

# E1SPA30-6.000M TR



## ITEM DESCRIPTION

Quartz Crystal Resonator HC49/UP Short 2 Pad Surface Mount (SMD) 3.2mm Height Metal Resistance Weld Seal 6.000MHz  $\pm 10\text{ppm}$  at 25°C,  $\pm 15\text{ppm}$  over -20°C to +70°C 30pF Parallel Resonant

## ELECTRICAL SPECIFICATIONS

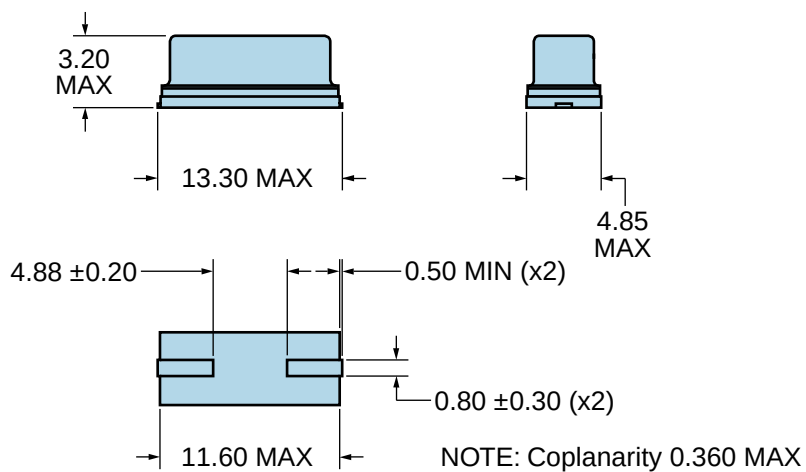
|                               |                                                                    |
|-------------------------------|--------------------------------------------------------------------|
| Nominal Frequency             | 6.000MHz                                                           |
| Frequency Tolerance/Stability | $\pm 10\text{ppm}$ at 25°C, $\pm 15\text{ppm}$ over -20°C to +70°C |
| Aging at 25°C                 | $\pm 5\text{ppm/year}$ Maximum                                     |
| Load Capacitance              | 30pF Parallel Resonant                                             |
| Shunt Capacitance             | 7pF Maximum                                                        |
| Equivalent Series Resistance  | 120 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 (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         |
| 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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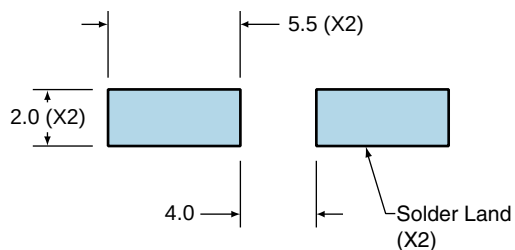
## MECHANICAL DIMENSIONS (all dimensions in millimeters)



| LINE | MARKING                                  |
|------|------------------------------------------|
| 1    | <b>E6.0000M</b><br>E=Ecliptek Designator |

## Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are ±0.1

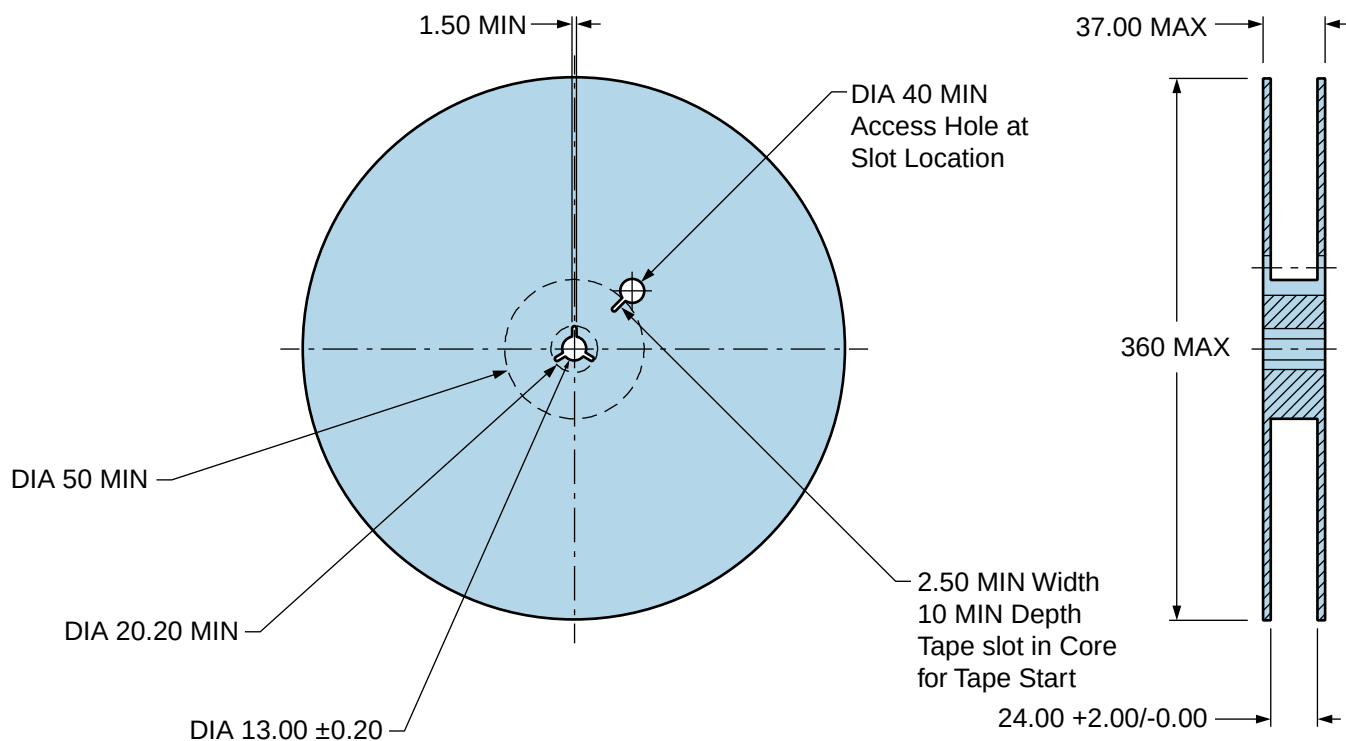
