

ECCM9HA18-13.000M
[Click part number to visit Part Number Details page](#)
REGULATORY COMPLIANCE (Data Sheet downloaded on Apr 28, 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 3.2mm x 5.0mm x 1.0mm 4 Pad Ceramic Surface Mount (SMD) 13.000MHz ± 15 ppm at 25°C, ± 30 ppm over -20°C to +70°C 18pF Parallel Resonant

ELECTRICAL SPECIFICATIONS

Nominal Frequency	13.000MHz
Frequency Tolerance/Stability	± 15 ppm at 25°C, ± 30 ppm over -20°C to +70°C
Aging at 25°C	± 3 ppm/Year Maximum
Load Capacitance	18pF Parallel Resonant
Shunt Capacitance	7pF Maximum
Equivalent Series Resistance	55 Ohms Maximum
Mode of Operation	AT-Cut Fundamental
Drive Level	100 μ Watts Maximum
Spurious Response	-3dB Minimum (Measured from Fo to Fo+5000ppm)
Storage Temperature Range	-40°C to +125°C
Insulation Resistance	500 Megaohms Minimum (Measured at 100Vdc)

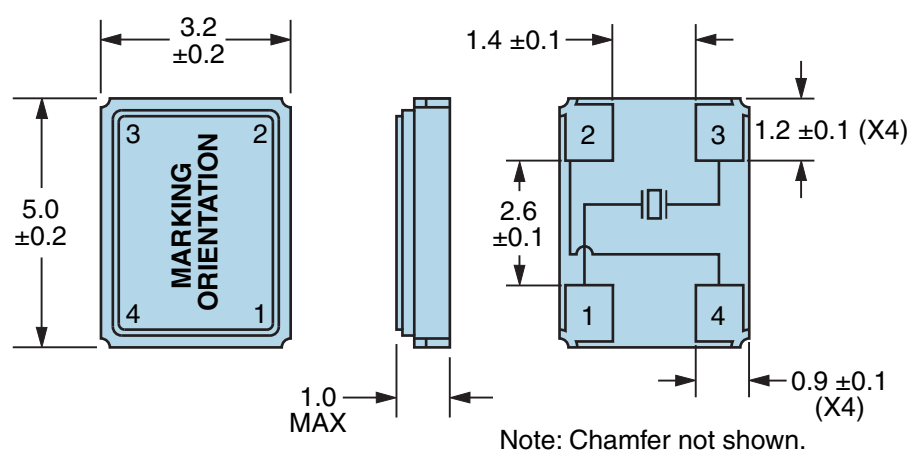
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

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-883, Method 2002, Condition B
Moisture Resistance	MIL-STD-883, Method 1004
Moisture Sensitivity	J-STD-020, MSL 1
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)

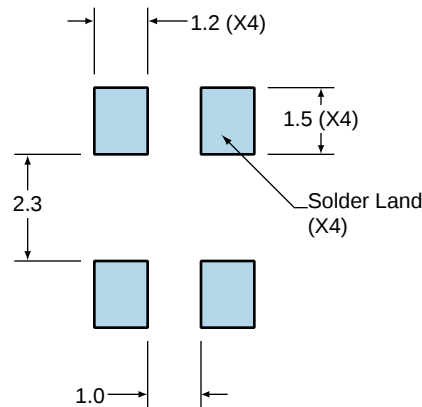


PIN	CONNECTION
1	Crystal
2	Cover/Ground
3	Crystal
4	Cover/Ground

LINE	MARKING
1	E13.00 <i>E=Ecliptek Designator</i>
2	XXXXXX <i>XXXXXX=Ecliptek Manufacturing Identifier</i>

