

ES52C1C25V-19.440M TR
[Click part number to visit Part Number Details page](#)
REGULATORY COMPLIANCE (Data Sheet downloaded on Oct 29, 2016)
[Click badges to download compliance docs](#)

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**ITEM DESCRIPTION**

Temperature Compensated Quartz Crystal Clock Oscillators TCXO TC(VC)XO Clipped Sinewave 3.3Vdc 10 Pad 5.0mm x 7.0mm Ceramic Surface Mount (SMD) 19.440MHz ± 2.5 ppm Maximum -20°C to +70°C

ELECTRICAL SPECIFICATIONS

Nominal Frequency	19.440MHz
Frequency Tolerance	± 1.0 ppm Maximum (at 25°C $\pm 2^\circ\text{C}$, Vdd=3.3Vdc, Vc=1.5Vdc)
Frequency Stability	± 2.5 ppm Maximum (Inclusive of Operating Temperature Range, at Vdd = 3.3Vdc)
Frequency Stability vs. Supply 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	-20°C to +70°C
Supply Voltage	3.3Vdc $\pm 5\%$
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
Control Voltage Range	0.0Vdc to Vdd
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, -148dBc/Hz at 10kHz offset, -148dBc/Hz at 100kHz offset (All Values are Typical)
Start Up Time	5mSec Maximum
Storage Temperature Range	-55°C to +125°C

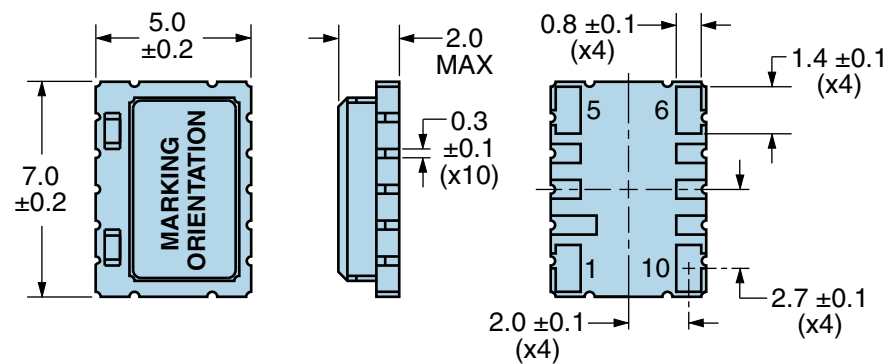
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

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)

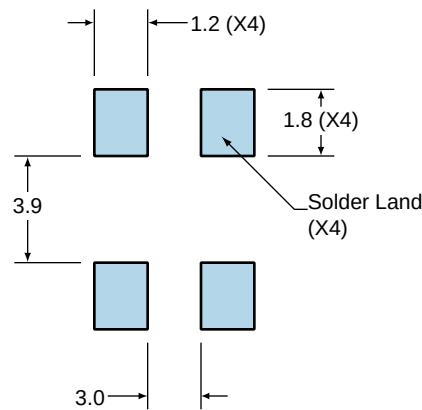


PIN	CONNECTION
1	Control Voltage
2	Do Not Connect
3	Do Not Connect
4	Do Not Connect
5	Case/Ground
6	Output
7	Do Not Connect
8	Do Not Connect
9	Do Not Connect
10	Supply Voltage

LINE	MARKING
1	E19.440 E=Ecliptek
2	XXXXX XXXXX=Ecliptek Manufacturing Identifier