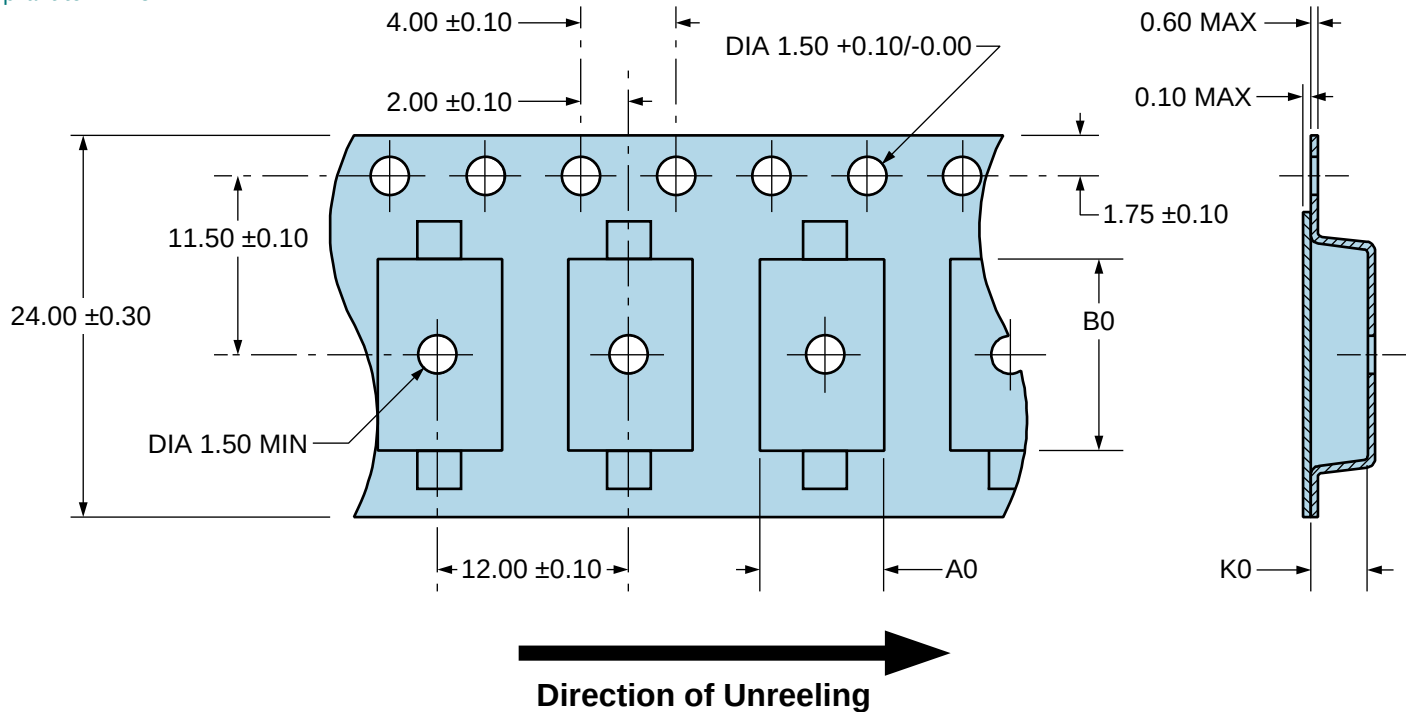
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## Tape & Reel Dimensions

