





EH26 45

Series — RoHS Compliant (Pb-free) 3.3V 4 Pad 5mm x 7mm Ceramic SMD LVCMOS High Frequency Oscillator

Frequency Tolerance/Stability ±50ppm Maximum

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

TS -66.667M

Nominal Frequency 66.667MHz

Pin 1 Connection
Tri-State (High Impedance)

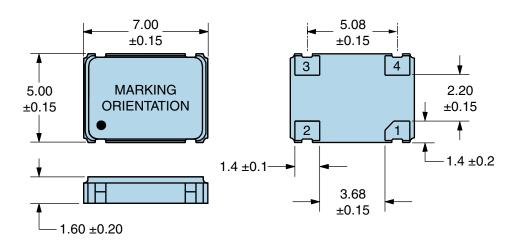
- Duty Cycle 50 ±10(%)

#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°C, Shock, and Vibration)  Aging at 25°C #5ppm/year Maximum  Operating Temperature Range 0°C to +70°C  Supply Voltage 3.3Vdc ±0.3Vdc  Input Current 35mA Maximum (No Load)  Output Voltage Logic High (Voh) 2.7Vdc Minimum (IOH= -8mA)  Output Voltage Logic Low (Vol) 0.5Vdc Maximum (IOH= +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 30pF Maximum  Output Logic Type CMOS  Pin 1 Connection 7ri-State (High Impedance)  Tri-State Input Voltage (Vih and Vil) 70% of Vdd Minimum to enable output, 20% of Vdd Maximum to disable output, No Connect to enable output.  Absolute Clock Jitter ±250pSec Maximum, ±100pSec Typical  Description of the Aging Ag	ELECTRICAL SPECIFICATIONS		
Aging at 25°C ±5pm/year Maximum  Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°C, Shock, and Vibration)  Aging at 25°C ±5pm/year Maximum  Operating Temperature Range 0°C to +70°C  Supply Voltage 3.3Vdc ±0.3Vdc Input Current 35mA Maximum (No Load)  Output Voltage Logic High (Voh) 2.7Vdc Minimum (IOH= -8mA)  Output Voltage Logic Low (Vol) 0.5Vdc Maximum (IOH= +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 30pF Maximum  Output Logic Type CMOS  Pin 1 Connection 7ri-State (High Impedance)  Tri-State Input Voltage (Vih and Vil) 70% of Vdd Minimum to enable output, 20% of Vdd Maximum to disable output, No Connect to enable output.  Absolute Clock Jitter ±250pSec Maximum, ±100pSec Typical  Start Up Time 10mSec Maximum	Nominal Frequency	66.667MHz	
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Output Voltage Logic High (Voh)       2.7Vdc Minimum (IOH= -8mA)         Output Voltage Logic Low (Vol)       0.5Vdc Maximum (IOH= +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       30pF Maximum         Output Logic Type       CMOS         Pin 1 Connection       Tri-State (High Impedance)         Tri-State Input Voltage (Vih and Vil)       70% of Vdd Minimum to enable output, 20% of Vdd Maximum to disable output, No Connect to enable output.         Absolute Clock Jitter       ±250pSec Maximum, ±100pSec Typical         One Sigma Clock Period Jitter       ±50pSec Maximum, ±40pSec Typical         Start Up Time       10mSec Maximum	Supply Voltage	3.3Vdc ±0.3Vdc	
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Start Up Time 10mSec Maximum	Absolute Clock Jitter	±250pSec Maximum, ±100pSec Typical	
	One Sigma Clock Period Jitter	±50pSec Maximum, ±40pSec Typical	
Storage Temperature Range -55°C to +125°C	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	



### **MECHANICAL DIMENSIONS (all dimensions in millimeters)**

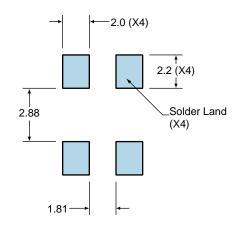


PIN	CONNECTION
1	Tri-State (High Impedance)
2	Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	ECLIPTEK
2	66.667M
3	PXXYZZ P=Configuration Designator XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year

#### **Suggested Solder Pad Layout**

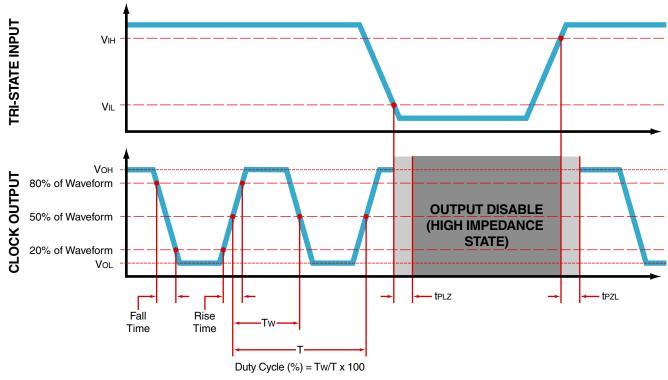
All Dimensions in Millimeters



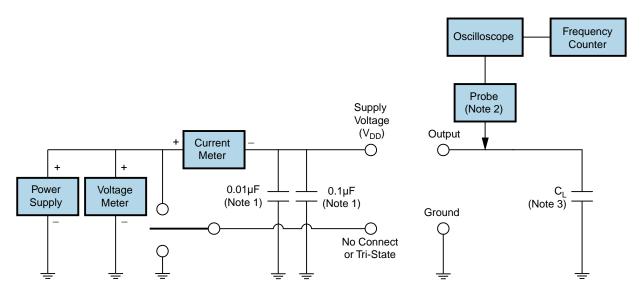
All Tolerances are ±0.1



#### **OUTPUT WAVEFORM & TIMING DIAGRAM**



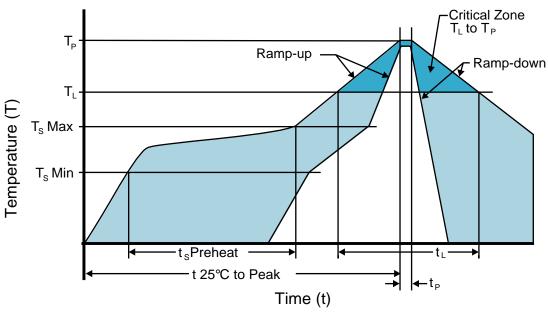
#### **Test Circuit for CMOS Output**



- 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 (>10Mohms), and high bandwidth (>300MHz) passive probe is recommended.
- Note 3: Capacitance value  $\dot{C}_L$  includes sum of all probe and fixture capacitance.



## **Recommended Solder Reflow Methods**

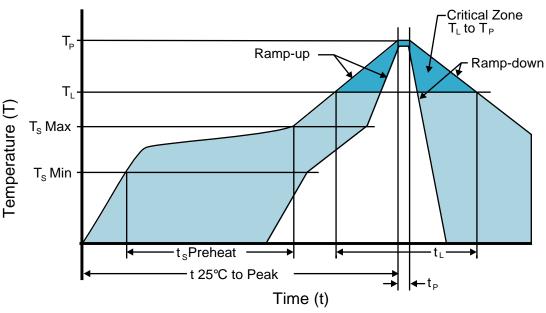


### **High Temperature Infrared/Convection**

<u> </u>	
T <sub>s</sub> MAX to T <sub>∟</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
- 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
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 (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.



## **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∟)	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 (tp)	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.)