

ES51C1E15V-20.000M TR



ITEM DESCRIPTION

Temperature Compensated Quartz Crystal Clock Oscillators TCXO (TCVCXO) Clipped Sinewave 5.0Vdc 10 Pad 5.0mm x 7.0mm Ceramic Surface Mount (SMD) 20.000MHz ± 1.5 ppm Maximum -40°C to +85°C

ELECTRICAL SPECIFICATIONS

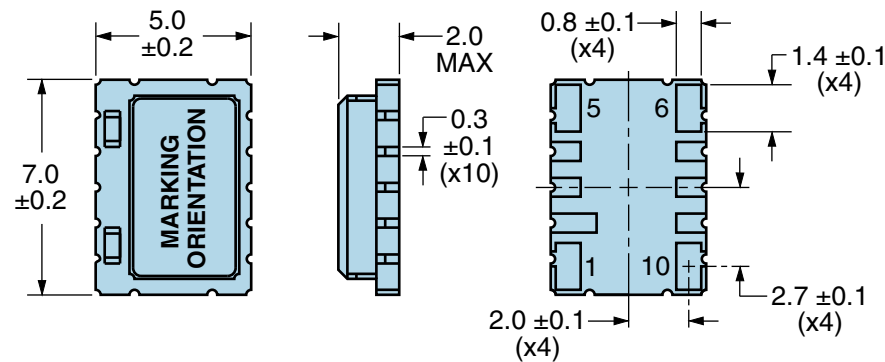
Nominal Frequency	20.000MHz
Frequency Stability	± 1.5 ppm Maximum
Frequency Stability vs. Frequency Tolerance	± 1.0 ppm Maximum (Measured at 25°C $\pm 2^\circ\text{C}$, Vdd=5.0Vdc, Vc=1.5Vdc)
Frequency Stability vs. Input Voltage	± 0.2 ppm Maximum (Vdd $\pm 5\%$)
Frequency Stability vs. Load	± 0.2 ppm Maximum ($\pm 1\text{k}\Omega$ // $\pm 1\text{pF}$)
Frequency Stability vs. Aging	± 1 ppm/Year Maximum (at 25°C)
Operating Temperature Range	-40°C to +85°C
Supply Voltage	5.0Vdc $\pm 5\%$
Input Current	2.0mA Maximum
Output Voltage	0.8Vp-p Clipped Sinewave Minimum
Load Drive Capability	10kOhms//10pF
Output Logic Type	Clipped Sinewave
Control Voltage	1.5Vdc ± 1.0 Vdc
Frequency Deviation	± 8 ppm Minimum
Linearity	10% Maximum
Transfer Function	Positive Transfer Characteristic
Modulation Bandwidth	3kHz Minimum (Measured at -3dB with a Control Voltage of 1.5Vdc)
Input Impedance	100kOhms Minimum
Phase Noise	-80dBc/Hz at 10Hz offset, -115dBc/Hz at 100Hz offset, -135dBc/Hz at 1kHz offset, -145dBc/Hz at 10kHz offset, -145dBc/Hz at 100kHz offset (Typical Values, at 12.800MHz)
Start Up Time	5mSec Maximum
Storage Temperature Range	-55°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)

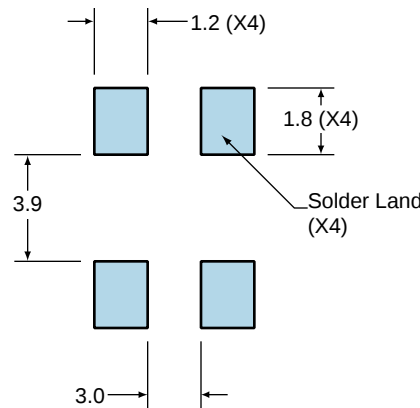


PIN	CONNECTION
1	Voltage Control
2	Do Not Connect
3	Do Not Connect
4	Do Not Connect
5	Case/Ground
6	Output
7	Do Not Connect
8	Do Not Connect
9	Do Not Connect
10	Supply Voltage

LINE	MARKING
1	E20.000 E=Ecliptek
2	XXYYZ XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year