Suggested Solder Pad Layout

All Dimensions in Millimeters

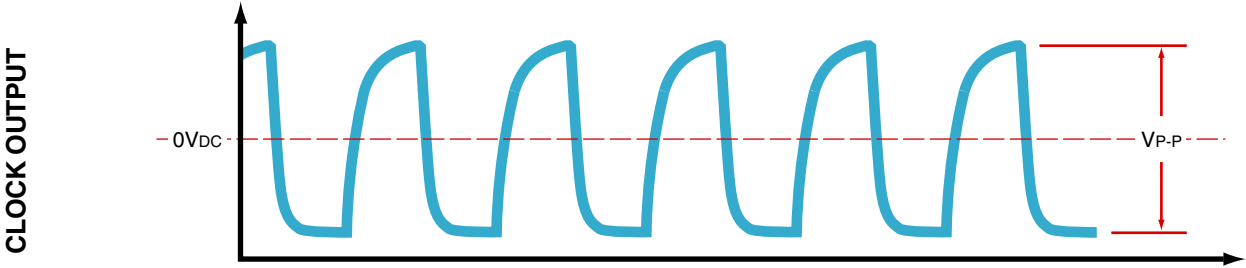


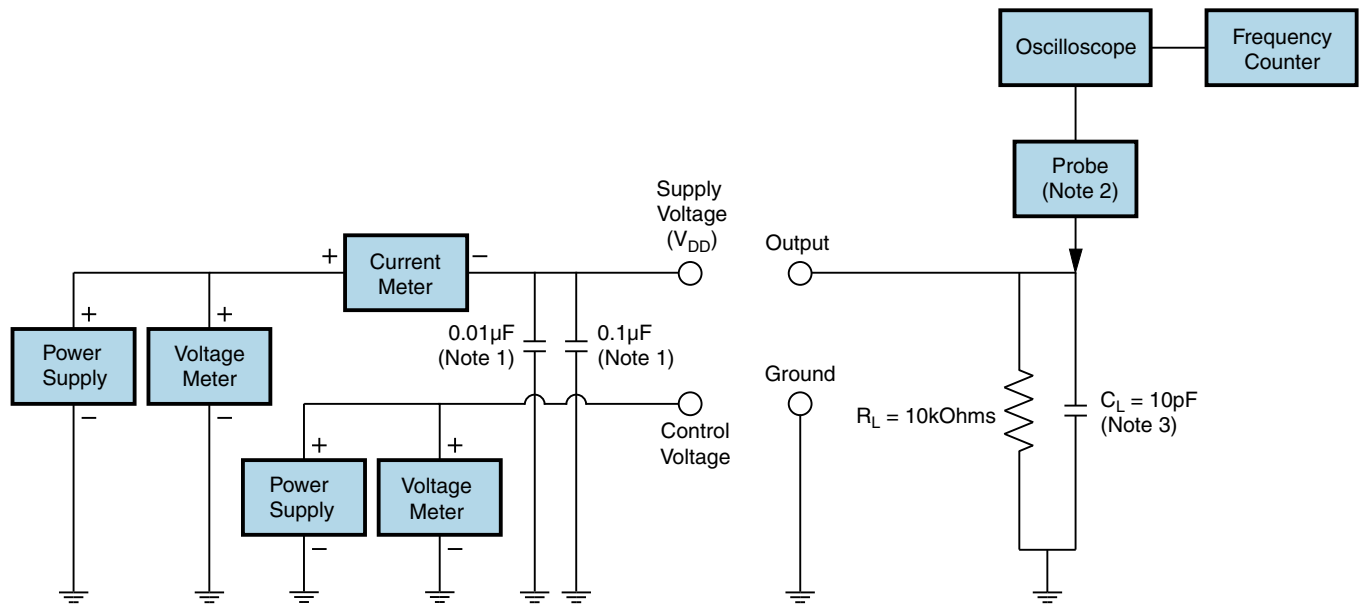
All Tolerances are ±0.1

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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.

