

EQUA13C1E5-13.000M

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

REGULATORY COMPLIANCE (Data Sheet downloaded on Apr 5, 2020)


[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 Voltage Controlled Quartz Crystal Clock Oscillators TCVCXO LVCMOS (CMOS) 3.3Vdc 4 Pad 5.0mm x 7.0mm Ceramic Surface Mount (SMD) 13.000MHz 0°C to +50°C

ELECTRICAL SPECIFICATIONS

Nominal Frequency	13.000MHz
Frequency Stability	±3.0ppm Maximum (Inclusive of Operating Temperature Range, at Vdd=3.3Vdc, at Vc=1.5Vdc)
Frequency Stability vs. Frequency Tolerance	±2.0ppm Maximum (at 25°C ±2°C, at Vdd=3.3Vdc, at Vc=1.5Vdc)
Frequency Stability vs. Input Voltage	±0.2ppm Maximum (±5%)
Frequency Stability vs. Load	±0.2ppm Maximum (±2pF)
Frequency Stability vs. Reflow	±1.0ppm Maximum (at 25°C, 1 hour after reflow, 1 time)
Frequency Stability vs. Aging	±1ppm/Year Maximum (at 25°C)
Operating Temperature Range	0°C to +50°C
Supply Voltage	3.3Vdc ±5%
Input Current	10mA Maximum
Output Voltage Logic High (Voh)	90% of Vdd Minimum (IOH = -4mA)
Output Voltage Logic Low (Vol)	10% of Vdd Maximum (IOL = +4mA)
Rise/Fall Time	3nSec Maximum (Measured at 20% to 80% of waveform)
Duty Cycle	50 ±10(%) (Measured at 50% of waveform)
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Control Voltage	1.5Vdc ±1.0Vdc
Frequency Deviation	±5ppm Minimum
Linearity	10% Maximum
Transfer Function	Positive Transfer Characteristic
Modulation Bandwidth	10kHz Minimum (Measured at -3dB)
Input Impedance	1MOhms Minimum
Phase Noise	All Values are Typical -96dBc at 10Hz Offset -120dBc at 100Hz Offset -135dBc at 1kHz Offset -142dBc at 10kHz Offset -143dBc at 100kHz Offset -149dBc at 1MHz Offset -150dBc at 10MHz Offset -154dBc at 20MHz Offset
RMS Phase Jitter	1pSec Maximum (Fj=12kHz to 20MHz (Random))
Start Up Time	5mSec Maximum
Storage Temperature Range	-40°C to +85°C

EQUA13C1E5-13.000M

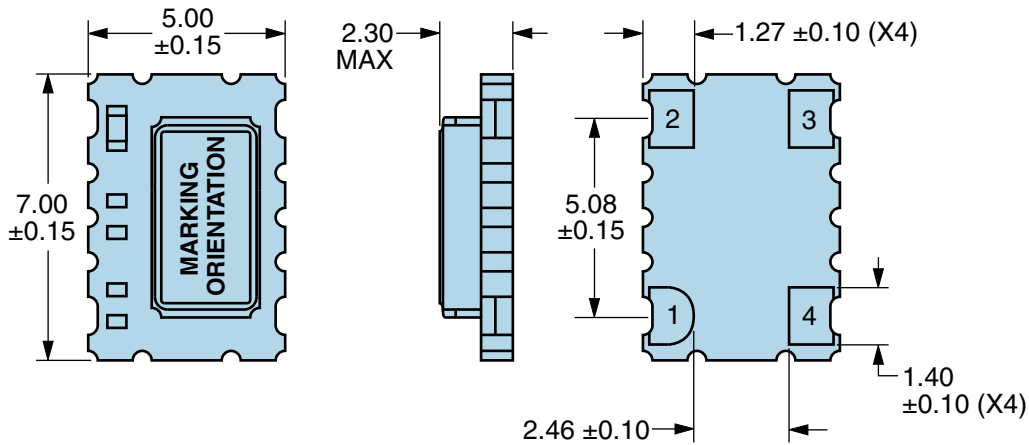
[Click part number to visit Part Number Details page](#)

ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

ESD Susceptibility	MIL-STD-883, Method 3015, Class 1, HBM: 1500V
Fine Leak Test	MIL-STD-883, Method 1014, Condition A
Flammability	UL94-V0
Gross Leak Test	MIL-STD-883, Method 1014, Condition C
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Moisture Resistance	MIL-STD-883, Method 1004
Moisture Sensitivity	J-STD-020, MSL 1
Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition K
Resistance to Solvents	MIL-STD-202, Method 215
Solderability	MIL-STD-883, Method 2003
Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A

EQUA13C1E5-13.000M [Click part number to visit Part Number Details page](#)

MECHANICAL DIMENSIONS (all dimensions in millimeters)

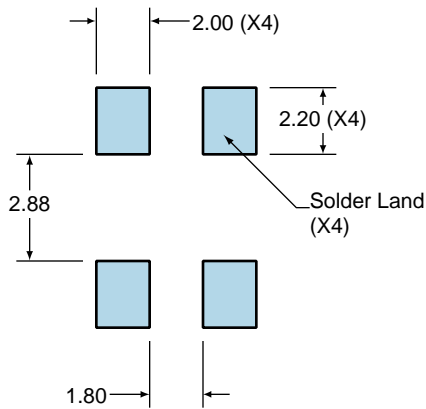


PIN	CONNECTION
1	Control Voltage
2	Case/Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	E13.000 E=Ecliptek Designator
2	XXXXX XXXXX=Ecliptek Manufacturing Identifier

