## EH2745TS-32.000M



EH27 45

Series -RoHS Compliant (Pb-free) 2.5V 4 Pad 5mm x 7mm Ceramic SMD LVCMOS Oscillator

Frequency Tolerance/Stability ±50ppm Maximum

#### TS -32.000M Nominal Frequency

32.000MHz

Pin 1 Connection Tri-State (High Impedance)

Duty Cycle 50 ±10(%)

Operating Temperature Range -0°C to +70°C

ELECTRICAL SPECIFICATIONS		
Nominal Frequency	32.000MHz	
Frequency Tolerance/Stability	±50ppm 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	±5ppm/Year Maximum	
Operating Temperature Range	0°C to +70°C	
Supply Voltage	2.5Vdc ±5%	
Input Current	7mA 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)	

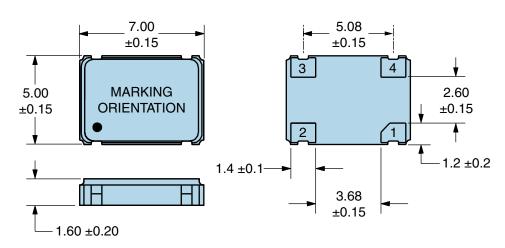
Output Voltage Logic Low (Vol)	10% of Vdd Maximum (IOL = +8mA)	
Rise/Fall Time	6nSec Maximum (Measured at 20% to 80% of waveform)	
Duty Cycle	50 ±10(%) (Measured at 50% of waveform)	
Load Drive Capability	15pF Maximum	
Output Logic Type	CMOS	
Pin 1 Connection	Tri-State (High Impedance)	
Tri-State Input 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	10µA Maximum (Pin 1 = Ground)	
Absolute Clock Jitter	±100pSec 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: 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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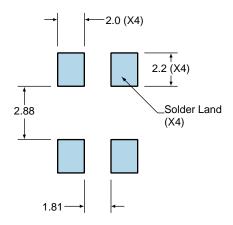
### **MECHANICAL DIMENSIONS (all dimensions in millimeters)**



PIN	CONNECTION
1	Tri-State
2	Case Ground
3	Output
4	Supply Voltage
LINE	MARKING
1	ECLIPTEK
2	32.000M
3	XXXXXX XXXXX=Ecliptek Manufacturing Identifier

#### Suggested Solder Pad Layout

All Dimensions in Millimeters



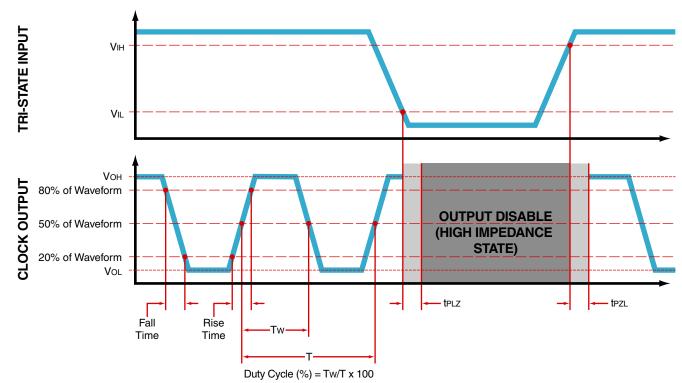
All Tolerances are ±0.1



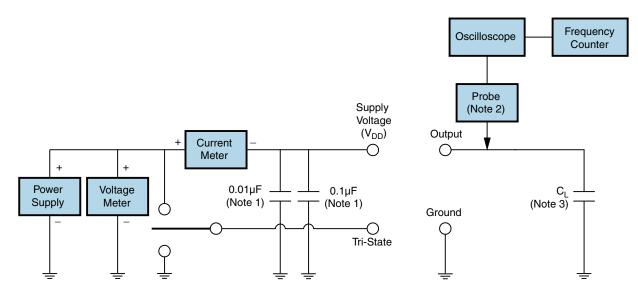
# EH2745TS-32.000M



**OUTPUT WAVEFORM & TIMING DIAGRAM** 



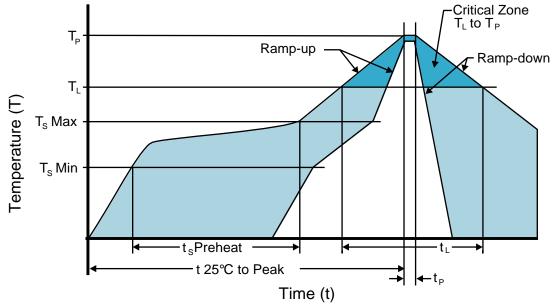
**Test Circuit for CMOS Output** 



- Note 1: An external 0.01µF ceramic bypass capacitor in parallel with a 0.1µF high frequency ceramic bypass capacitor close (less than 2mm) to the package ground and supply voltage pin is required.
- Note 2: A low capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), and high bandwidth (>300MHz) passive probe is recommended. Note 3: Capacitance value C<sub>L</sub> includes sum of all probe and fixture capacitance.

### **ECLIPTEK** CORPORATION

## **Recommended Solder Reflow Methods**



### **High Temperature Infrared/Convection**

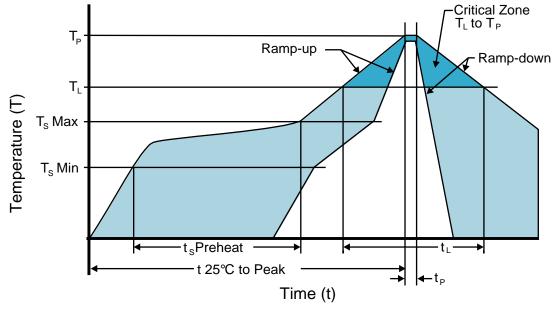
EH2745TS-32.000M

T <sub>s</sub> MAX to T <sub>L</sub> (Ramp-up Rate)	3°C/second Maximum
Preheat	
- Temperature Minimum (T <sub>s</sub> MIN)	150°C
- Temperature Typical (T <sub>s</sub> TYP)	175°C
<ul> <li>Temperature Maximum (T<sub>s</sub> MAX)</li> </ul>	200°C
- Time (t <sub>s</sub> MIN)	60 - 180 Seconds
Ramp-up Rate (T⊾ to T <sub>P</sub> )	3°C/second Maximum
Time Maintained Above:	
- Temperature (T∟)	217°C
- Time (t∟)	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 body of device.

### **ECLIPTEK** CORPORATION

## **Recommended Solder Reflow Methods**

EH2745TS-32.000M



#### 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
<ul> <li>Temperature Maximum (T<sub>s</sub> MAX)</li> </ul>	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∟)	150°C
- Time (t∟)	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 ( $t_p$ )	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
Additional Notes	Temperatures shown are applied to body of device.

#### 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.)