

ES52K1F05V-20.000M TR

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REGULATORY COMPLIANCE (Data Sheet downloaded on Nov 12, 2017)


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ITEM DESCRIPTION

Temperature Compensated Quartz Crystal Clock Oscillators TCXO (TCVCXO) Clipped Sinewave 3.0Vdc 4 Pad 2.5mm x 3.2mm Ceramic Surface Mount (SMD) 20.000MHz ± 0.5 ppm Maximum -30°C to +85°C

ELECTRICAL SPECIFICATIONS

Nominal Frequency	20.000MHz
Frequency Stability	± 0.5 ppm Maximum (Inclusive of Operating Temperature Range, at Vdd=3.0Vdc)
Frequency Stability vs. Frequency Tolerance	± 0.5 ppm Maximum (at 25°C ± 2 °C, at Vdd=3.0Vdc and Vc=1.5Vdc)
Frequency Stability vs. Input Voltage	± 0.2 ppm Maximum ($\pm 5\%$)
Frequency Stability vs. Load	± 0.2 ppm Maximum (± 1 kOhm// ± 1 pF)
Frequency Stability vs. Reflow	± 1.0 ppm Maximum (at 25°C, 1 hour after reflow, 2 times)
Frequency Stability vs. Aging	± 1 ppm/year Maximum (at 25°C)
Operating Temperature Range	-30°C to +85°C
Supply Voltage	3.0Vdc $\pm 5\%$
Input Current	2.0mA Maximum
Output Voltage	0.8Vp-p Clipped Sinewave Minimum (External DC-Cut capacitor required, 1000pF recommended)
Load Drive Capability	10kOhms//10pF
Output Logic Type	Clipped Sinewave
Control Voltage	1.5Vdc ± 1.0 Vdc
Frequency Deviation	± 8 ppm Minimum
Transfer Function	Positive Transfer Characteristic
Phase Noise	All Values are Typical -80dBc/Hz at 10Hz Offset -115dBc/Hz at 100Hz Offset -135dBc/Hz at 1kHz Offset -148dBc/Hz at 10kHz Offset
Start Up Time	5mSec Maximum
Storage Temperature Range	-55°C to +125°C

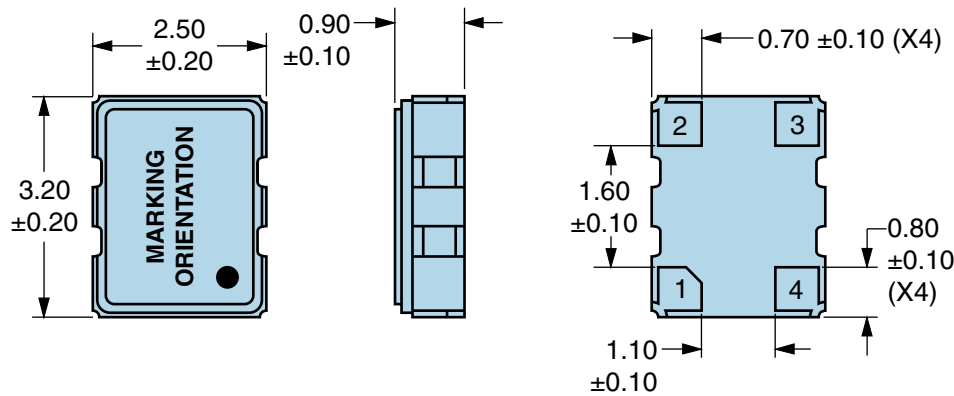
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

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)

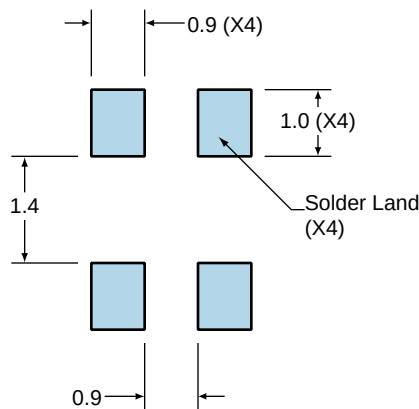


PIN	CONNECTION
1	Voltage Control
2	Case/Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	EXX.XXX <i>E=Ecliptek XX.XXX=Nominal Frequency in MHz (5 Digits + Decimal)</i>
2	XXXXX <i>XXXXX=Ecliptek Manufacturing Identifier</i>

