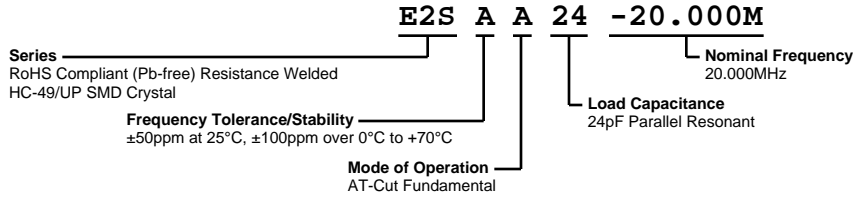


# E2SAA24-20.000M



**ECLIPTEK**  
CORPORATION



## ELECTRICAL SPECIFICATIONS

|                                      |   |
|--------------------------------------|---|
| <b>Nominal Frequency</b>             | 20.000MHz   |
| <b>Frequency Tolerance/Stability</b> | $\pm 50\text{ppm}$ at 25°C, $\pm 100\text{ppm}$ over 0°C to +70°C |
| <b>Aging at 25°C</b>                 | $\pm 5\text{ppm/year}$ Maximum                                    |
| <b>Load Capacitance</b>              | 24pF Parallel Resonant  |
| <b>Shunt Capacitance (C0)</b>        | 7pF Maximum   |
| <b>Equivalent Series Resistance</b>  | 50 Ohms Maximum   |
| <b>Mode of Operation</b>             | AT-Cut Fundamental  |
| <b>Drive Level</b>                   | 1mWatt Maximum  |
| <b>Storage Temperature Range</b>     | -40°C to +125°C   |
| <b>Insulation Resistance</b>         | 500 Megaohms Minimum at 100Vdc                                    |

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

|                                     |                                      |
|-------------------------------------|--------------------------------------|
| <b>Fine Leak Test</b>               | MIL-STD-883, Method 1014 Condition A |
| <b>Gross Leak Test</b>              | MIL-STD-883, Method 1014 Condition C |
| <b>Lead Termination</b>             | Sn 2 $\mu\text{m}$ - 6 $\mu\text{m}$ |
| <b>Mechanical Shock</b>             | MIL-STD-202, Method 213 Condition C  |
| <b>Resistance to Soldering Heat</b> | MIL-STD-202, Method 210              |
| <b>Resistance to Solvents</b>       | MIL-STD-202, Method 215              |
| <b>Solderability</b>                | MIL-STD-883, Method 2003             |
| <b>Temperature Cycling</b>          | MIL-STD-883, Method 1010             |
| <b>Vibration</b>                    | MIL-STD-883, Method 2007 Condition A |

## MECHANICAL DIMENSIONS (all dimensions in millimeters)

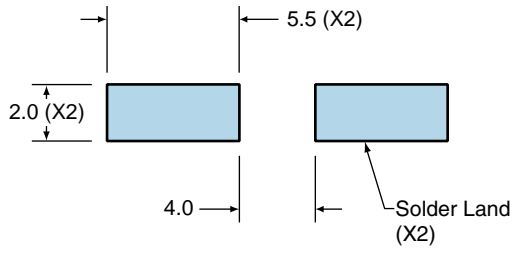


| LINE | MARKING   |
|------|---|
| 1    | <b>E20.000M</b><br>E=Ecliptek Designator<br>M=MHz |

# E2SAA24-20.000M

## Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are  $\pm 0.1$

## Recommended Solder Reflow Methods



### High Temperature Infrared/Convection

|  |                                      |
|--|--------------------------------------|
| <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                              |

## Recommended Solder Reflow Methods



### Low Temperature Infrared/Convection 245°C

|  |  |
|--|--|
| <b>T<sub>s</sub> MAX to T<sub>L</sub> (Ramp-up Rate)</b> | 5°C/second Maximum                                     |
| <b>Preheat</b>   |  |
| - Temperature Minimum (T <sub>s</sub> MIN)               | N/A  |
| - Temperature Typical (T <sub>s</sub> TYP)               | 150°C  |
| - Temperature Maximum (T <sub>s</sub> MAX)               | N/A  |
| - Time (t <sub>s</sub> MIN)                              | 30 - 60 Seconds  |
| <b>Ramp-up Rate (T<sub>L</sub> to T<sub>p</sub>)</b>     | 5°C/second Maximum                                     |
| <b>Time Maintained Above:</b>                            |  |
| - Temperature (T <sub>L</sub> )                          | 150°C  |
| - Time (t <sub>L</sub> )                                 | 200 Seconds Maximum                                    |
| <b>Peak Temperature (T<sub>p</sub>)</b>                  | 245°C Maximum  |
| <b>Target Peak Temperature (T<sub>p</sub> Target)</b>    | 245°C Maximum 2 Times / 230°C Maximum 1 Time           |
| <b>Time within 5°C of actual peak (t<sub>p</sub>)</b>    | 10 seconds Maximum 2 Times / 80 seconds Maximum 1 Time |
| <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  |

### Low Temperature Manual Soldering

185°C Maximum for 10 seconds Maximum, 2 times Maximum.

### High Temperature Manual Soldering

260°C Maximum for 5 seconds Maximum, 2 times Maximum.