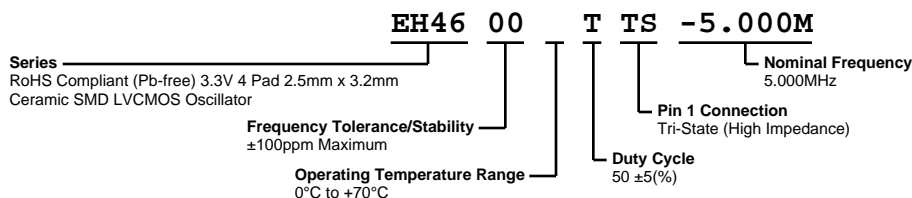


# EH4600TTS-5.000M



**ECLIPTEK**  
CORPORATION



## ELECTRICAL SPECIFICATIONS

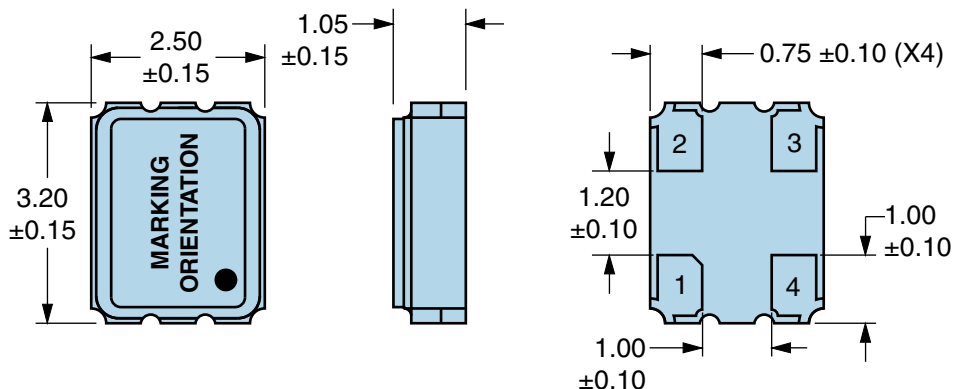
Nominal Frequency	5.000MHz
Frequency Tolerance/Stability	$\pm 100$ ppm Maximum (Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°, 260°C Reflow, Shock, and Vibration)
Aging at 25°C	$\pm 5$ ppm/Year Maximum
Operating Temperature Range	0°C to +70°C
Supply Voltage	3.3Vdc $\pm 5\%$
Input Current	10mA Maximum (No Load)
Output Voltage Logic High (Voh)	90% of Vdd Minimum (IOH = -8mA)
Output Voltage Logic Low (Vol)	10% of Vdd Maximum (IOL = +8mA)
Rise/Fall Time	6nSec Maximum (Measured at 20% to 80% of waveform)
Duty Cycle	50 $\pm 5$ (%) (Measured at 50% of waveform)
Output Logic Type	CMOS
Load Capacitance	30pF Maximum
Pin 1 Connection	Tri-State (High Impedance)
Tri-State Input Voltage (Vih and Vil)	90% of Vdd Minimum or No Connect to Enable Output, 10% of Vdd Maximum to Disable Output (High Impedance)
Standby Current	10 $\mu$ A Maximum (Pin 1 = Ground)
Absolute Clock Jitter	$\pm 100$ pSec Maximum
Start Up Time	10mSec Maximum
Storage Temperature Range	-55°C to +125°C

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

ESD Susceptibility	MIL-STD-883, Method 3015, Class 1, HBM: 1500Vdc
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

# EH4600TTS-5.000M

## MECHANICAL DIMENSIONS (all dimensions in millimeters)

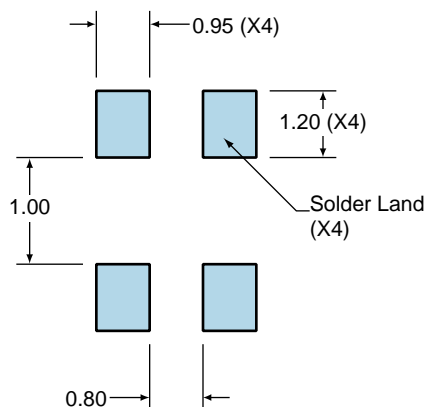


PIN	CONNECTION
1	Tri-State
2	Case Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	EPO
2	XXXXXX XXXXXX=Ecliptek Manufacturing Identifier