Suggested Solder Pad Layout

All Dimensions in Millimeters

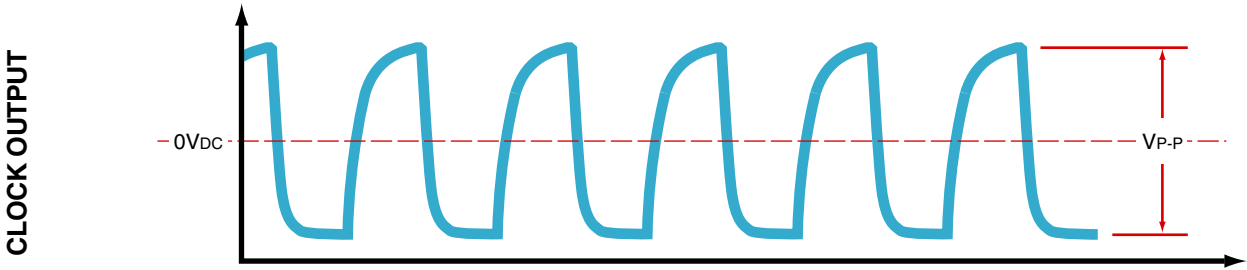


All Tolerances are ±0.1

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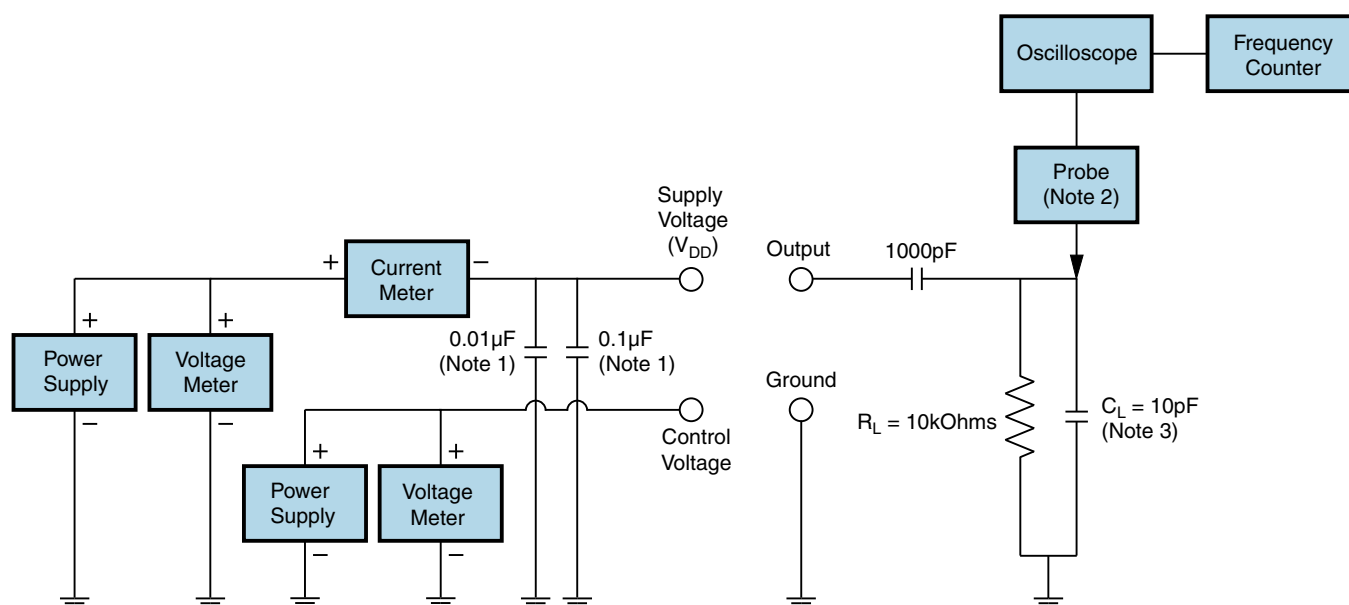
OUTPUT WAVEFORM



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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.

