

# E2SJA18-4.000M

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

## REGULATORY COMPLIANCE (Data Sheet downloaded on Dec 3, 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 4.000MHz  $\pm 15$ ppm at 25°C,  $\pm 30$ ppm over -40°C to +85°C 18pF Parallel Resonant

## ELECTRICAL SPECIFICATIONS

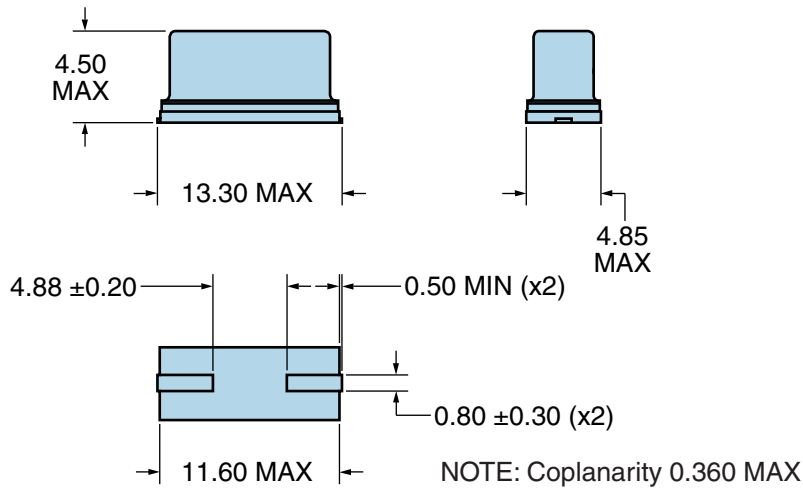
Nominal Frequency	4.000MHz
Frequency Tolerance/Stability	$\pm 15$ ppm at 25°C, $\pm 30$ ppm over -40°C to +85°C
Aging at 25°C	$\pm 5$ ppm/year Maximum
Load Capacitance	18pF Parallel Resonant
Shunt Capacitance	7pF Maximum
Equivalent Series Resistance	200 Ohms Maximum
Mode of Operation	AT-Cut Fundamental
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>E4.0000M</b> E=Ecliptek Designator

### Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are ±0.1

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## Recommended Solder Reflow Methods



### High Temperature Infrared/Convection

$T_s \text{ MAX to } T_L$ (Ramp-up Rate)	$3^\circ\text{C/Second Maximum}$
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#### Preheat

- Temperature Minimum ( $T_s \text{ MIN}$ )	$150^\circ\text{C}$
- Temperature Typical ( $T_s \text{ TYP}$ )	$175^\circ\text{C}$
- Temperature Maximum ( $T_s \text{ MAX}$ )	$200^\circ\text{C}$
- Time ( $t_s \text{ MIN}$ )	60 - 180 Seconds

Ramp-up Rate ( $T_L$ to $T_P$ )	$3^\circ\text{C/Second Maximum}$
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#### Time Maintained Above:

- Temperature ( $T_L$ )	$217^\circ\text{C}$
- Time ( $t_L$ )	60 - 150 Seconds

Peak Temperature ( $T_P$ )	$260^\circ\text{C Maximum for 10 Seconds Maximum}$
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Target Peak Temperature ( $T_P \text{ Target}$ )	$250^\circ\text{C } +0/-5^\circ\text{C}$
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Time within $5^\circ\text{C}$ of actual peak ( $t_p$ )	20 - 40 Seconds
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Ramp-down Rate	$6^\circ\text{C/Second Maximum}$
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Time $25^\circ\text{C}$ to Peak Temperature (t)	8 Minutes Maximum
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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.