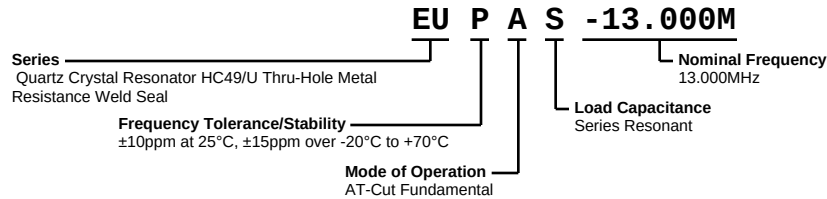


# EUPAS-13.000M



## ELECTRICAL SPECIFICATIONS

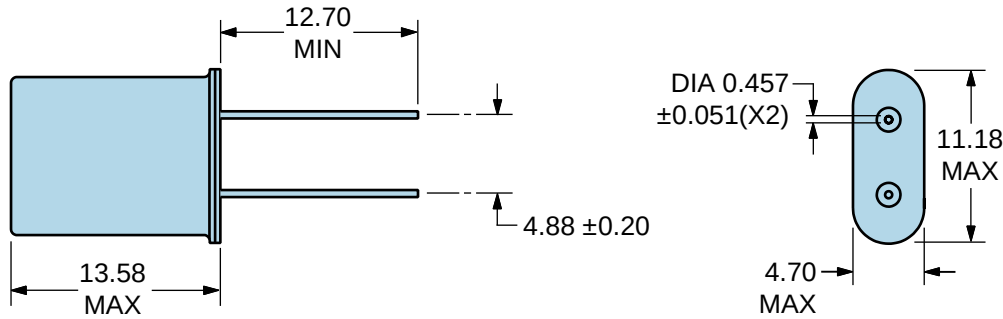
|                               |                                            |
|-------------------------------|--------------------------------------------|
| Nominal Frequency             | 13.000MHz                                  |
| Frequency Tolerance/Stability | ±10ppm at 25°C, ±15ppm over -20°C to +70°C |
| Aging at 25°C                 | ±5ppm/year Maximum                         |
| Load Capacitance              | Series Resonant                            |
| Shunt Capacitance             | 7pF Maximum                                |
| Equivalent Series Resistance  | 25 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         |

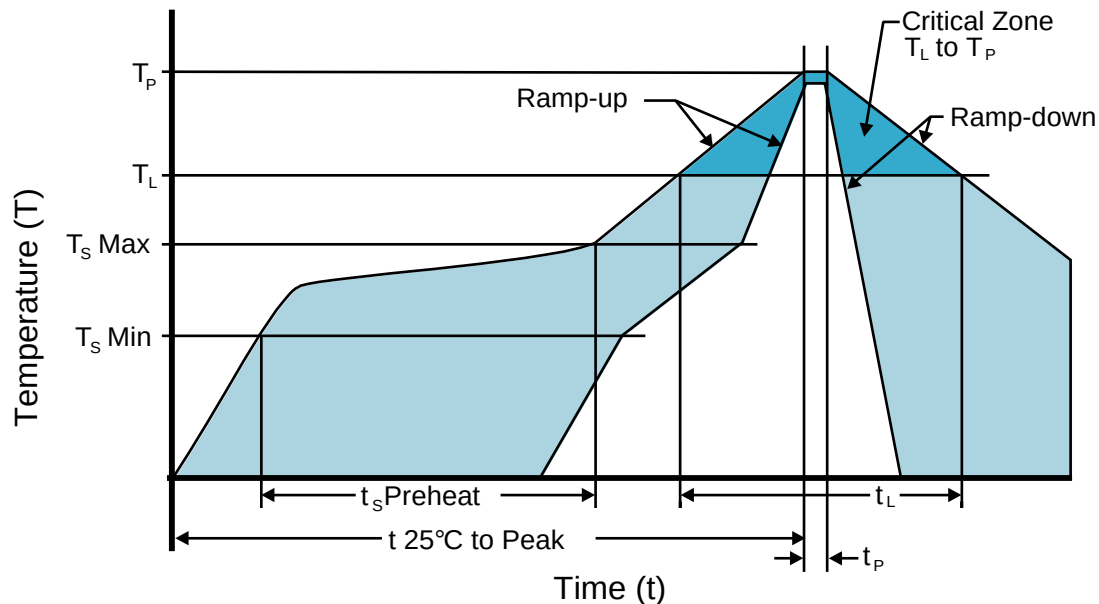
# EUPAS-13.000M

MECHANICAL DIMENSIONS (all dimensions in millimeters)



| LINE | MARKING                                           |
|------|---------------------------------------------------|
| 1    | ECLIPTEK                                          |
| 2    | E13.000M<br><i>E=Configuration Designator</i>     |
| 3    | XX<br><i>XX=Ecliptek Manufacturing Identifier</i> |