Suggested Solder Pad Layout

All Dimensions in Millimeters

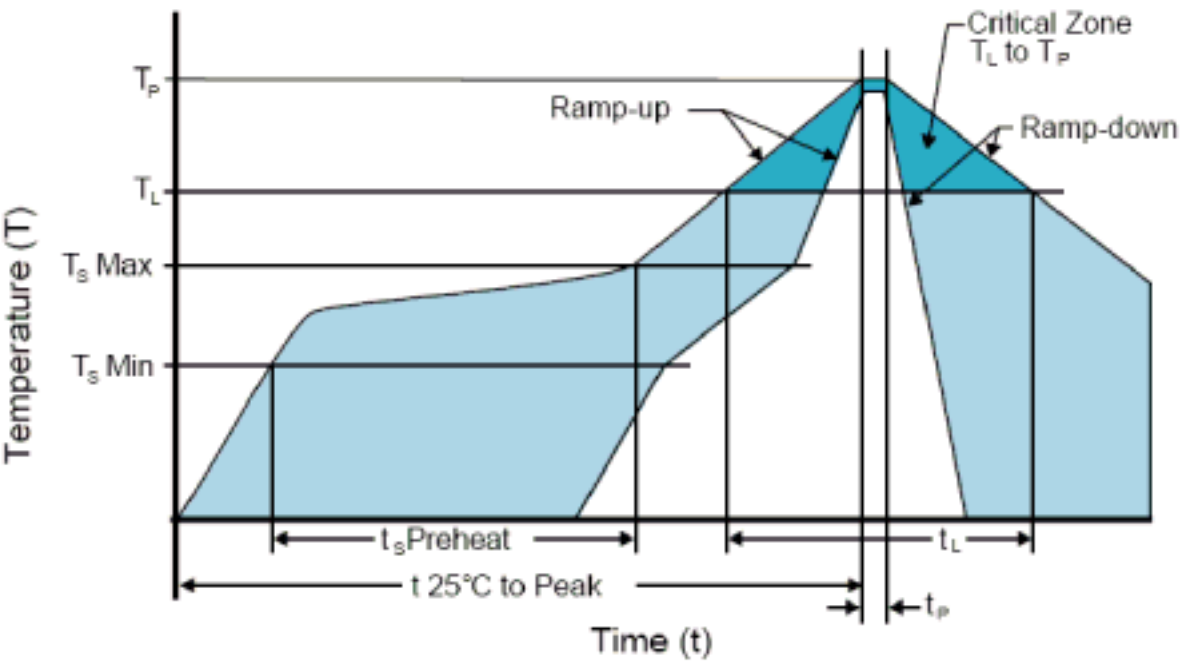


All Tolerances are ±0.1

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Recommended Solder Reflow Methods



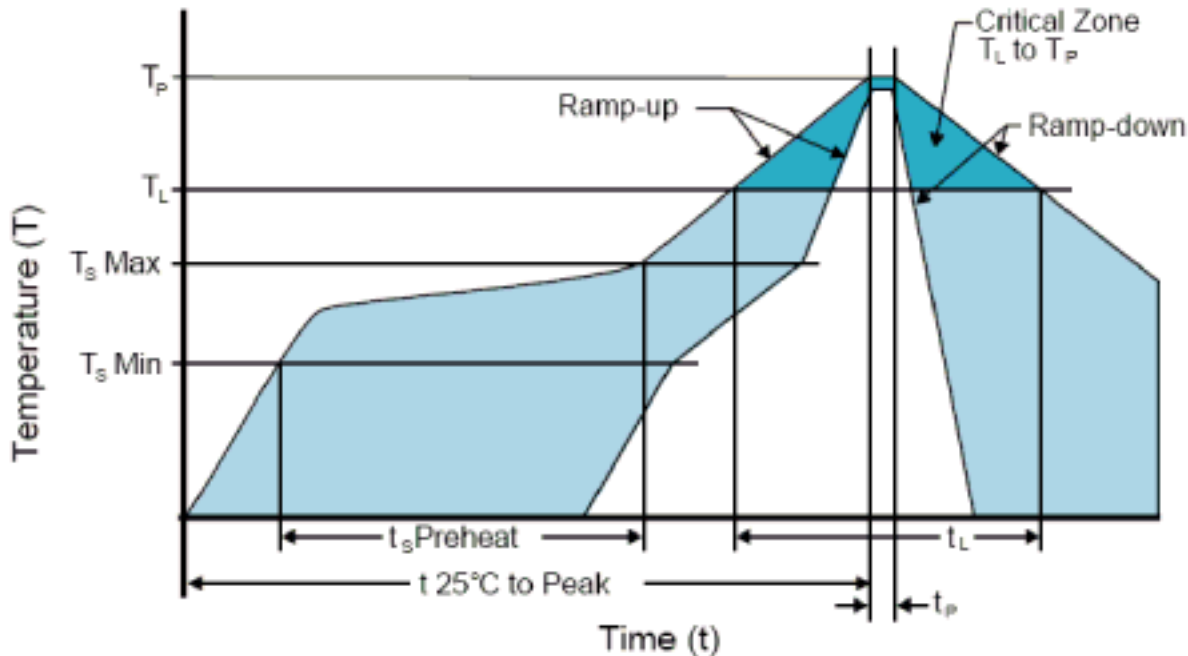
High Temperature Infrared/Convection

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
Additional Notes		Temperatures shown are applied to body of device.

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Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 245°C

TS MAX to TL (Ramp-up Rate)	5°C/Second Maximum
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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
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Time Maintained Above:

- Temperature (TL)	150°C
- Time (tL)	200 Seconds Maximum

Peak Temperature (TP)	245°C Maximum
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Target Peak Temperature (TP Target)	245°C Maximum 2 Times / 230°C Maximum 1 Time
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Time within 5°C of actual peak (tP)	10 Seconds Maximum 2 Times / 80 Seconds Maximum 1 Time
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Ramp-down Rate	5°C/Second Maximum
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Time 25°C to Peak Temperature (t)	N/A
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Moisture Sensitivity Level	Level 1
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Additional Notes	Temperatures shown are applied to body of device.
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Low Temperature Manual Soldering

185°C Maximum for 10 Seconds Maximum, 2 times Maximum. (Temperatures shown are applied to body of device.)

High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum. (Temperatures shown are applied to body of device.)