





EH49 20 ET T TS -35.328M

Series — RoHS Compliant (Pb-free) 1.8V 4 Pad 2.5mm x 3.2mm Ceramic SMD LVCMOS Oscillator

Frequency Tolerance/Stability — ±20ppm Maximum

Operating Temperature Range --40°C to +85°C

Nominal Frequency 35.328MHz

Pin 1 Connection
Tri-State (High Impedance)

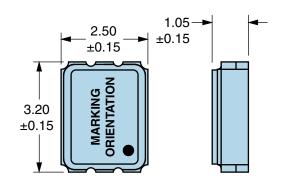
- Duty Cycle 50 ±5(%)

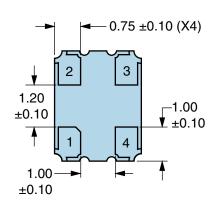
Operating Tempo 260°C Reflow, Suging at 25°C ±5ppm/Year Maximum 1.8Vdc ±5% 4mA Maximum (Maximum Voltage Logic High (Voh) 90% of Vdd Minimum Voltage Logic Low (Vol) 10% of Vdd Maximum (Maximum Voltage Logic Low (Vol) 10% of Vdd Maximum (Maximum Voltage Logic Low (Vol) 10% of Vdd Maximum Voltage Logic Low (Vol) 10% of Vdd Maximum Voltage Logic Low (Vol) 15pF Maximum Voltage Capability 15pF Maximum Voltage Capability 15pF Maximum Voltage Capability 15pF Maximum Voltage Capability 15pF Maximum Voltage Vin 1 Connection 17i-State (High Ir 190% of Vdd Minimum Voltage (Vih and Vii) 100% of Vdd Minimum Voltage (Vih and	m (Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the erature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°,
Operating Temp 260°C Reflow, S Inging at 25°C ±5ppm/Year Max Operating Temperature Range -40°C to +85°C Supply Voltage 1.8Vdc ±5% Input Current 4mA Maximum (Output Voltage Logic High (Voh) 90% of Vdd Mini Output Voltage Logic Low (Vol) 10% of Vdd Max Sise/Fall Time 6nSec Maximum Output Cycle 50 ±5(%) (Measured Duty Cycle 50 ±5(%) (Measured Duty Cycle Coad Drive Capability 15pF Maximum Output Logic Type CMOS Tri-State (High Ir 90% of Vdd Mini Impedance)	
Operating Temperature Range -40°C to +85°C 1.8Vdc ±5% AmA Maximum (Output Voltage Logic High (Voh) Output Voltage Logic Low (Vol) Cise/Fall Time Output Cycle Output Capability Output Logic Type Cin 1 Connection Tri-State (High Ir 90% of Vdd Mini Impedance)	hock, and Vibration)
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AmA Maximum (Output Voltage Logic High (Voh) Output Voltage Logic Low (Vol) Output Voltage Some Some Some Maximum Output Cycle Output Capability Output Logic Type Output	
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tise/Fall Time 6nSec Maximum 50 ±5(%) (Meast coad Drive Capability 15pF Maximum 6nUtput Logic Type CMOS 7ri-State Input Voltage (Vih and Vil) 15pF Maximum 7ri-State Input Voltage (Vih and Vil) 15pF Maximum 15pF Ma	mum (IOH = -8mA)
outy Cycle 50 ±5(%) (Meason and Drive Capability 15pF Maximum Dutput Logic Type CMOS Tri-State (High Ir ri-State Input Voltage (Vih and Vil) 90% of Vdd Mini Impedance)	imum (IOL = +8mA)
Dutput Logic Type Cin 1 Connection Tri-State Input Voltage (Vih and Vil) Tri-State Input Voltage (Vih and Vil) Connection Tri-State Input Voltage (Vih and Vil)	(Measured at 20% to 80% of waveform)
Dutput Logic Type CMOS Tri-State (High Ir ri-State Input Voltage (Vih and Vil) Unpedance)	ured at 50% of waveform)
ri-State Input Voltage (Vih and Vil) 778-State Input Voltage (Vih and Vil) 789-79-79-79-79-79-79-79-79-79-79-79-79-79	
ri-State Input Voltage (Vih and Vil) 90% of Vdd Mini Impedance)	
Impedance)	npedance)
standby Current 10µA Maximum	mum or No Connect to Enable Output, 10% of Vdd Maximum to Disable Output (High
· · · · · · · · · · · · · · · · · · ·	(Pin 1 = Ground)
bsolute Clock Jitter ±125pSec Maxim	num
start Up Time 10mSec Maximu	m
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	



