

EB52E8C3V-12.800M TR
[Click part number to visit Part Number Details page](#)
REGULATORY COMPLIANCE (Data Sheet downloaded on Nov 22, 2016)
[Click badges to download compliance docs](#)

Regulatory Compliance standards are subject to updates by governing bodies. Click the badges to download the latest compliance docs for this part number directly from Ecliptek.

**ITEM DESCRIPTION**

Temperature Compensated Quartz Crystal Clock Oscillators TCXO (TCVCXO) LVC MOS (CMOS) 3.3Vdc 10 Pad 5.0mm x 7.0mm Ceramic Surface Mount (SMD) 12.800MHz ± 1.0 ppm Maximum -20°C to +70°C

ELECTRICAL SPECIFICATIONS

Nominal Frequency	12.800MHz
Frequency Tolerance	± 1.0 ppm Maximum (Measured at 25°C $\pm 2^\circ\text{C}$, at Vdd=3.3Vdc and Vc=1.65Vdc)
Frequency Stability	± 1.0 ppm Maximum (Inclusive of Operating Temperature Range. Measured at Vdd=3.3Vdc and Vc=1.65Vdc)
Frequency Stability vs. Input Voltage	± 0.3 ppm Maximum ($\pm 5\%$)
Frequency Stability vs. Load	± 0.3 ppm Maximum ($\pm 10\%$)
Frequency Stability vs. Aging	± 1 ppm/year Maximum (at 25°C)
Operating Temperature Range	-20°C to +70°C
Supply Voltage	3.3Vdc $\pm 5\%$
Input Current	10mA Maximum
Output Voltage Logic High (Voh)	90% of Vdd Minimum (IOH = -4mA)
Output Voltage Logic Low (Vol)	10% of Vdd Maximum (IOL = +4mA)
Rise/Fall Time	5nSec Maximum (Measured at 20% to 80% of Waveform)
Duty Cycle	50 $\pm 5\%$ (Measured at 50% of Waveform)
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Control Voltage	1.65Vdc ± 1.65 Vdc
Control Voltage Range	0.0Vdc to Vdd
Frequency Deviation	± 5 ppm Minimum
Linearity	5% Maximum
Transfer Function	Positive Transfer Characteristic
Input Impedance	100kOhms Minimum
Phase Noise	-80dBc/Hz at 10Hz Offset, -115dBc/Hz at 100Hz Offset, -135dBc/Hz at 1kHz Offset, and -145dBc/Hz at ≥ 10 kHz Offset (Typical Values at 12.800MHz)
Tri-State Input Voltage (Vih and Vil)	+0.9Vdd Minimum to Enable Output; +0.1Vdd Maximum to Disable Output (High Impedance); No Connect to Enable Output
RMS Phase Jitter	1pSec Maximum (Fj = 12kHz to 20MHz)
Start Up Time	10mSec Maximum
Storage Temperature Range	-40°C to +125°C

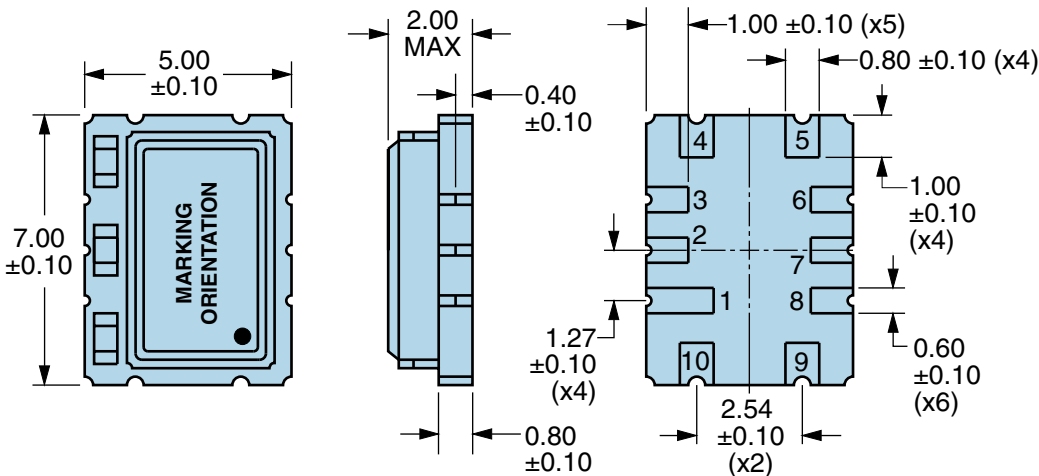
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

Fine Leak Test	MIL-STD-883, Method 1014 Condition A
Gross Leak Test	MIL-STD-883, Method 1014 Condition C
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

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MECHANICAL DIMENSIONS (all dimensions in millimeters)

