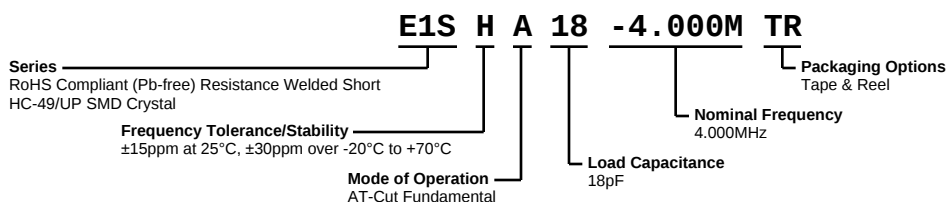


E1SHA18-4.000M TR



ECLIPTEK
CORPORATION



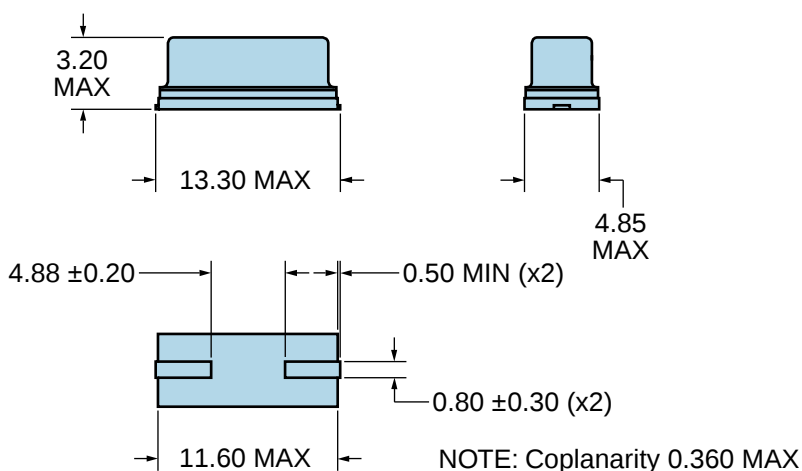
ELECTRICAL SPECIFICATIONS

Nominal Frequency	4.000MHz
Frequency Tolerance/Stability	$\pm 15\text{ppm}$ at 25°C , $\pm 30\text{ppm}$ over -20°C to $+70^\circ\text{C}$
Aging at 25°C	$\pm 5\text{ppm}/\text{year}$ Maximum
Load Capacitance	18pF
Shunt Capacitance (C0)	7pF Maximum
Equivalent Series Resistance	200 Ohms Maximum
Mode of Operation	AT-Cut Fundamental
Drive Level	1mWatt Maximum
Storage Temperature Range	-40°C to $+125^\circ\text{C}$
Insulation Resistance	500 Megaohms Minimum at 100Vdc

ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

Fine Leak Test	MIL-STD-883, Method 1014 Condition A
Gross Leak Test	MIL-STD-883, Method 1014 Condition C
Lead Termination	Sn $2\mu\text{m}$ - $6\mu\text{m}$
Mechanical Shock	MIL-STD-202, Method 213 Condition C
Resistance to Soldering Heat	MIL-STD-202, Method 210
Resistance to Solvents	MIL-STD-202, Method 215
Solderability	MIL-STD-883, Method 2003
Temperature Cycling	MIL-STD-883, Method 1010
Vibration	MIL-STD-883, Method 2007 Condition A

MECHANICAL DIMENSIONS (all dimensions in millimeters)

