

EQUB73E6G2-19.680M-CB [Click part number to visit Part Number Details page](#)

REGULATORY COMPLIANCE (Data Sheet downloaded on Nov 17, 2019)



ITEM DESCRIPTION

Temperature Compensated Voltage Controlled Quartz Crystal Clock Oscillators TCVCXO LVCMOS (CMOS) 3.3Vdc 14-Pin DIP Metal Thru-Hole 19.680MHz -30°C to +75°C

ELECTRICAL SPECIFICATIONS

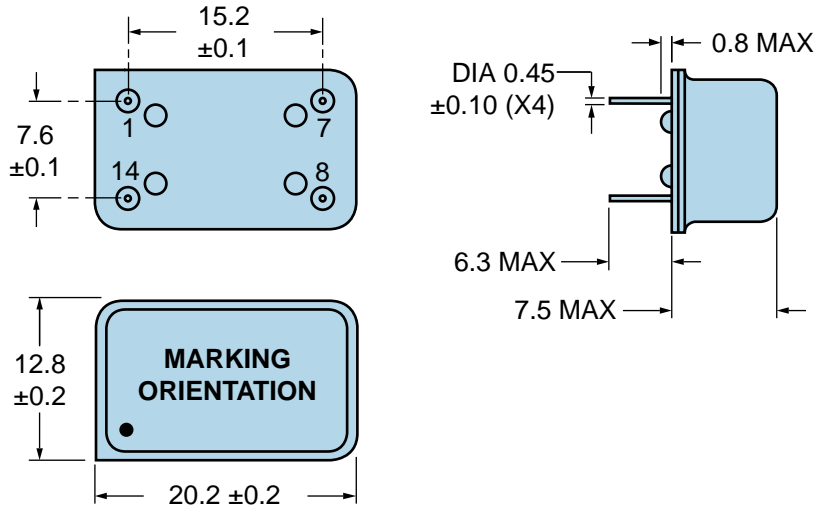
Nominal Frequency	19.680MHz
Frequency Stability	±2.0ppm Maximum (Inclusive of Operating Temperature Range, at Vdd=3.3Vdc, at Vc=1.5V)
Frequency Stability vs. Frequency Tolerance	±2.0ppm Maximum (At 25°C ±2°C, at Vdd=3.3Vdc, at Vc=1.5V)
Frequency Stability vs. Input Voltage	±0.3ppm Maximum (±5%)
Frequency Stability vs. Load	±0.3ppm Maximum (±2pF)
Frequency Stability vs. Reflow	±1.0ppm Maximum (at 25°C, 1 hour after reflow, 1 times)
Aging at 25°C	±1ppm/Year Maximum
Operating Temperature Range	-30°C to +75°C
Supply Voltage	3.3Vdc ±5%
Input Current	15mA Maximum
Output Voltage Logic High (Voh)	90% of Vdd Minimum IOL=-4mA
Output Voltage Logic Low (Vol)	10% of Vdd Maximum IOL=+4mA
Rise/Fall Time	10nSec 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	50kOhms Minimum
Phase Noise	-96dBc at 10Hz Offset, -122dBc at 100Hz Offset, -138dBc at 1kHz Offset, -145dBc at 10kHz Offset, -150dBc at 100kHz Offset (Typical Values)
Storage Temperature Range	-40°C to +85°C

ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

Fine Leak Test	MIL-STD-883, Method 1014 Condition A
Gross Leak Test	MIL-STD-883, Method 1014 Condition C
Lead Integrity	MIL-STD-883, Method 2004
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)