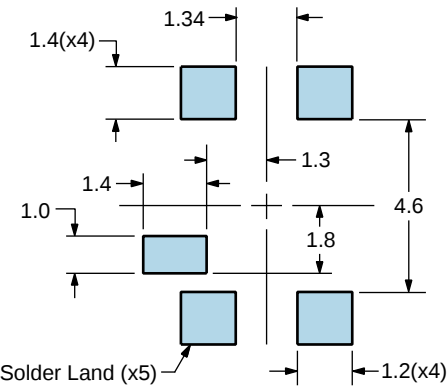


PIN	CONNECTION
1	Do Not Connect
2	Do Not Connect
3	Do Not Connect
4	Ground
5	Output
6	Do Not Connect
7	Do Not Connect
8	Tri-State
9	Supply Voltage
10	Voltage Control

LINE	MARKING
1	EXX.XXX <i>E=Ecliptek Designator XX.XXX=Nominal Frequency in MHz</i>
2	XXYZZ <i>XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year</i>

Suggested Solder Pad Layout

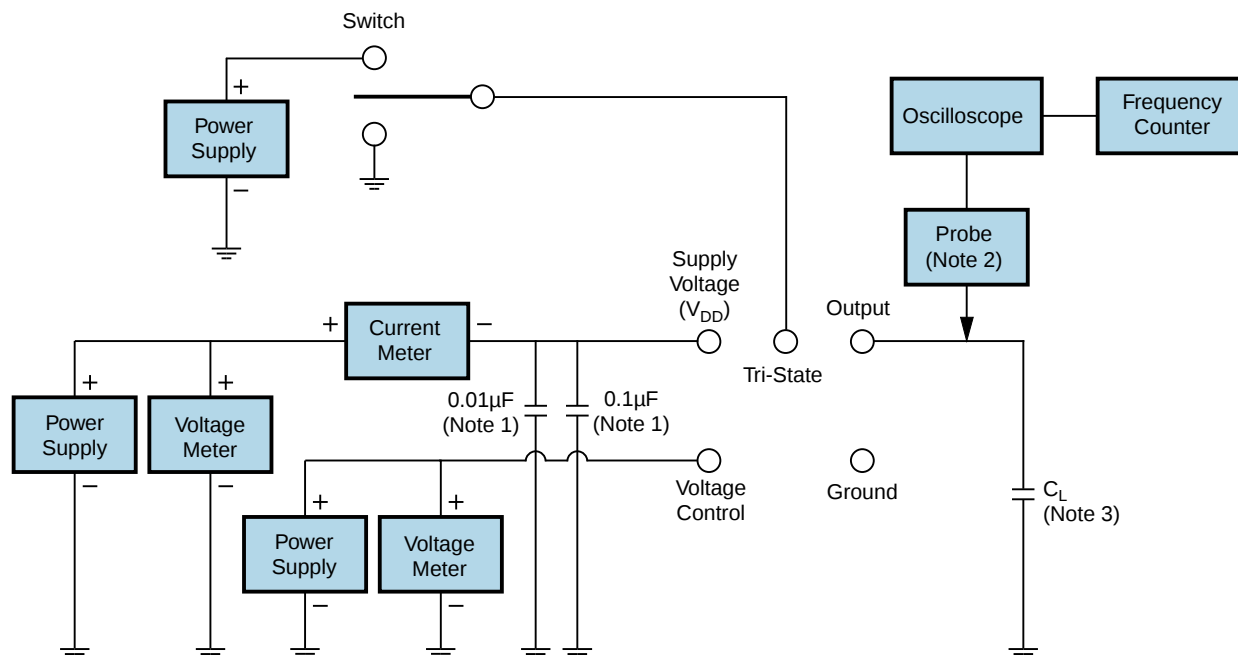
All Dimensions in Millimeters



All Tolerances are ±0.1

OUTPUT WAVEFORM & TIMING DIAGRAM



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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.

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Tape & Reel Dimensions

Quantity Per Reel: 1,000 units

All Dimensions in Millimeters

Compliant to EIA-481



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Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 230°C

TS MAX to TL (Ramp-up Rate)	5°C/Second Maximum
Preheat	
- Temperature Minimum (TS MIN)	N/A
- Temperature Typical (TS TYP)	150°C
- Temperature Maximum (TS MAX)	N/A
- Time (ts MIN)	30 - 60 Seconds
Ramp-up Rate (TL to TP)	5°C/Second Maximum
Time Maintained Above:	
- Temperature (TL)	150°C
- Time (tL)	200 Seconds Maximum
Peak Temperature (TP)	230°C Maximum
Target Peak Temperature (TP Target)	230°C Maximum 2 Times
Time within 5°C of actual peak (tP)	10 Seconds Maximum 2 Times
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 listed are applied to body of device.)

High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum. (Temperatures listed are applied to body of device.)