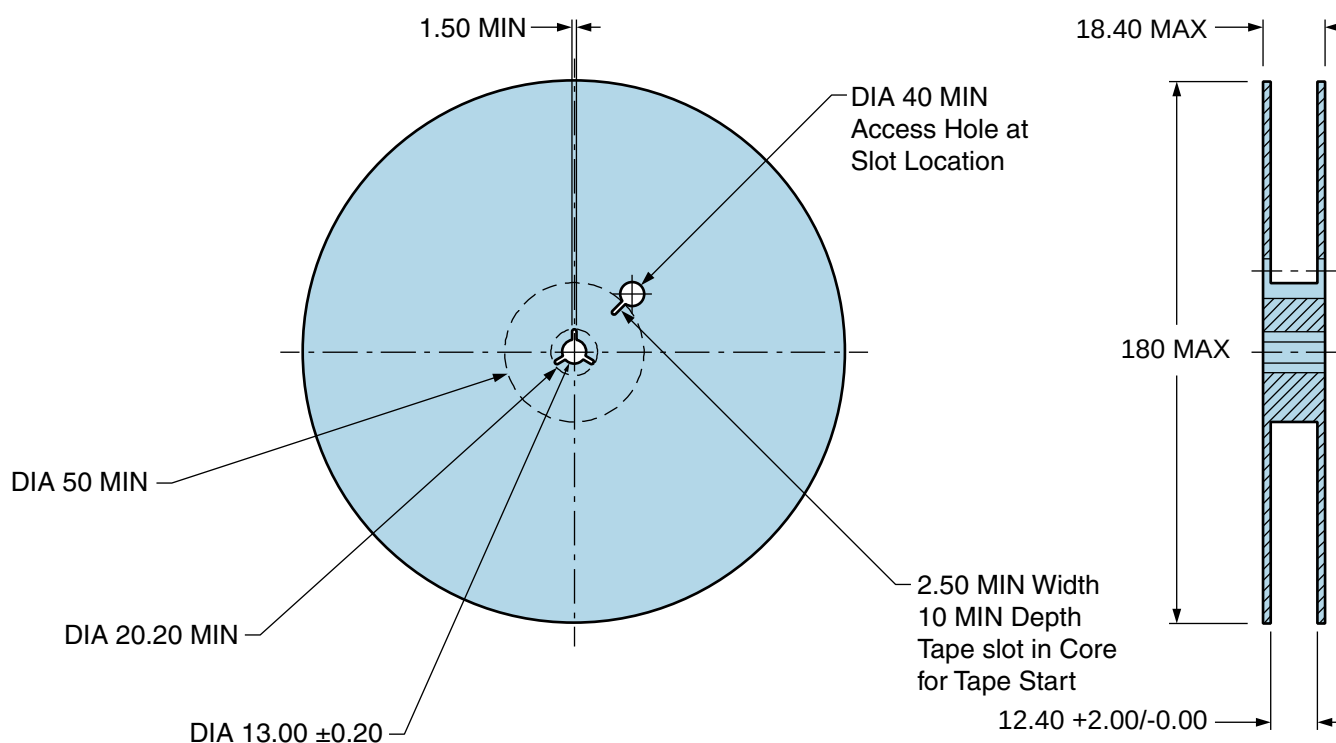
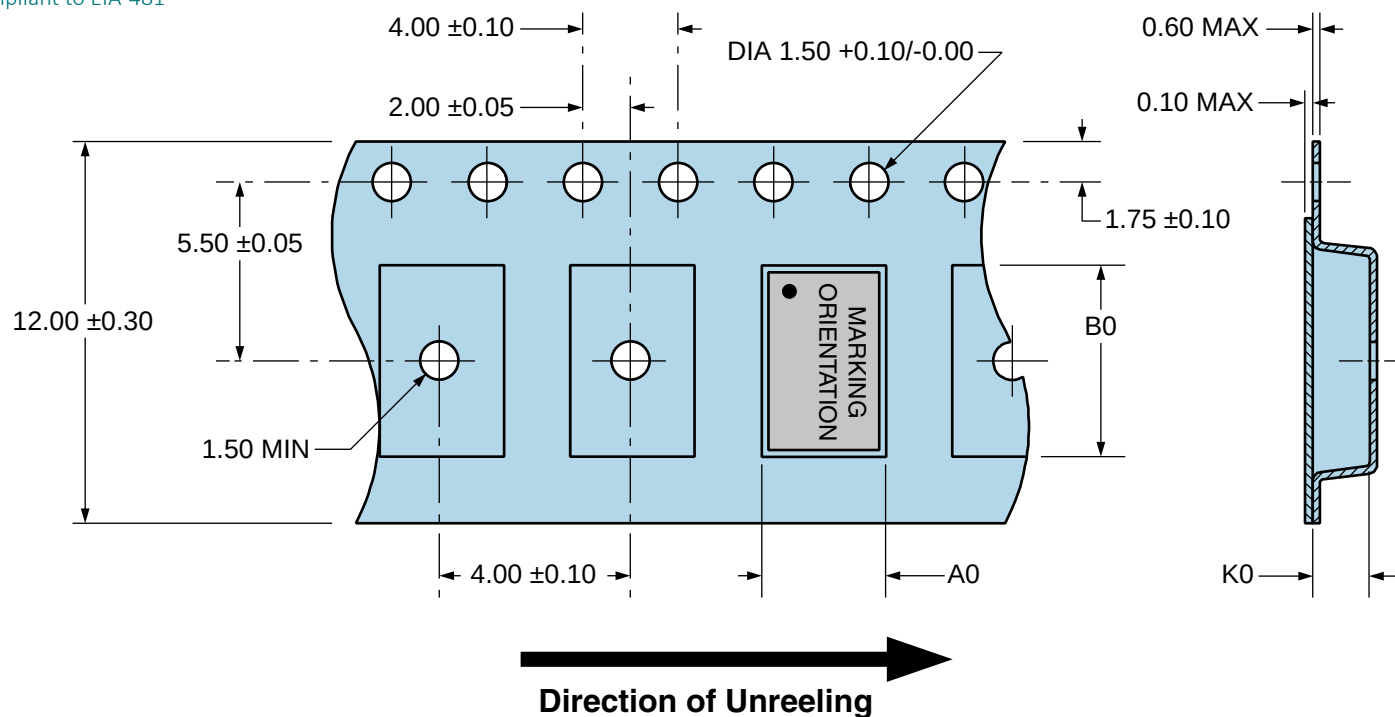
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Tape & Reel Dimensions