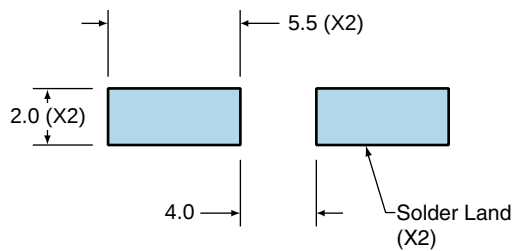


LINE	MARKING
1	E4.000M E=Ecliptek Designator M=MHz

E1SHA18-4.000M TR

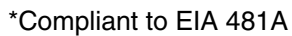
Suggested Solder Pad Layout

All Dimensions in Millimeters

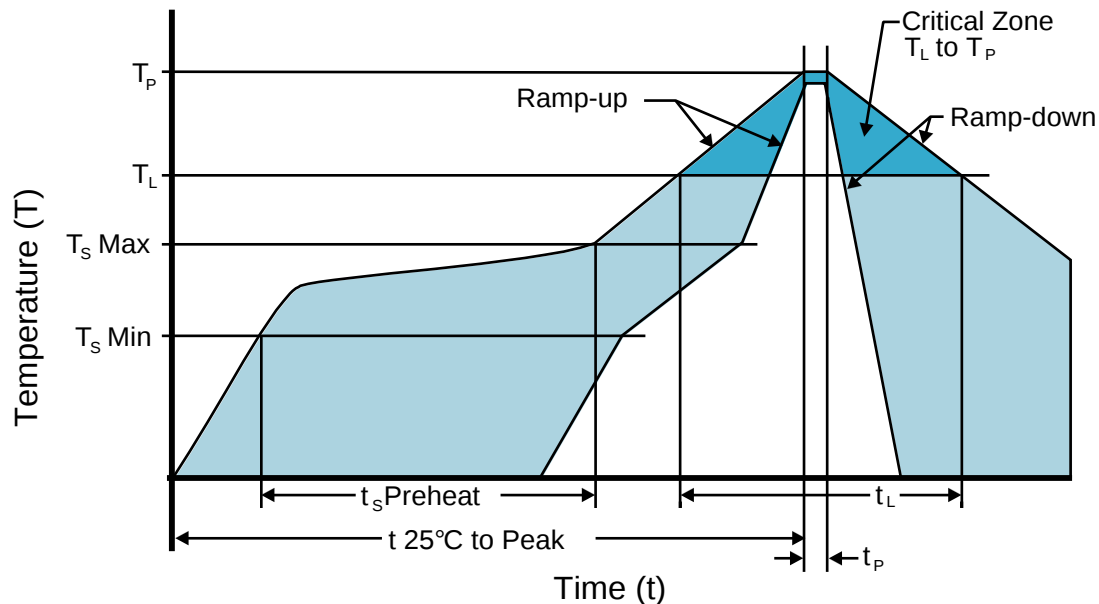


All Tolerances are ± 0.1

Quantity Per Reel: 1,000 units



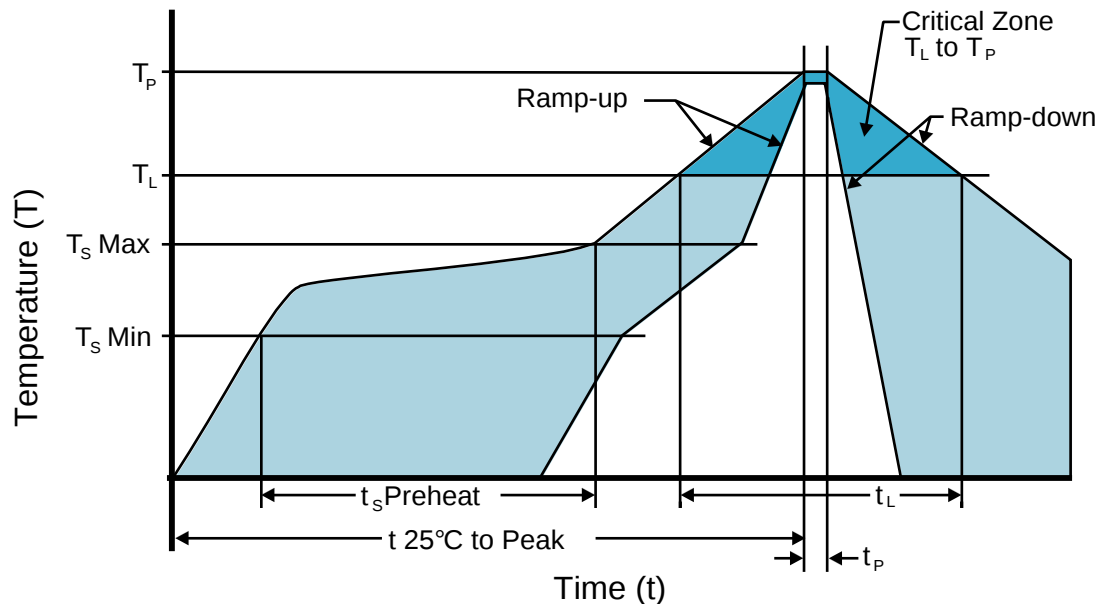
Recommended Solder Reflow Methods



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

Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 245°C

T_s MAX to T_L (Ramp-up Rate)	5°C/second Maximum
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Preheat

- 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

Ramp-up Rate (T_L to T_p)	5°C/second Maximum
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Time Maintained Above:

- Temperature (T_L)	150°C
- Time (t_L)	200 Seconds Maximum

Peak Temperature (T_p)	245°C Maximum
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Target Peak Temperature (T_p Target)	245°C Maximum 2 Times / 230°C Maximum 1 Time
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Time within 5°C of actual peak (t_p)	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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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.