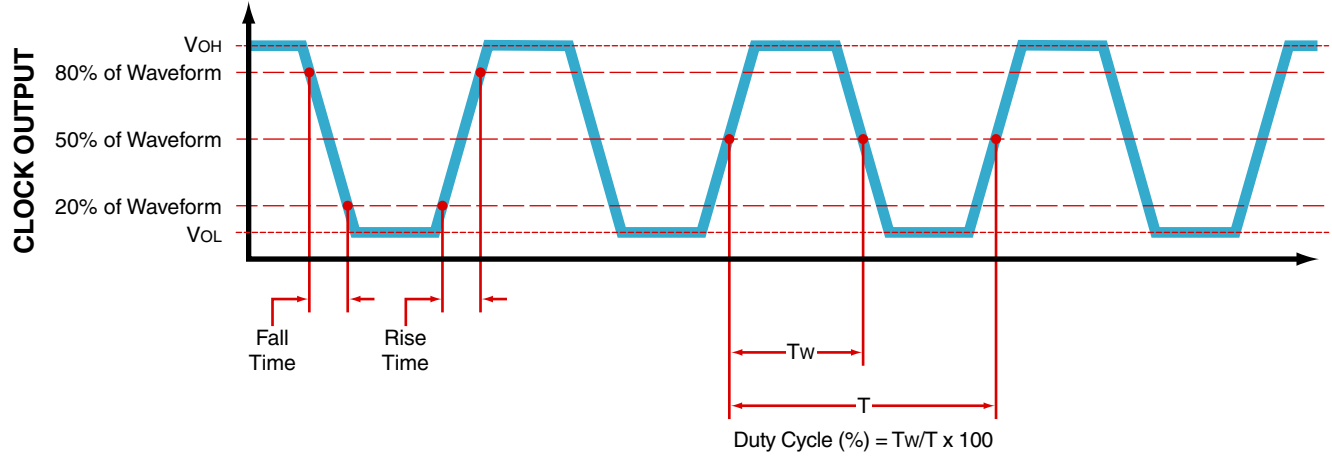


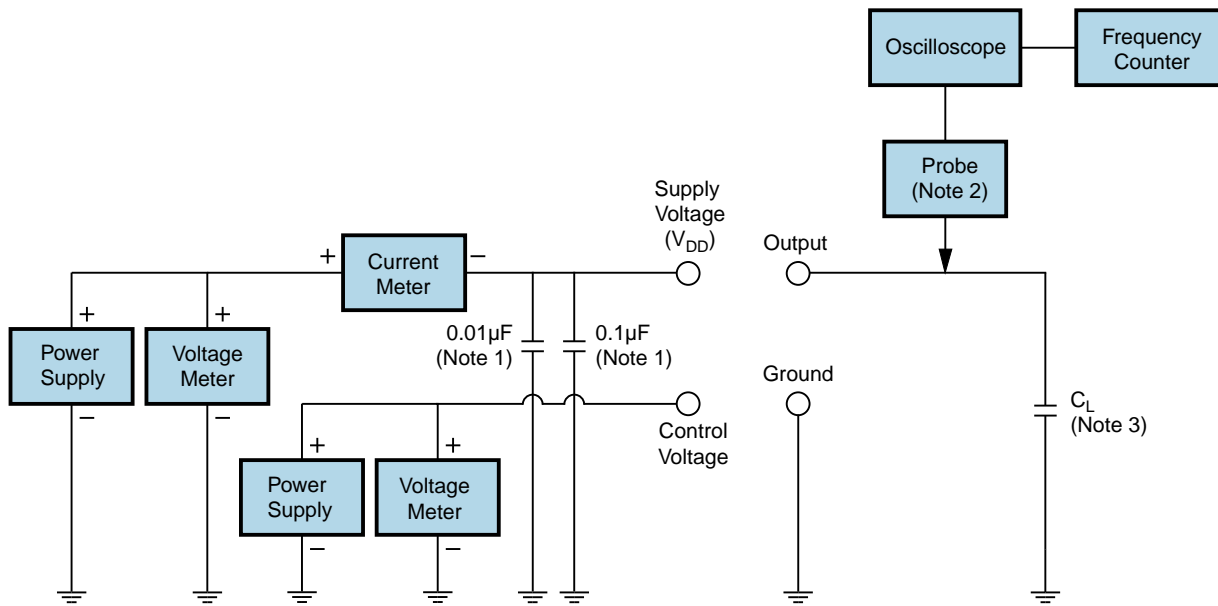
PIN	CONNECTION
1	Control Voltage
7	Case/Ground
8	Output
14	Supply Voltage

LINE	MARKING
1	ECLIPTEK
2	19.680M
3	XXXXX XXXXX=Ecliptek Manufacturing Identifier

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OUTPUT WAVEFORM

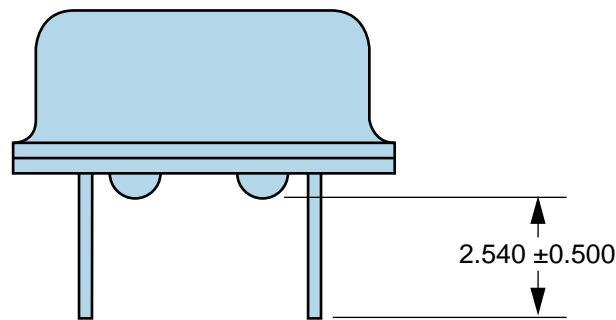


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Test Circuit for Voltage Control Option


Note 1: An external 0.01µF ceramic 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 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.

Value Added Option - Cut Leads


All dimensions are in millimeters

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Recommended Solder Reflow Methods



Low Temperature Solder Bath (Wave Solder)

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)	30 - 60 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)	245°C Maximum
Target Peak Temperature (Tp Target)	245°C Maximum 1 Time / 235°C Maximum 2 Times
Time within 5°C of actual peak (tp)	5 Seconds Maximum 1 Time / 15 Seconds Maximum 2 Times
Ramp-down Rate	5°C/Second Maximum
Time 25°C to Peak Temperature (t)	N/A
Moisture Sensitivity Level	Level 1

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.