## Suggested Solder Pad Layout

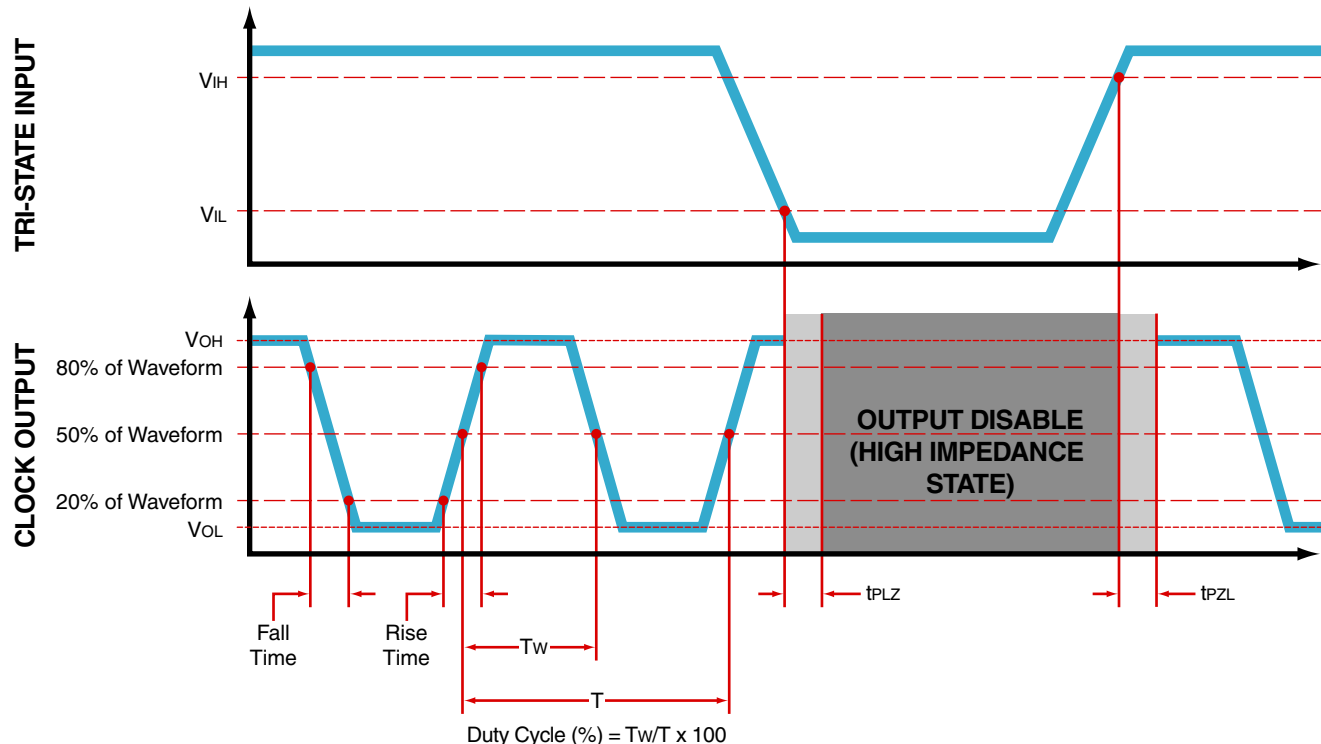
All Dimensions in Millimeters



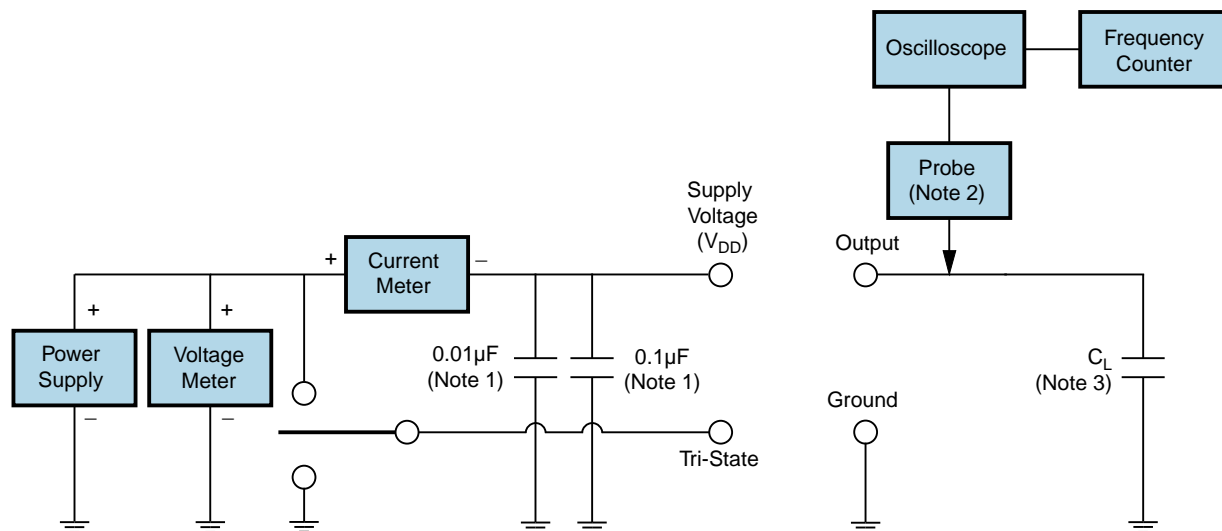
All Tolerances are  $\pm 0.1$

# EH4600TTS-5.000M

## OUTPUT WAVEFORM & TIMING DIAGRAM



## Test Circuit for CMOS Output

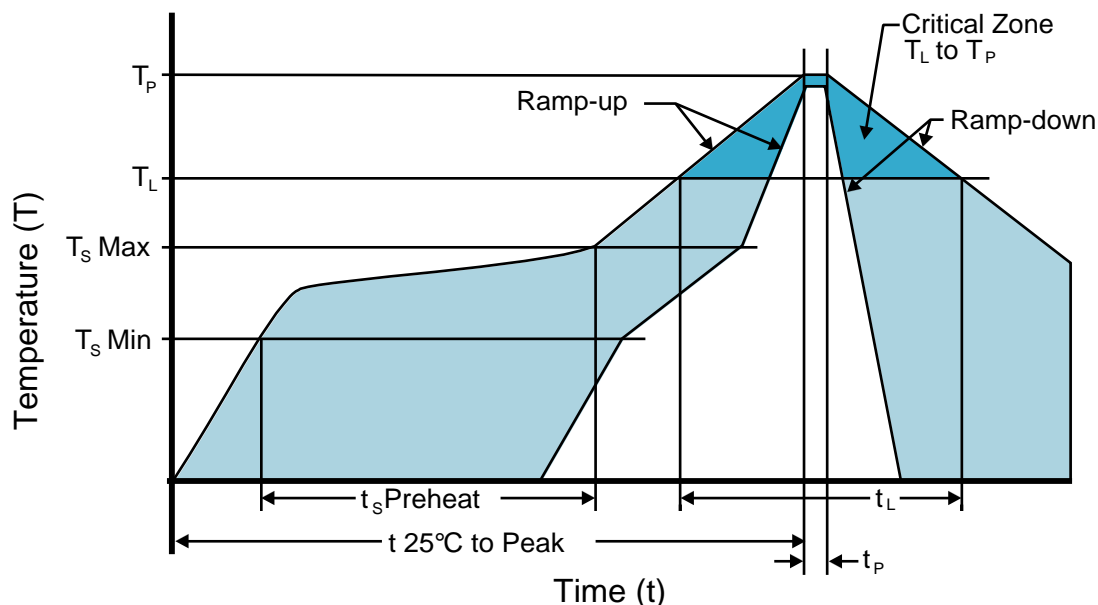


Note 1: An external  $0.1\mu F$  low frequency tantalum bypass capacitor in parallel with a  $0.01\mu F$  high frequency ceramic bypass capacitor close to the package ground and  $V_{DD}$  pin is required.

Note 2: A low capacitance ( $<12pF$ ), 10X attenuation factor, high impedance ( $>10M\Omega$ ), and high bandwidth ( $>300MHz$ ) passive probe is recommended.