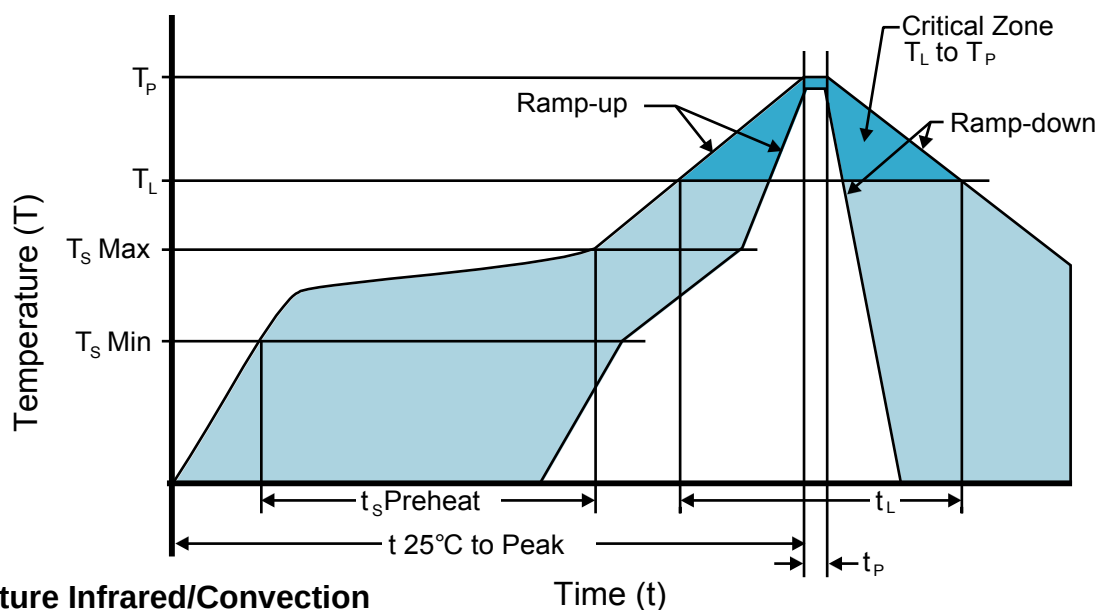
Quantity Per Reel: 1,000 units

All Dimensions in Millimeters

Compliant to EIA-481



## Recommended Solder Reflow Methods



### High Temperature Infrared/Convection

**$T_s$  MAX to  $T_l$  (Ramp-up Rate)** 3°C/Second Maximum

#### Preheat

- 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

**Ramp-up Rate ( $T_l$  to  $T_p$ )** 3°C/Second Maximum

#### Time Maintained Above:

- Temperature ( $T_l$ ) 217°C
- Time ( $t_L$ ) 60 - 150 Seconds

**Peak Temperature ( $T_p$ )** 260°C Maximum for 10 Seconds Maximum

**Target Peak Temperature ( $T_p$  Target)** 250°C +0/-5°C

**Time within 5°C of actual peak ( $t_p$ )** 20 - 40 Seconds

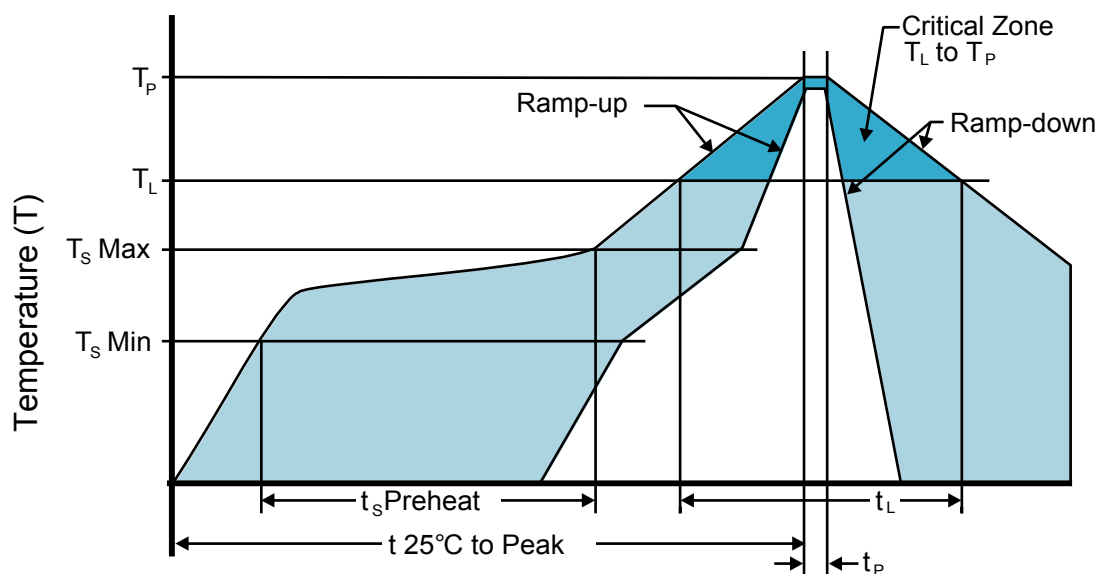
**Ramp-down Rate** 6°C/Second Maximum

**Time 25°C to Peak Temperature (t)** 8 Minutes Maximum

**Moisture Sensitivity Level** Level 1

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## Recommended Solder Reflow Methods



### Low Temperature Infrared/Convection 245°C Time (t)

**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 2 Times / 230°C Maximum 1 Time

**Time within 5°C of actual peak (tp)** 10 Seconds Maximum 2 Times / 80 Seconds Maximum 1 Time

**Ramp-down Rate** 5°C/Second Maximum

**Time 25°C to Peak Temperature (t)** N/A

**Moisture Sensitivity Level** 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.