

ES51C1E25N-13.000M



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) 13.000MHz ± 2.5 ppm Maximum -40°C to +85°C

ELECTRICAL SPECIFICATIONS

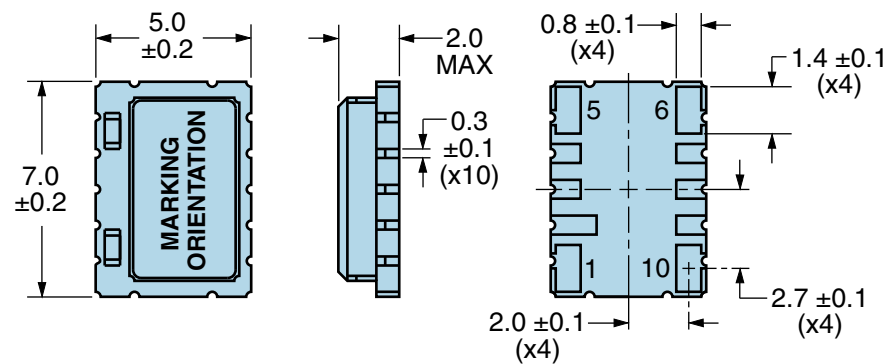
Nominal Frequency	13.000MHz
Frequency Stability	± 2.5 ppm Maximum
Frequency Stability vs. Frequency Tolerance	± 1.0 ppm Maximum (Measured at 25°C $\pm 2^\circ\text{C}$, Vdd=5.0Vdc, Vc=1.5Vdc)
Frequency Stability vs. Input Voltage	± 0.2 ppm Maximum (Vdd $\pm 5\%$)
Frequency Stability vs. Load	± 0.2 ppm 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	1.5mA Maximum
Output Voltage	0.8Vp-p Clipped Sinewave Minimum
Load Drive Capability	10kOhms//10pF
Output Logic Type	Clipped Sinewave
Control Voltage	None (No Connect on Pin 1)
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)

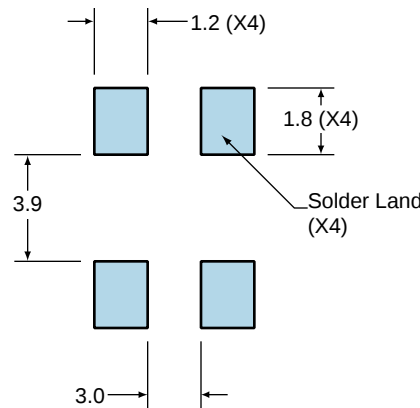


PIN	CONNECTION
1	No Connect
2	Do Not Connect
3	Do Not Connect
4	Do Not Connect
5	Case/Ground
6	Output
7	Do Not Connect
8	Do Not Connect
9	Do Not Connect
10	Supply Voltage

LINE	MARKING
1	E13.000 E=Ecliptek
2	XXYYZ XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year