Suggested Solder Pad Layout

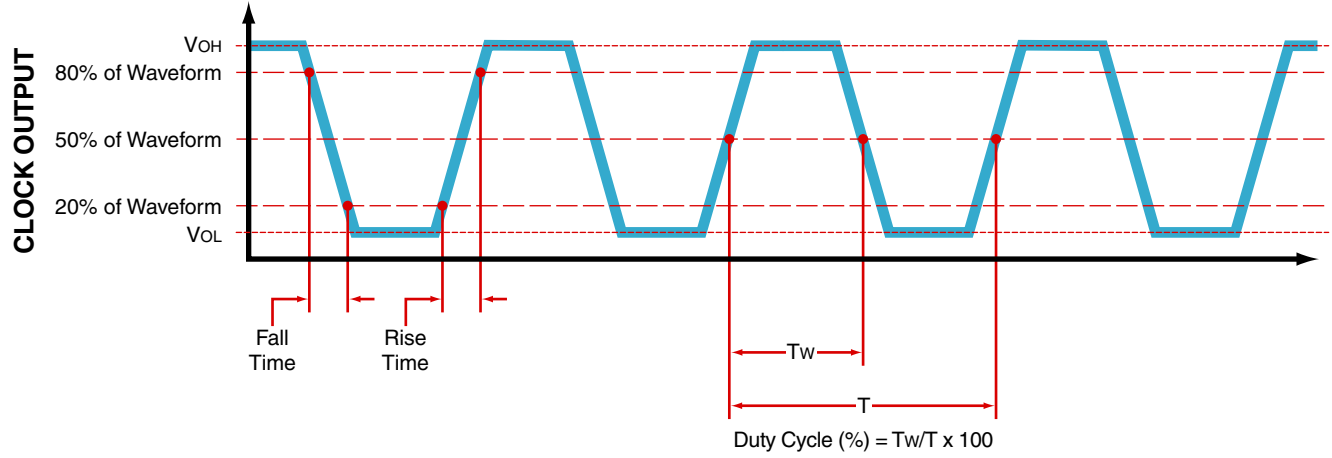
All Dimensions in Millimeters



All Tolerances are ±0.1

EQUA13C1E5-13.000M [Click part number to visit Part Number Details page](#)

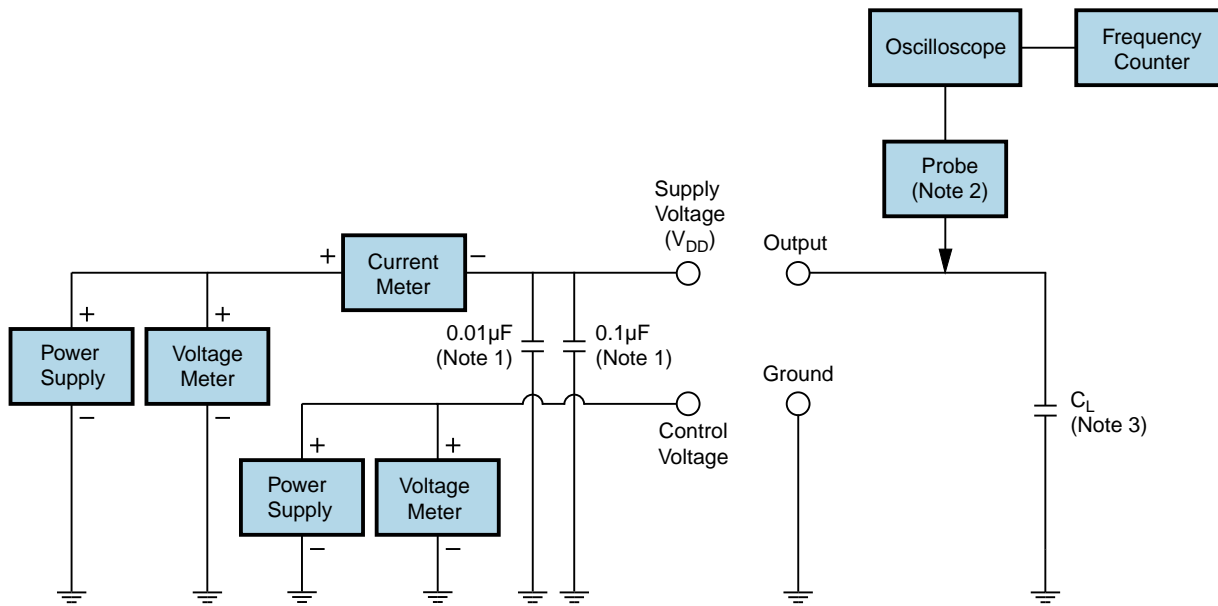
OUTPUT WAVEFORM



EQUA13C1E5-13.000M

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

Test Circuit for Voltage Control Option



Note 1: An external $0.01\mu\text{F}$ ceramic 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 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.