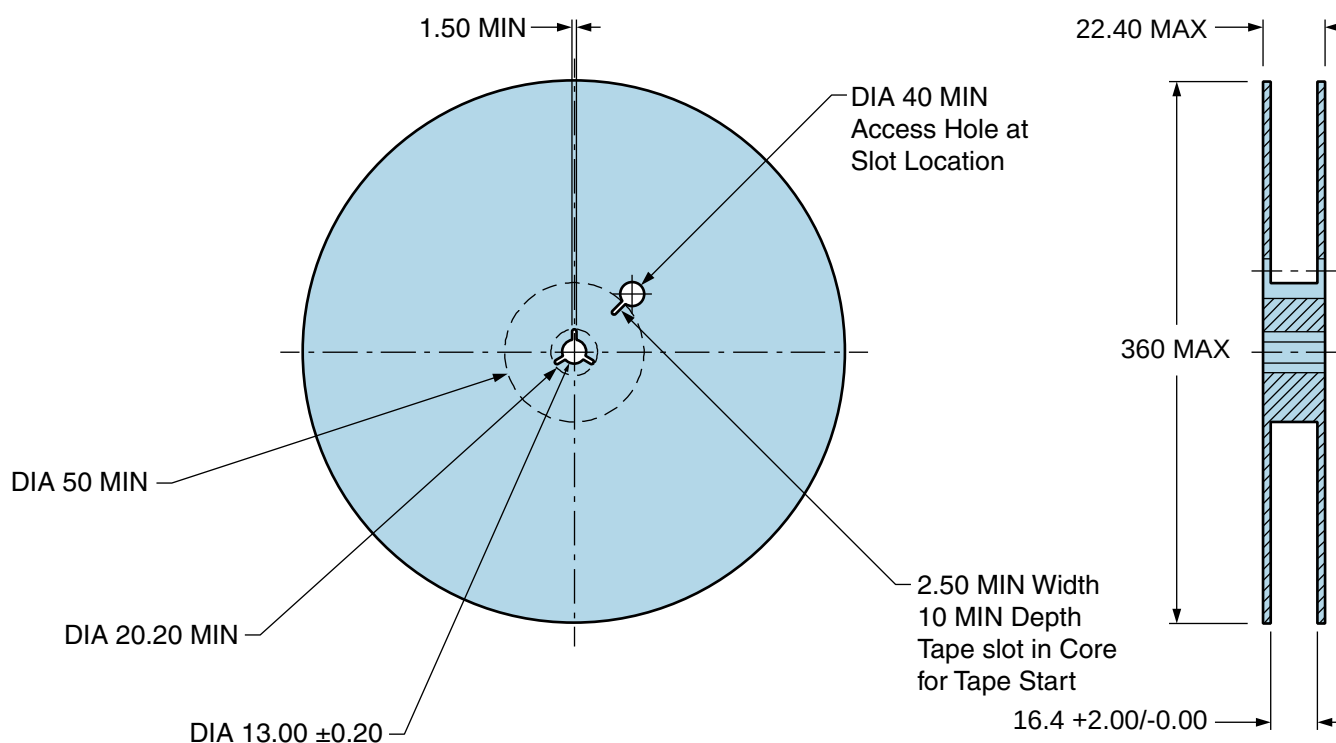
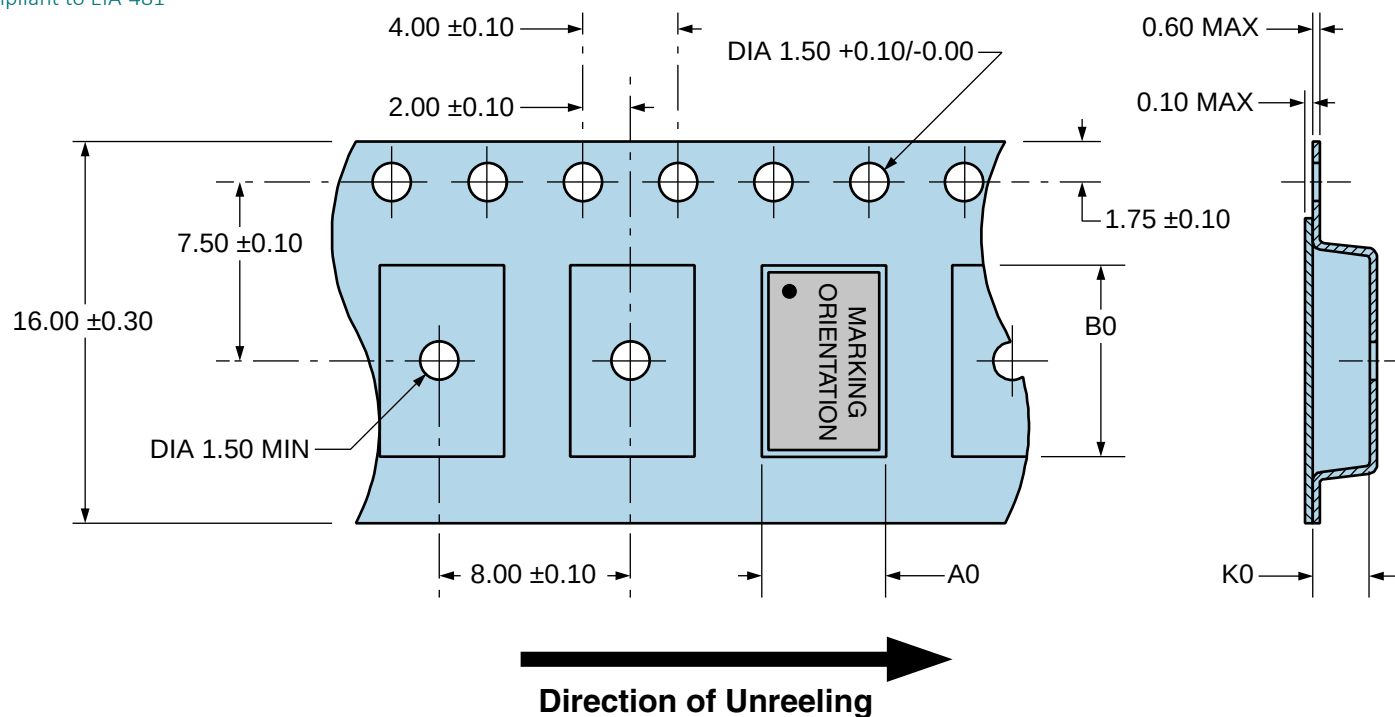
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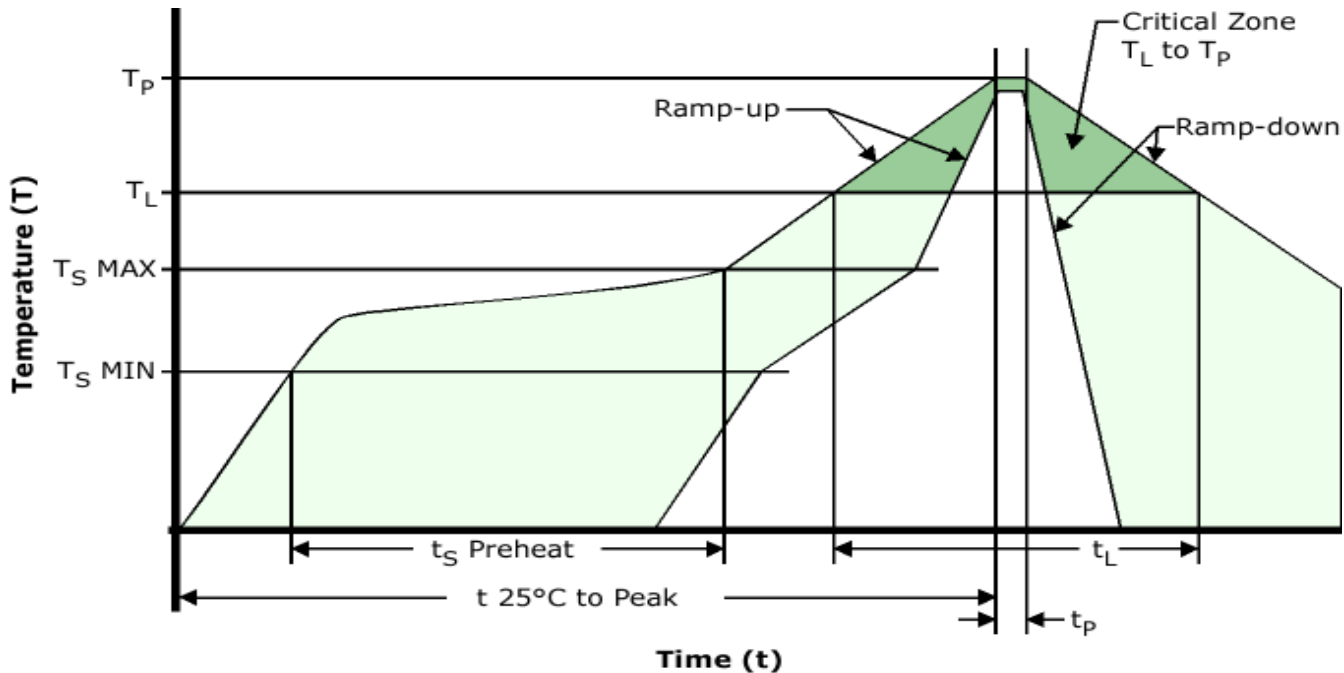
Tape & Reel Dimensions

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**

T _S MAX to T _L (Ramp-up Rate)	5°C/Second Maximum
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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
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Time Maintained Above:

- Temperature (T _L)	150°C
- Time (t _L)	200 Seconds Maximum

Peak Temperature (T _P)	220°C Maximum
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Target Peak Temperature (T _P Target)	220°C Maximum 1 Time / 215°C Maximum 1 Time
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Time within 5°C of actual peak (t _p)	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.)