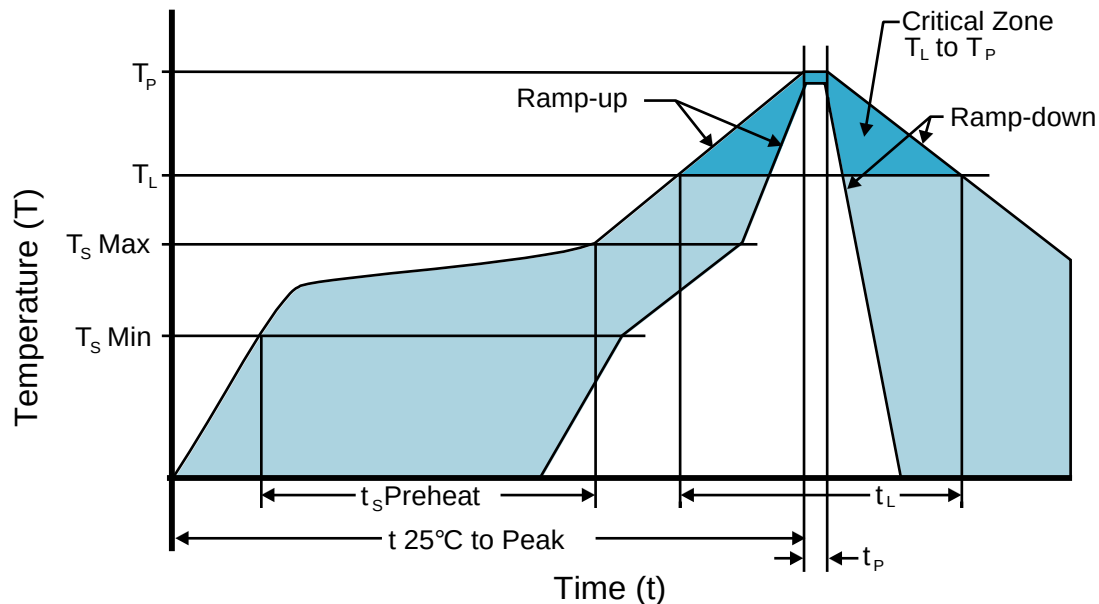
## Recommended Solder Reflow Methods



### High Temperature Solder Bath (Wave Solder)

|                                                                |                                                                            |
|----------------------------------------------------------------|----------------------------------------------------------------------------|
| <b><math>T_S</math> MAX to <math>T_L</math> (Ramp-up Rate)</b> | 3°C/second Maximum                                                         |
| <b>Preheat</b>                                                 |                                                                            |
| - Temperature Minimum ( $T_S$ MIN)                             | 150°C                                                                      |
| - Temperature Typical ( $T_S$ TYP)                             | 175°C                                                                      |
| - Temperature Maximum ( $T_S$ MAX)                             | 200°C                                                                      |
| - Time ( $t_s$ MIN)                                            | 60 - 180 Seconds                                                           |
| <b>Ramp-up Rate (<math>T_L</math> to <math>T_P</math>)</b>     | 3°C/second Maximum                                                         |
| <b>Time Maintained Above:</b>                                  |                                                                            |
| - Temperature ( $T_L$ )                                        | 217°C                                                                      |
| - Time ( $t_L$ )                                               | 60 - 150 Seconds                                                           |
| <b>Peak Temperature (<math>T_P</math>)</b>                     | 260°C Maximum for 10 Seconds Maximum                                       |
| <b>Target Peak Temperature (<math>T_P</math> Target)</b>       | 250°C +0/-5°C                                                              |
| <b>Time within 5°C of actual peak (<math>t_p</math>)</b>       | 20 - 40 seconds                                                            |
| <b>Ramp-down Rate</b>                                          | 6°C/second Maximum                                                         |
| <b>Time 25°C to Peak Temperature (t)</b>                       | 8 minutes Maximum                                                          |
| <b>Moisture Sensitivity Level</b>                              | Level 1                                                                    |
| <b>Additional Notes</b>                                        | Temperatures shown are applied to back of PCB board and device leads only. |

## Recommended Solder Reflow Methods



### Low Temperature Solder Bath (Wave Solder)

|                                                                |                                                                            |
|----------------------------------------------------------------|----------------------------------------------------------------------------|
| <b><math>T_S</math> MAX to <math>T_L</math> (Ramp-up Rate)</b> | 5°C/second Maximum                                                         |
| <b>Preheat</b>                                                 |                                                                            |
| - Temperature Minimum ( $T_S$ MIN)                             | N/A                                                                        |
| - Temperature Typical ( $T_S$ TYP)                             | 150°C                                                                      |
| - Temperature Maximum ( $T_S$ MAX)                             | N/A                                                                        |
| - Time ( $t_s$ MIN)                                            | 30 - 60 Seconds                                                            |
| <b>Ramp-up Rate (<math>T_L</math> to <math>T_P</math>)</b>     | 5°C/second Maximum                                                         |
| <b>Time Maintained Above:</b>                                  |                                                                            |
| - Temperature ( $T_L$ )                                        | 150°C                                                                      |
| - Time ( $t_L$ )                                               | 200 Seconds Maximum                                                        |
| <b>Peak Temperature (<math>T_P</math>)</b>                     | 245°C Maximum                                                              |
| <b>Target Peak Temperature (<math>T_P</math> Target)</b>       | 245°C Maximum 1 Time / 235°C Maximum 2 Times                               |
| <b>Time within 5°C of actual peak (<math>t_P</math>)</b>       | 5 seconds Maximum 1 Time / 15 seconds Maximum 2 Times                      |
| <b>Ramp-down Rate</b>                                          | 5°C/second Maximum                                                         |
| <b>Time 25°C to Peak Temperature (t)</b>                       | N/A                                                                        |
| <b>Moisture Sensitivity Level</b>                              | Level 1                                                                    |
| <b>Additional Notes</b>                                        | 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.)