MECHANICAL DIMENSIONS (all dimensions in millimeters)



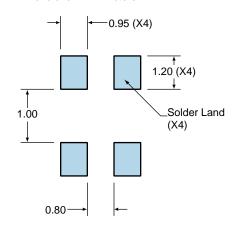


PIN	CONNECTION
1	Tri-State
2	Case Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	EPO
_	XXXXX XXXXX=Ecliptek Manufacturing Identifier

Suggested Solder Pad Layout

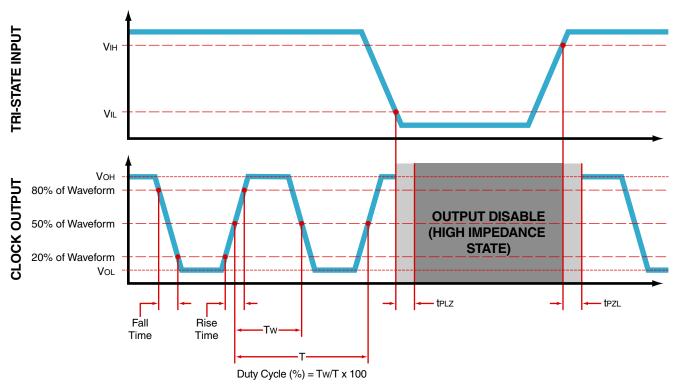
All Dimensions in Millimeters



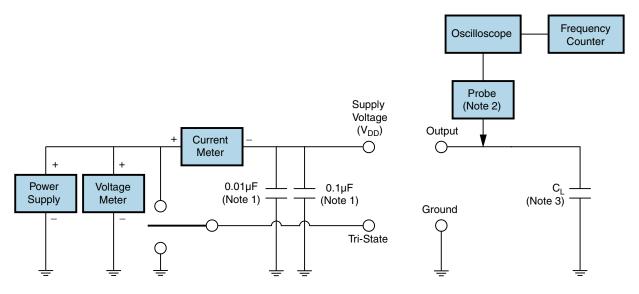
All Tolerances are ±0.1



OUTPUT WAVEFORM & TIMING DIAGRAM



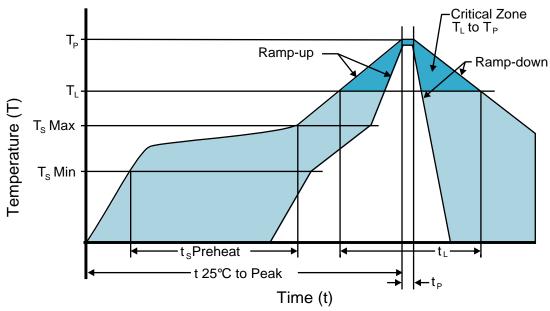
Test Circuit for CMOS Output



- Note 1: An external 0.01µF 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 C₁ includes sum of all probe and fixture capacitance.



Recommended Solder Reflow Methods



High Temperature Infrared/Convection

T _s MAX to T _∟ (Ramp-up Rate)	3°C/second Maximum
Preheat	
- Temperature Minimum (Ts 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∟)	217°C
- Time (t∟)	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 (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



Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 240°C

T _S MAX to T _L (Ramp-up Rate)	5°C/second Maximum
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)	60 - 120 Seconds
Ramp-up Rate (T _L to T _P)	5°C/second Maximum
Time Maintained Above:	
- Temperature (T∟)	150°C
- Time (t∟)	200 Seconds Maximum
Peak Temperature (T _P)	240°C Maximum
Target Peak Temperature (T _P 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

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.