Quantity Per Reel: 1,000 units

All Dimensions in Millimeters

Compliant to EIA-481



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Recommended Solder Reflow Methods



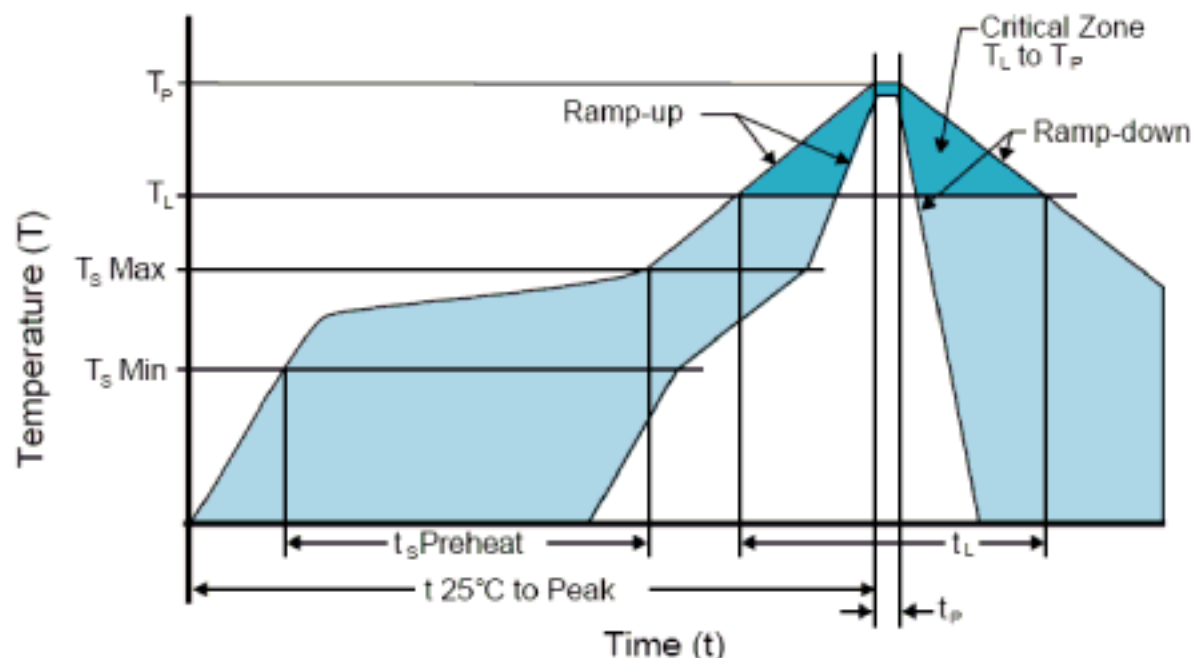
High Temperature Infrared/Convection

Ts MAX to TL (Ramp-up Rate)	3°C/Second Maximum
Preheat	
- Temperature Minimum (Ts MIN)	150°C
- Temperature Typical (Ts TYP)	175°C
- Temperature Maximum (Ts MAX)	200°C
- Time (ts MIN)	60 - 180 Seconds
Ramp-up Rate (TL to TP)	3°C/Second Maximum
Time Maintained Above:	
- Temperature (TL)	217°C
- Time (tL)	60 - 150 Seconds
Peak Temperature (TP)	260°C Maximum for 10 Seconds Maximum
Target Peak Temperature (TP 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

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Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 240°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)	240°C Maximum
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Target Peak Temperature (TP Target)	240°C Maximum 2 Times / 230°C Maximum 1 Time
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Time within 5°C of actual peak (tP)	10 Seconds Maximum 2 Times / 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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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.