Suggested Solder Pad Layout

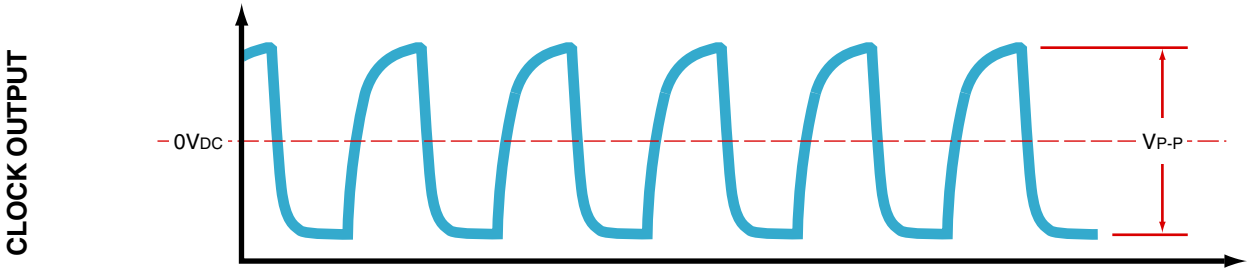
All Dimensions in Millimeters



All Tolerances are ±0.1

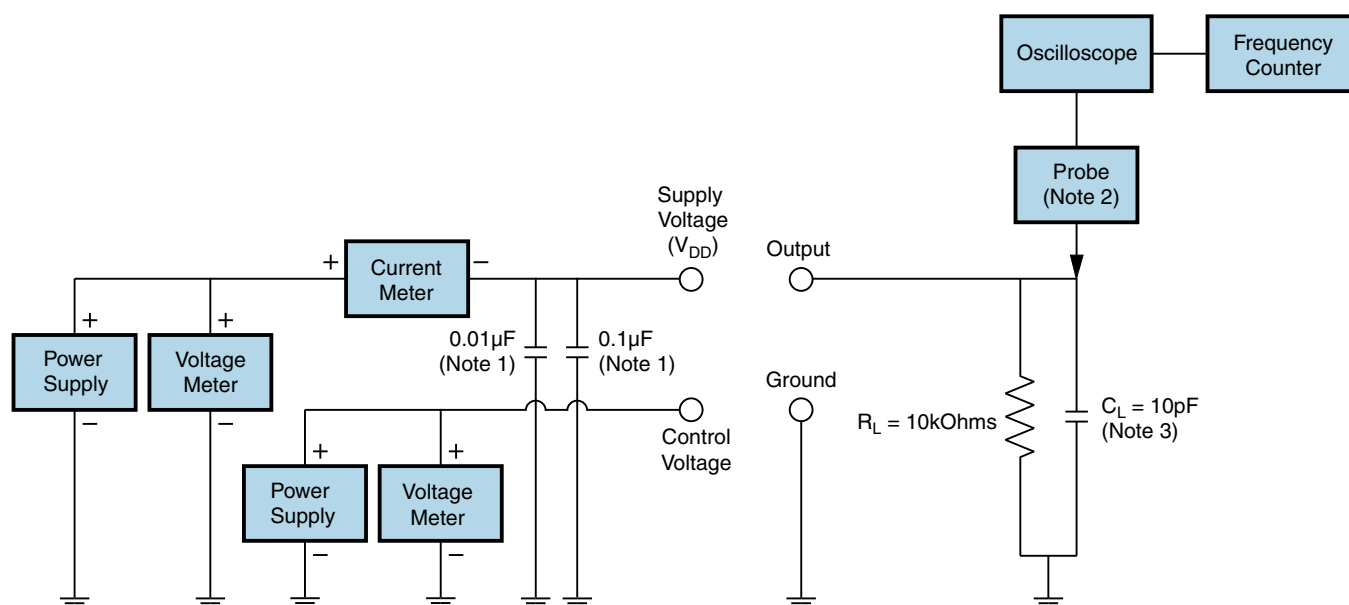
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OUTPUT WAVEFORM



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Test Circuit for Control Voltage Option



Note 1: An external 0.01µF 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 input capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), 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

