

# E2UPA18-16.000M

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

## REGULATORY COMPLIANCE (Data Sheet downloaded on Mar 28, 2020)


[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/US Thru-Hole 3.68mm Height Metal Resistance Weld Seal 16.000MHz  $\pm 10$ ppm at 25°C,  $\pm 15$ ppm over -20°C to +70°C 18pF Parallel Resonant

## ELECTRICAL SPECIFICATIONS

Nominal Frequency	16.000MHz
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	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 (Measured at 100Vdc)

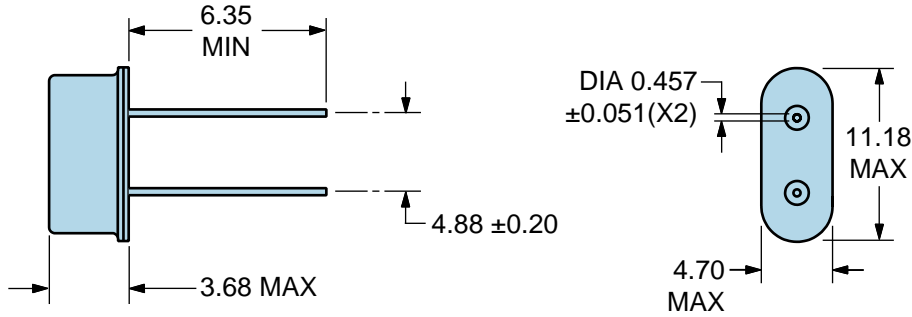
## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

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
Lead Integrity	MIL-STD-883, Method 2004
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>E16.000M</b> <i>E=Ecliptek Designator</i>



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## Recommended Solder Reflow Methods



### High Temperature Solder Bath (Wave Solder)

T <sub>s</sub> MAX to T <sub>L</sub> (Ramp-up Rate)	3°C/Second Maximum
<b>Preheat</b>	
- Temperature Minimum (T <sub>s</sub> MIN)	150°C
- Temperature Typical (T <sub>s</sub> TYP)	175°C
- Temperature Maximum (T <sub>s</sub> MAX)	200°C
- Time (t <sub>s</sub> MIN)	60 - 180 Seconds
Ramp-up Rate (T <sub>L</sub> to T <sub>P</sub> )	3°C/Second Maximum
<b>Time Maintained Above:</b>	
- Temperature (T <sub>L</sub> )	217°C
- Time (t <sub>L</sub> )	60 - 150 Seconds
Peak Temperature (T <sub>P</sub> )	260°C Maximum for 10 Seconds Maximum
Target Peak Temperature (T <sub>P</sub> Target)	250°C +0/-5°C
Time within 5°C of actual peak (t <sub>p</sub> )	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 back of PCB board and device leads only.

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## Recommended Solder Reflow Methods



### Low Temperature Solder Bath (Wave Solder)

Ts MAX to TL (Ramp-up Rate)	5°C/Second Maximum
<b>Preheat</b>	
- Temperature Minimum (Ts MIN)	N/A
- Temperature Typical (Ts TYP)	150°C
- Temperature Maximum (Ts MAX)	N/A
- Time (ts MIN)	30 - 60 Seconds
<b>Ramp-up Rate (TL to TP)</b>	5°C/Second Maximum
<b>Time Maintained Above:</b>	
- Temperature (TL)	150°C
- Time (tL)	200 Seconds Maximum
<b>Peak Temperature (TP)</b>	245°C Maximum
<b>Target Peak Temperature (TP Target)</b>	245°C Maximum 1 Time / 235°C Maximum 2 Times
<b>Time within 5°C of actual peak (tp)</b>	5 Seconds Maximum 1 Time / 15 Seconds Maximum 2 Times
<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
<b>Additional Notes</b>	Temperatures shown are applied to back of PCB board and device leads only.

### Low Temperature Manual Soldering

185°C Maximum for 10 Seconds Maximum, 2 times Maximum. (Temperatures shown are applied to back of PCB board and device leads only.)

### High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum. (Temperatures shown are applied to back of PCB board and device leads only.)