

ES52C1B10V-20.000M

[Click part number to visit Part Number Details page](#)

REGULATORY COMPLIANCE (Data Sheet downloaded on Apr 29, 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 TC(VC)XO Clipped Sinewave 3.3Vdc 10 Pad 5.0mm x 7.0mm Ceramic Surface Mount (SMD) 20.000MHz ± 1.0 ppm Maximum 0°C to +70°C

ELECTRICAL SPECIFICATIONS

Nominal Frequency	20.000MHz
Frequency Tolerance	± 1.0 ppm Maximum (at 25°C $\pm 2^\circ\text{C}$, Vdd=3.3Vdc, Vc=1.5Vdc)
Frequency Stability	± 1.0 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	0°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

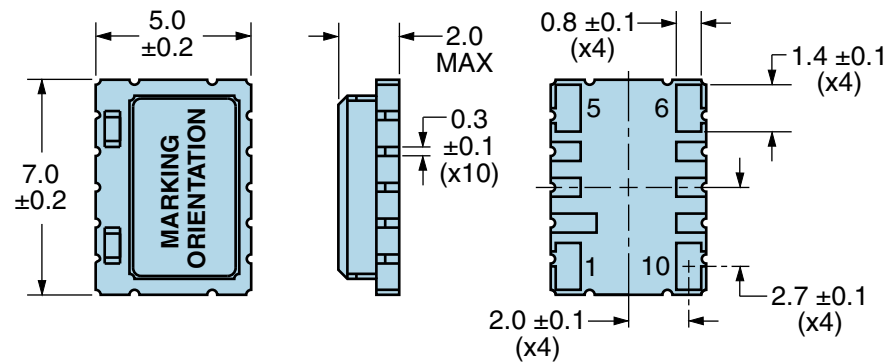
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

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

ES52C1B10V-20.000M

[Click part number to visit Part Number Details page](#)

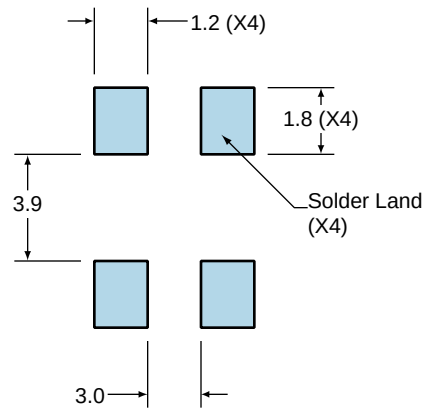
MECHANICAL DIMENSIONS (all dimensions in millimeters)



LINE	MARKING
1	E20.000 E=Ecliptek
2	XXXXXX XXXXXX=Ecliptek Manufacturing Identifier

Suggested Solder Pad Layout

All Dimensions in Millimeters

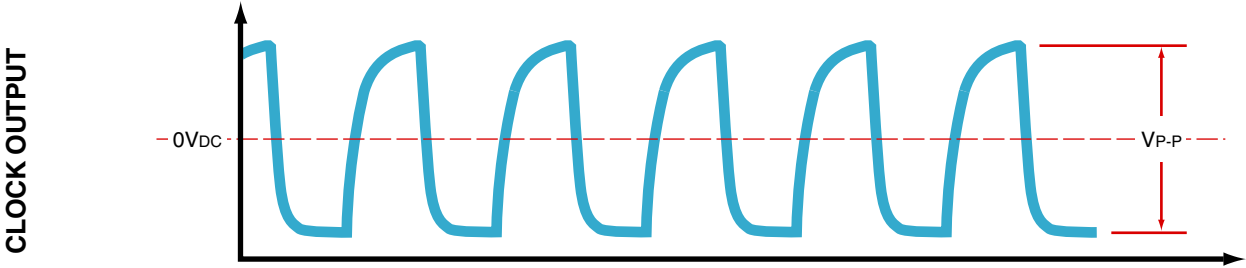


All Tolerances are ±0.1

ES52C1B10V-20.000M

[Click part number to visit Part Number Details page](#)