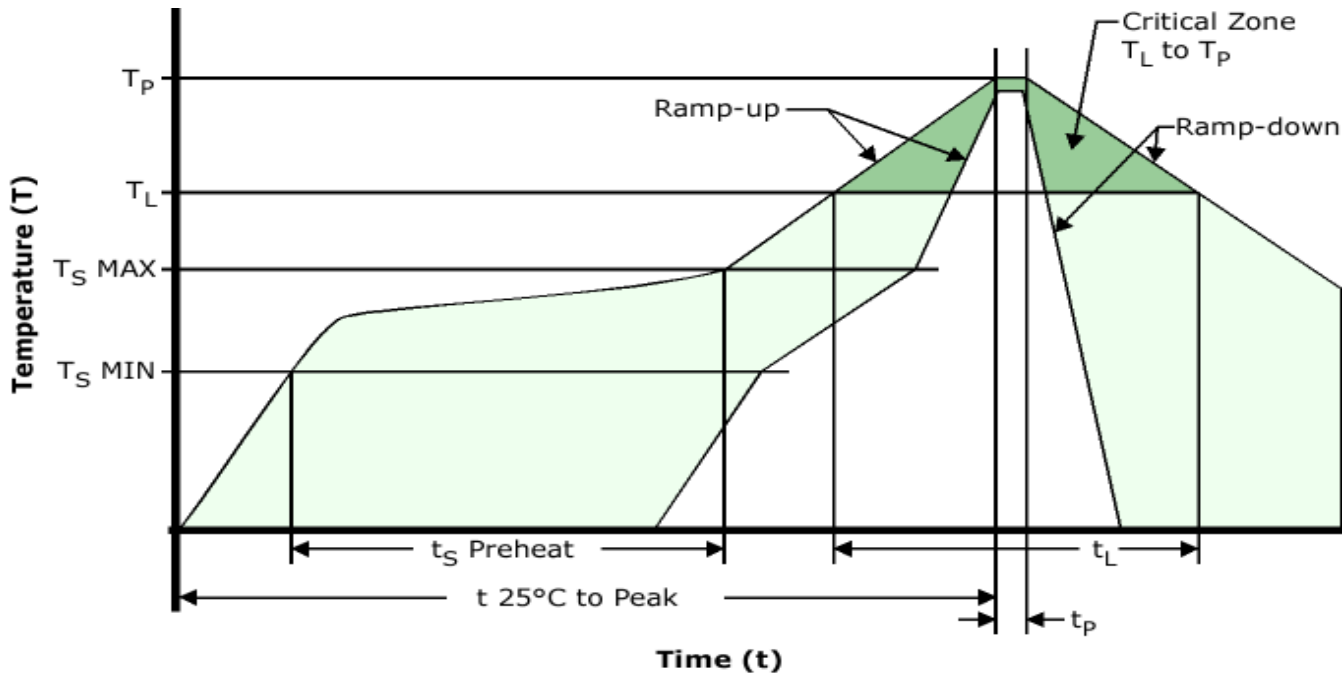
All Dimensions in Millimeters

Compliant to EIA-481



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Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 220°C

Ts MAX to Tl (Ramp-up Rate)	5°C/Second Maximum
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Preheat

- Temperature Minimum (Ts MIN)	N/A
- Temperature Typical (Ts TYP)	150°C
- Temperature Maximum (Ts MAX)	N/A
- Time (ts MIN)	60 - 120 Seconds

Ramp-up Rate (Tl to Tp)	5°C/Second Maximum
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Time Maintained Above:

- Temperature (Tl)	150°C
- Time (tL)	200 Seconds Maximum

Peak Temperature (Tp)	220°C Maximum
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Target Peak Temperature (Tp Target)	220°C Maximum 1 Time / 215°C Maximum 1 Time
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Time within 5°C of actual peak (tp)	15 Seconds Maximum 1 Time / 80 Seconds Maximum 1 Time
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Ramp-down Rate	5°C/Second Maximum
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Time 25°C to Peak Temperature (t)	N/A
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Moisture Sensitivity Level	Level 1
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Additional Notes	Temperatures listed are applied to body of device.
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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.)