Suggested Solder Pad Layout

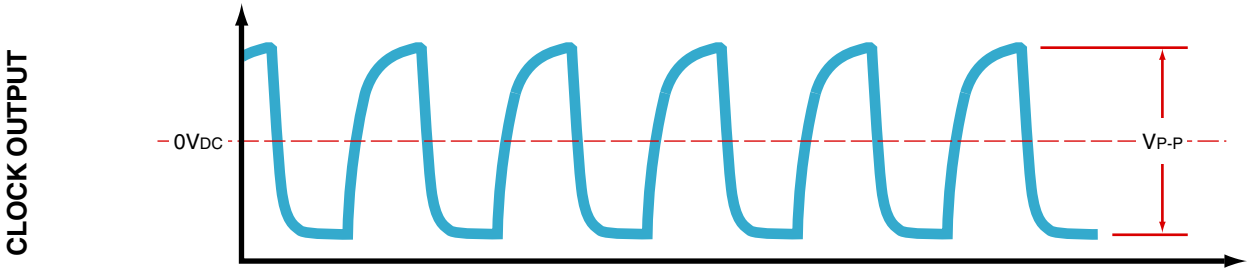
All Dimensions in Millimeters



All Tolerances are ±0.1

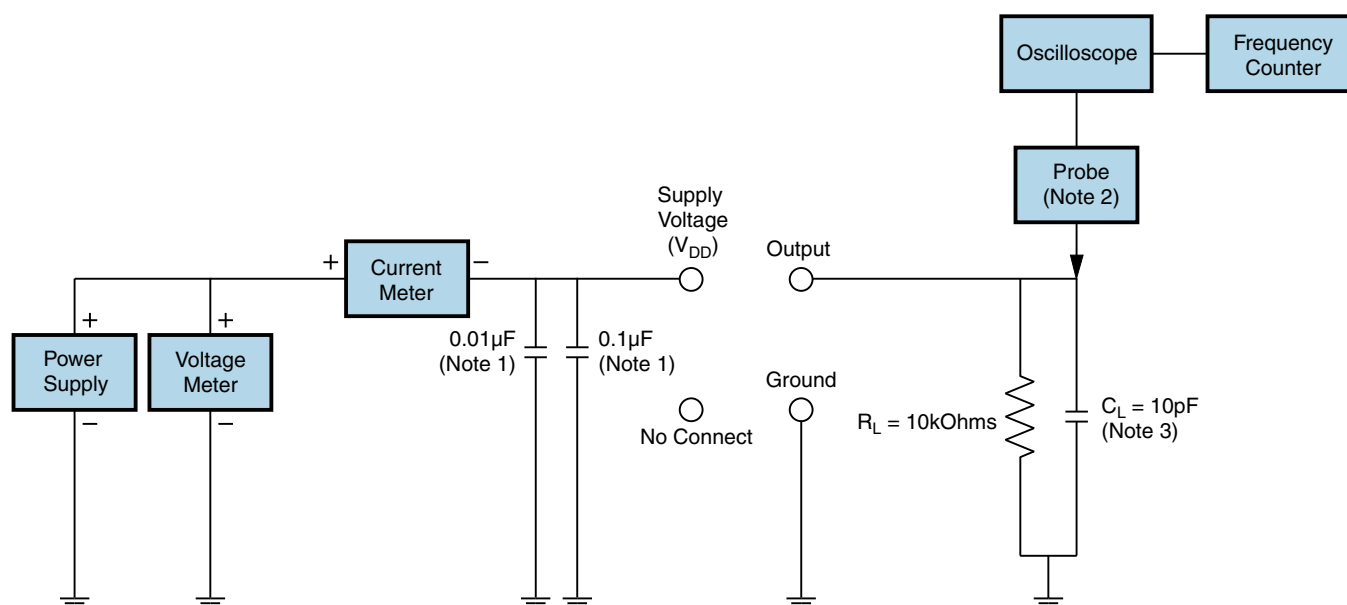
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OUTPUT WAVEFORM



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Test Circuit for No Connect Option



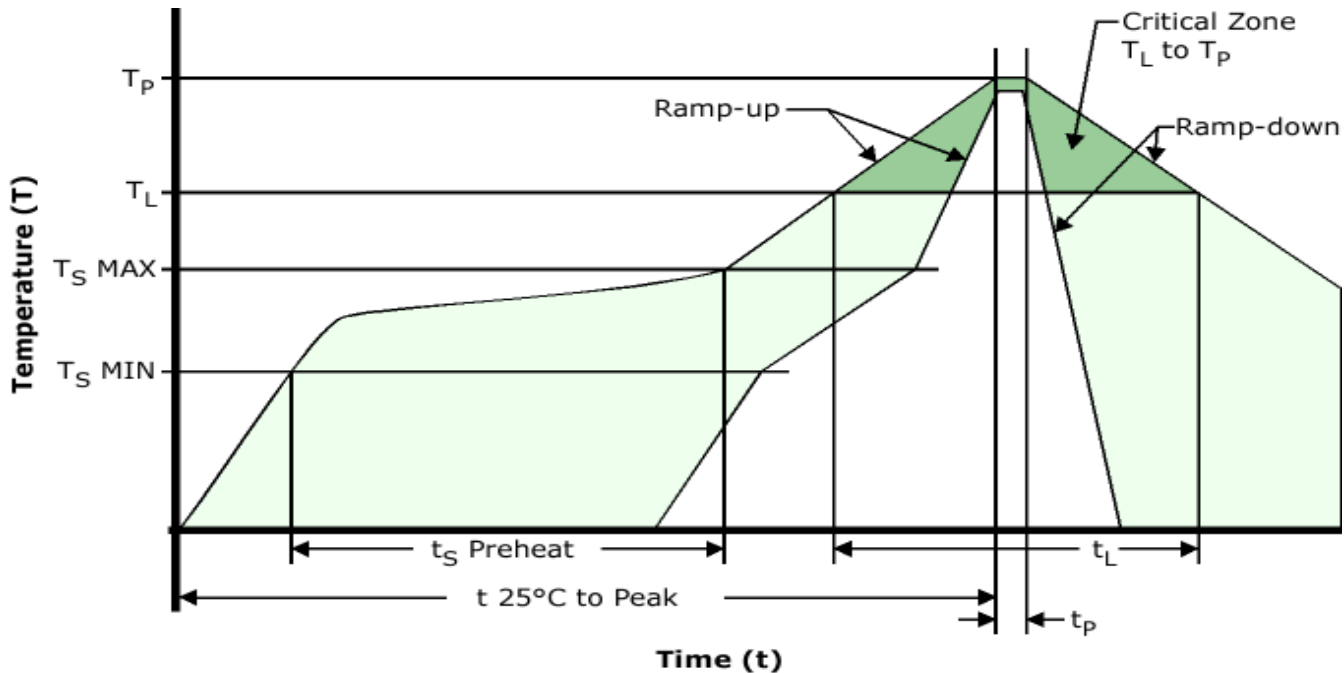
Note 1: An external $0.01\mu\text{F}$ bypass capacitor in parallel with a $0.1\mu\text{F}$ high frequency ceramic bypass capacitor close (less than 2mm) to the package ground and supply voltage pin is required.

Note 2: A low input capacitance ($<12\text{pF}$), 10X attenuation factor, high impedance ($>10\text{Mohms}$), and high bandwidth ($>300\text{MHz}$) passive probe is recommended.

Note 3: Capacitance value C_L includes sum of all probe and fixture capacitance.

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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

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

Time Maintained Above:

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

Peak Temperature (Tp) 220°C Maximum

Target Peak Temperature (Tp Target) 220°C Maximum 1 Time / 215°C Maximum 1 Time

Time within 5°C of actual peak (tp) 15 Seconds Maximum 1 Time / 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 listed 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.)