Note 3: Capacitance value  $C_L$  includes sum of all probe and fixture capacitance.

## Recommended Solder Reflow Methods



### High Temperature Infrared/Convection

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

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

Ramp-up Rate ( $T_L$ to $T_p$ )	3°C/second Maximum
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#### 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
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Target Peak Temperature ( $T_p \text{ Target}$ )	250°C +0/-5°C
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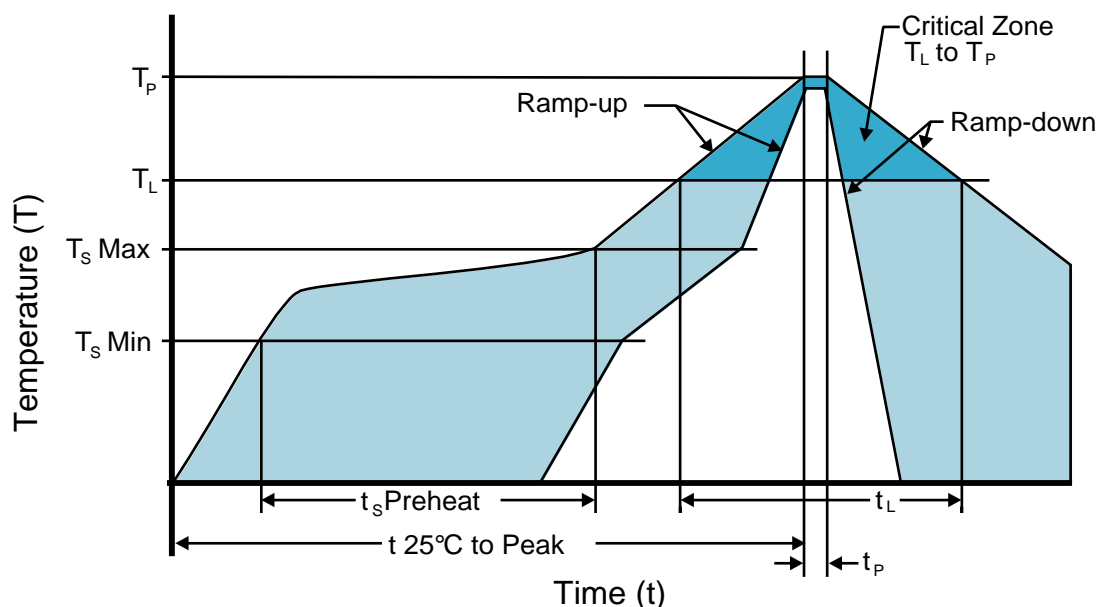
Time within 5°C of actual peak ( $t_p$ )	20 - 40 seconds
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Ramp-down Rate	6°C/second Maximum
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Time 25°C to Peak Temperature (t)	8 minutes Maximum
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Moisture Sensitivity Level	Level 1
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## Recommended Solder Reflow Methods



### Low Temperature Infrared/Convection 240°C

**T<sub>S</sub> MAX to T<sub>L</sub> (Ramp-up Rate)** 5°C/second Maximum

#### Preheat

- Temperature Minimum (T<sub>S</sub> MIN) N/A  
 - Temperature Typical (T<sub>S</sub> TYP) 150°C  
 - Temperature Maximum (T<sub>S</sub> MAX) N/A  
 - Time (t<sub>S</sub> MIN) 60 - 120 Seconds

**Ramp-up Rate (T<sub>L</sub> to T<sub>P</sub>)** 5°C/second Maximum

#### Time Maintained Above:

- Temperature (T<sub>L</sub>) 150°C  
 - Time (t<sub>L</sub>) 200 Seconds Maximum

**Peak Temperature (T<sub>P</sub>)** 240°C Maximum

**Target Peak Temperature (T<sub>P</sub> Target)** 240°C Maximum 1 Time / 230°C Maximum 2 Times

**Time within 5°C of actual peak (t<sub>p</sub>)** 10 seconds Maximum 2 Times / 80 seconds Maximum 1 Time

**Ramp-down Rate** 5°C/second Maximum

**Time 25°C to Peak Temperature (t)** N/A

**Moisture Sensitivity Level** 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.