C         |
| Lead Integrity               | MIL-STD-883, Method 2004                      |
| Mechanical Shock             | MIL-STD-202, Method 213, Condition C          |
| Moisture Resistance          | MIL-STD-883, Method 1004                      |
| Moisture Sensitivity         | J-STD-020, MSL1                               |
| Resistance to Soldering Heat | MIL-STD-202, Method 210, Condition K          |
| Resistance to Solvents       | MIL-STD-202, Method 215                       |
| Solderability                | MIL-STD-883, Method 2003                      |
| Temperature Cycling          | MIL-STD-883, Method 1010, Condition B         |
| Vibration                    | MIL-STD-883, Method 2007, Condition A         |

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MECHANICAL DIMENSIONS (all dimensions in millimeters)

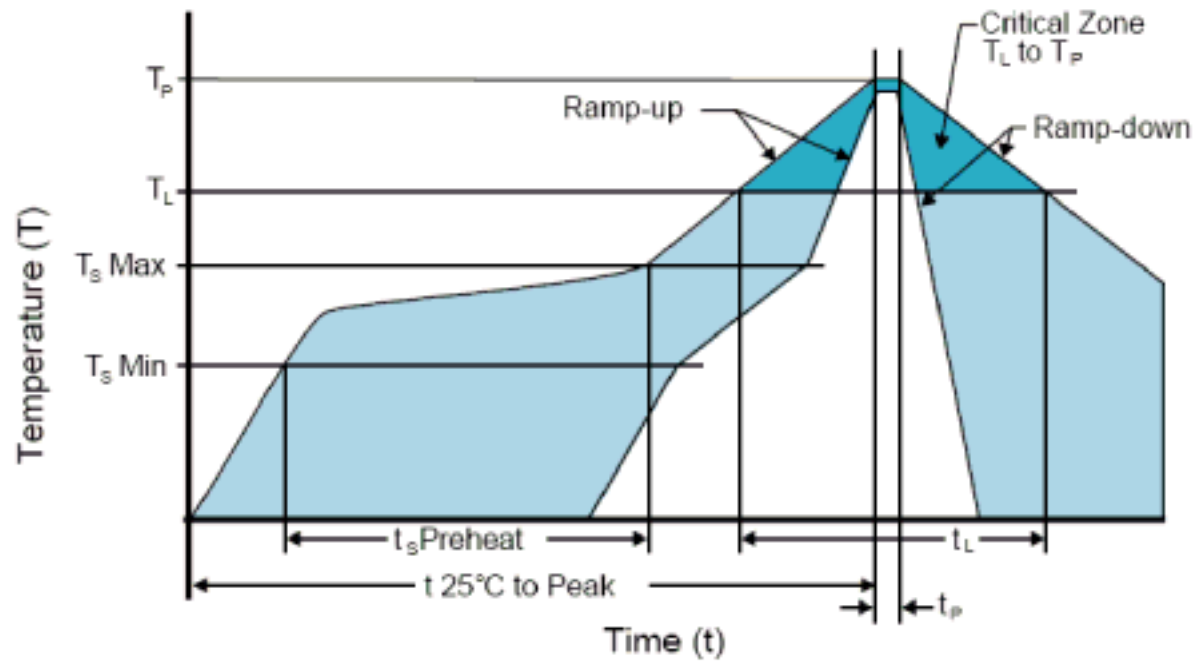


| LINE | MARKING                                           |
|------|---------------------------------------------------|
| 1    | ECLIPTEK                                          |
| 2    | E4.0000M<br><i>E=Configuration Designator</i>     |
| 3    | XX<br><i>XX=Ecliptek Manufacturing Identifier</i> |

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Recommended Solder Reflow Methods



High Temperature Solder Bath (Wave Solder)

|                                     |                                                                            |
|-------------------------------------|----------------------------------------------------------------------------|
| Ts MAX to TL (Ramp-up Rate)         | 3°C/Second Maximum                                                         |
| Preheat                             |                                                                            |
| - Temperature Minimum (Ts MIN)      | 150°C                                                                      |
| - Temperature Typical (Ts TYP)      | 175°C                                                                      |
| - Temperature Maximum (Ts MAX)      | 200°C                                                                      |
| - Time (ts MIN)                     | 60 - 180 Seconds                                                           |
| Ramp-up Rate (TL to TP)             | 3°C/Second Maximum                                                         |
| Time Maintained Above:              |                                                                            |
| - Temperature (TL)                  | 217°C                                                                      |
| - Time (tL)                         | 60 - 150 Seconds                                                           |
| Peak Temperature (TP)               | 260°C Maximum for 10 Seconds Maximum                                       |
| Target Peak Temperature (TP Target) | 250°C +0/-5°C                                                              |
| Time within 5°C of actual peak (tp) | 20 - 40 Seconds                                                            |
| Ramp-down Rate                      | 6°C/Second Maximum                                                         |
| Time 25°C to Peak Temperature (t)   | 8 Minutes Maximum                                                          |
| Moisture Sensitivity Level          | Level 1                                                                    |
| Additional Notes                    | Temperatures shown are applied to back of PCB board and device leads only. |

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Recommended Solder Reflow Methods



Low Temperature Solder Bath (Wave Solder)

|                                     |                                                                            |
|-------------------------------------|----------------------------------------------------------------------------|
| Ts MAX to TL (Ramp-up Rate)         | 5°C/Second Maximum                                                         |
| Preheat                             |                                                                            |
| - Temperature Minimum (Ts MIN)      | N/A                                                                        |
| - Temperature Typical (Ts TYP)      | 150°C                                                                      |
| - Temperature Maximum (Ts MAX)      | N/A                                                                        |
| - Time (ts MIN)                     | 30 - 60 Seconds                                                            |
| Ramp-up Rate (TL to TP)             | 5°C/Second Maximum                                                         |
| Time Maintained Above:              |                                                                            |
| - Temperature (TL)                  | 150°C                                                                      |
| - Time (tL)                         | 200 Seconds Maximum                                                        |
| Peak Temperature (TP)               | 245°C Maximum                                                              |
| Target Peak Temperature (TP Target) | 245°C Maximum 1 Time / 235°C Maximum 2 Times                               |
| Time within 5°C of actual peak (tP) | 5 Seconds Maximum 1 Time / 15 Seconds Maximum 2 Times                      |
| Ramp-down Rate                      | 5°C/Second Maximum                                                         |
| Time 25°C to Peak Temperature (t)   | N/A                                                                        |
| Moisture Sensitivity Level          | Level 1                                                                    |
| Additional Notes                    | Temperatures shown are applied to back of PCB board and device leads only. |

Low Temperature Manual Soldering

185°C Maximum for 10 Seconds Maximum, 2 times Maximum. (Temperatures shown are applied to back of PCB board and device leads only.)

High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum. (Temperatures shown are applied to back of PCB board and device leads only.)