

# E2SPA18-24.000M TR

[Click part number to visit Part Number Details page](#)

## REGULATORY COMPLIANCE (Data Sheet downloaded on Nov 22, 2017)


[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/UP 2 Pad Surface Mount (SMD) 4.5mm Height Metal Resistance Weld Seal 24.000MHz  $\pm 10$ ppm at 25°C,  $\pm 15$ ppm over -20°C to +70°C 18pF Parallel Resonant

## ELECTRICAL SPECIFICATIONS

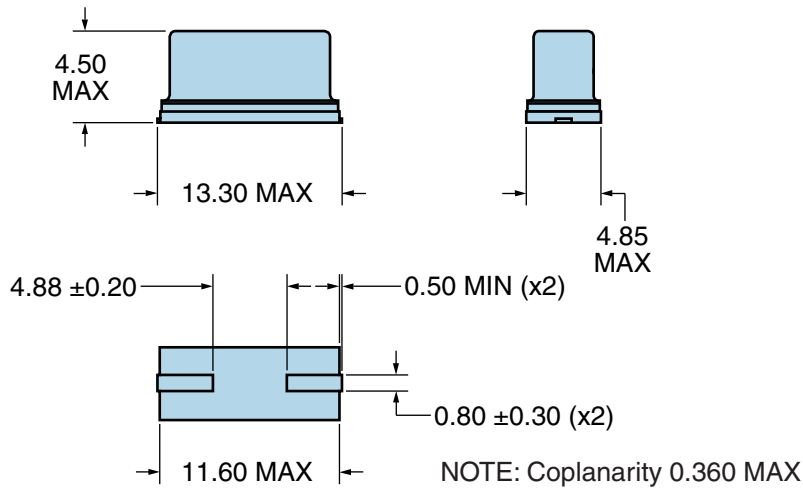
Nominal Frequency	24.000MHz
Frequency Tolerance/Stability	$\pm 10$ ppm at 25°C, $\pm 15$ ppm over -20°C to +70°C
Aging at 25°C	$\pm 5$ ppm/year Maximum
Load Capacitance	18pF Parallel Resonant
Shunt Capacitance	7pF Maximum
Equivalent Series Resistance	40 Ohms Maximum
Mode of Operation	AT-Cut Fundamental
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

## E2SPA18-24.000M TR [Click part number to visit Part Number Details page](#)

### MECHANICAL DIMENSIONS (all dimensions in millimeters)



LINE	MARKING
1	<b>E24.000M</b> E=Ecliptek Designator

### Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are ±0.1

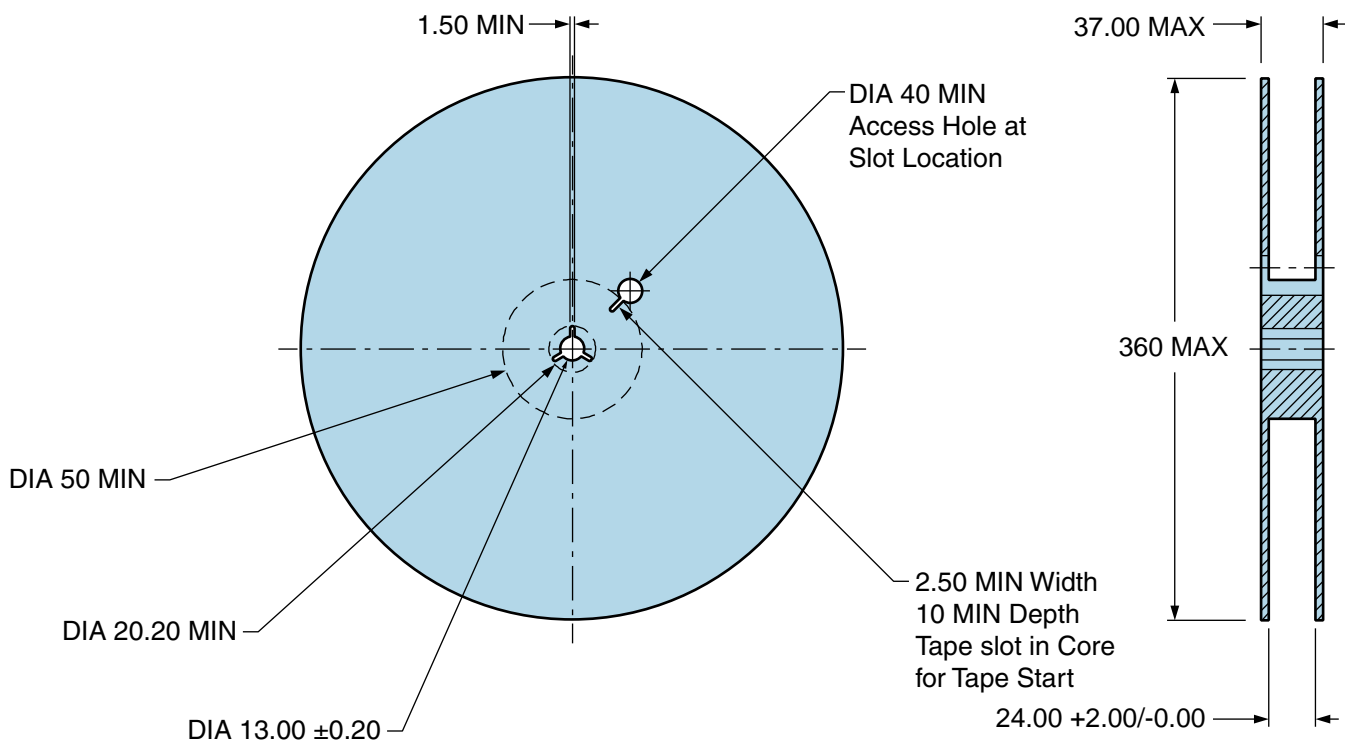
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## Tape & Reel Dimensions

Quantity Per Reel: 1,000 units

All Dimensions in Millimeters

Compliant to EIA-481



# E2SPA18-24.000M TR [Click part number to visit Part Number Details page](#)

## Recommended Solder Reflow Methods



### High Temperature Infrared/Convection

**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

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## 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.