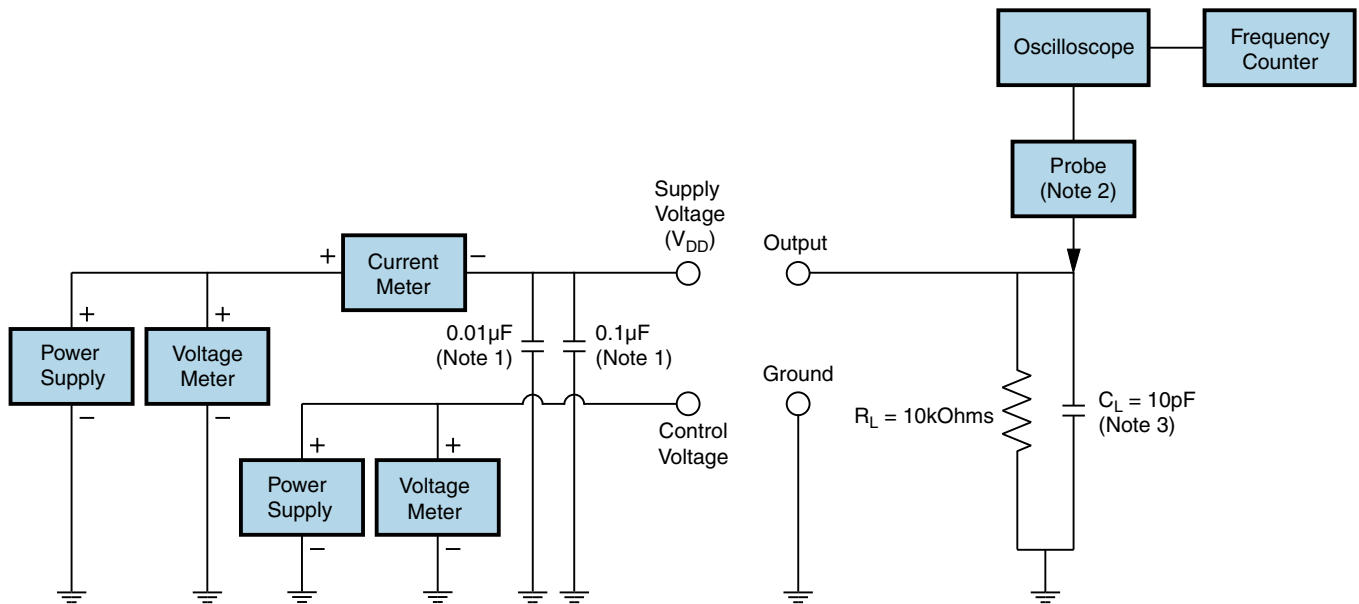
OUTPUT WAVEFORM



ES52C1B10V-20.000M

[Click part number to visit Part Number Details page](#)

Test Circuit for Control Voltage 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.

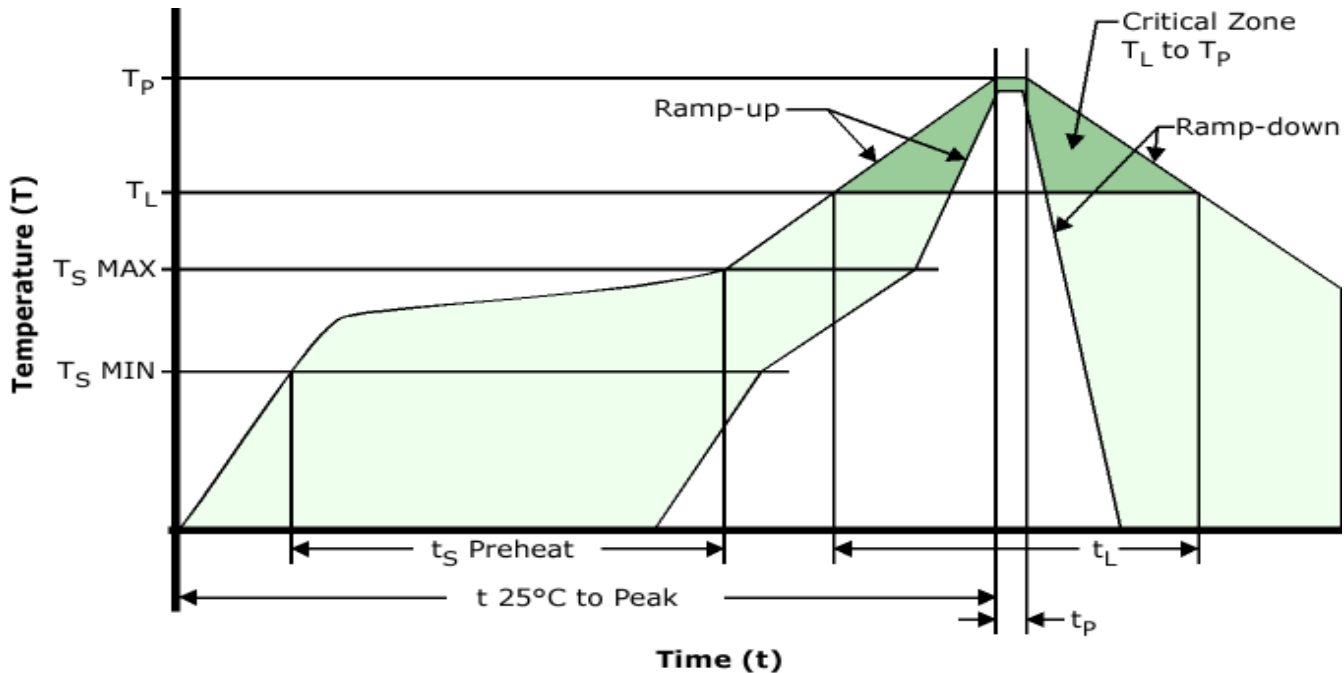
Note 2: A low input capacitance ($<12\text{pF}$), 10X attenuation factor, high impedance ($>10\text{M}\Omega$), and high bandwidth ($>300\text{MHz}$) passive probe is recommended.

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

ES52C1B10V-20.000M

[Click part number to visit Part Number Details page](#)

Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 220°C

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

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
--	--------------------

Time Maintained Above:

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

Peak Temperature (T _P)	220°C Maximum
------------------------------------	---------------

Target Peak Temperature (T _P Target)	220°C Maximum 1 Time / 215°C Maximum 1 Time
---	---

Time within 5°C of actual peak (t _p)	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.)