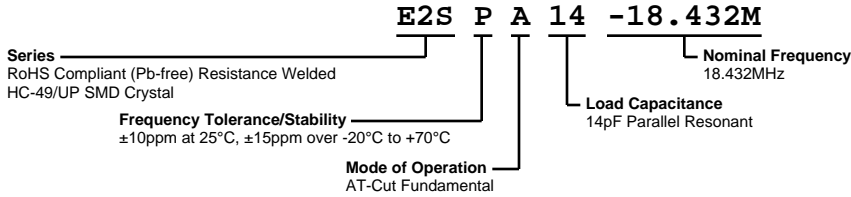


# E2SPA14-18.432M



**ECLIPTEK**  
CORPORATION



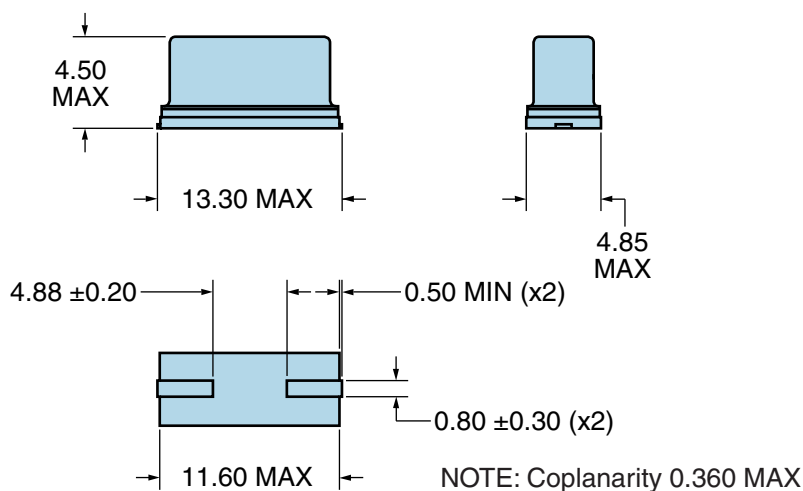
## ELECTRICAL SPECIFICATIONS

|                               |                                            |
|-------------------------------|--------------------------------------------|
| Nominal Frequency             | 18.432MHz                                  |
| Frequency Tolerance/Stability | ±10ppm at 25°C, ±15ppm over -20°C to +70°C |
| Aging at 25°C                 | ±5ppm/year Maximum                         |
| Load Capacitance              | 14pF Parallel Resonant                     |
| Shunt Capacitance (C0)        | 7pF Maximum                                |
| Equivalent Series Resistance  | 50 Ohms Maximum                            |
| Mode of Operation             | AT-Cut Fundamental                         |
| Drive Level                   | 1mWatt Maximum                             |
| Storage Temperature Range     | -40°C to +125°C                            |
| Insulation Resistance         | 500 Megaohms Minimum at 100Vdc             |

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

|                              |                                      |
|------------------------------|--------------------------------------|
| Fine Leak Test               | MIL-STD-883, Method 1014 Condition A |
| Gross Leak Test              | MIL-STD-883, Method 1014 Condition C |
| Lead Termination             | Sn 2µm - 6µm                         |
| Mechanical Shock             | MIL-STD-202, Method 213 Condition C  |
| Resistance to Soldering Heat | MIL-STD-202, Method 210              |
| Resistance to Solvents       | MIL-STD-202, Method 215              |
| Solderability                | MIL-STD-883, Method 2003             |
| Temperature Cycling          | MIL-STD-883, Method 1010             |
| Vibration                    | MIL-STD-883, Method 2007 Condition A |

## MECHANICAL DIMENSIONS (all dimensions in millimeters)



| LINE | MARKING                                           |
|------|---------------------------------------------------|
| 1    | <b>E18.432M</b><br>E=Ecliptek Designator<br>M=MHz |

# E2SPA14-18.432M

## 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><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 2 Times / 230°C Maximum 1 Time           |
| <b>Time within 5°C of actual peak (<math>t_p</math>)</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.