

EQUD31E5H5-24.000M

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REGULATORY COMPLIANCE (Data Sheet downloaded on Nov 20, 2019)



◀ 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 Clipped Sinewave 1.8Vdc 4 Pad 2.5mm x 3.2mm Ceramic Surface Mount (SMD) 24.000MHz -30°C to +60°C

ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| Nominal Frequency | 24.000MHz |
| Frequency Stability | ±1.5ppm Maximum (Inclusive of Operating Temperature Range, at Vdd=1.8Vdc and Vc=0.9Vdc) |
| Frequency Stability vs. Frequency Tolerance | ±1.0ppm Maximum (at 25°C ±2°C, at Vdd=1.8Vdc, and Vc=0.9Vdc, Pre-Reflow) |
| Frequency Stability vs. Input Voltage | ±0.2ppm Maximum (±5%) |
| Frequency Stability vs. Load | ±0.2ppm Maximum (±1kOhm//±1pF) |
| Frequency Stability vs. Reflow | ±1ppm Maximum (at 25°C, 24 hours after reflow, 1 time) |
| Frequency Stability vs. Aging | ±1ppm/Year Maximum (at 25°C) |
| Operating Temperature Range | -30°C to +60°C |
| Supply Voltage | 1.8Vdc ±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 | 0.9Vdc ±0.6Vdc |
| Frequency Deviation | ±5ppm Minimum |
| Linearity | 10% Maximum |
| Transfer Function | Positive Transfer Characteristic |
| Modulation Bandwidth | 10kHz Minimum at -3dB |
| Input Impedance | 500kohm Minimum |
| Phase Noise | All Values are Typical -89dBc/Hz at 10Hz Offset -115dBc/Hz at 100Hz Offset -138dBc/Hz at 1kHz Offset -150dBc/Hz at 10kHz Offset |
| RMS Phase Jitter | 0.7pSec Typical, 1pSec Maximum (Fj = 12kHz to 20MHz (Random)) |
| Start Up Time | 2mSec Maximum |
| Storage Temperature Range | -40°C to +85°C |

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 |

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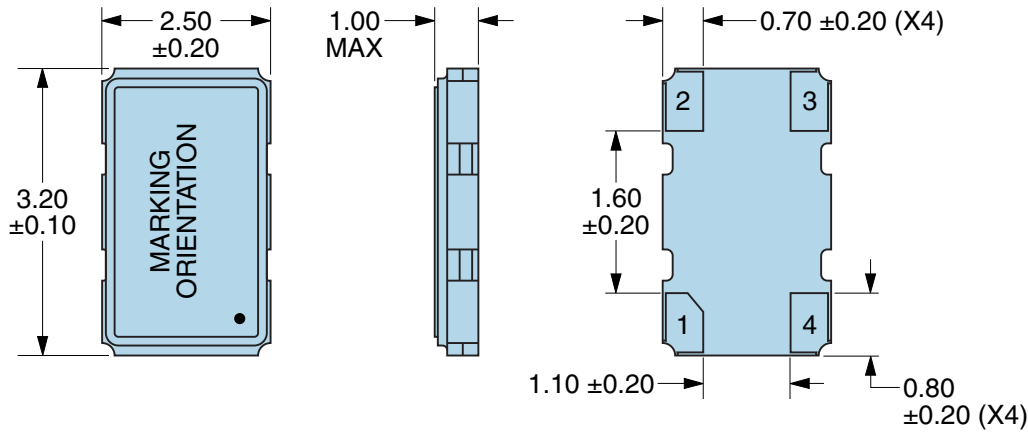
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ENVIRONMENTAL & MECHANICAL SPECIFICATIONS CONTINUED

| | |
|----------------------------|---------------------------------------|
| Temperature Cycling | MIL-STD-883, Method 1010, Condition B |
| Vibration | MIL-STD-883, Method 2007, Condition A |

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MECHANICAL DIMENSIONS (all dimensions in millimeters)

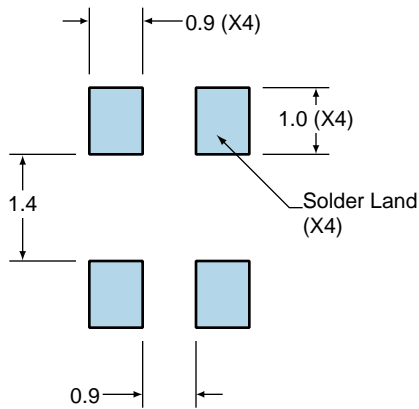


| PIN | CONNECTION |
|-----|-----------------|
| 1 | Control Voltage |
| 2 | Case/Ground |
| 3 | Output |
| 4 | Supply Voltage |

| LINE | MARKING |
|------|---|
| 1 | E24.000 E=Ecliptek Designator |
| 2 | XXXXX XXXXX=Ecliptek Manufacturing Identifier |

Suggested Solder Pad Layout

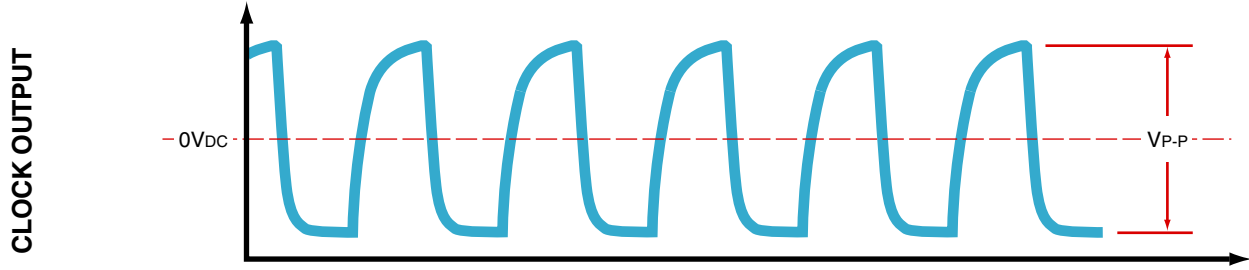
All Dimensions in Millimeters



All Tolerances are ±0.1

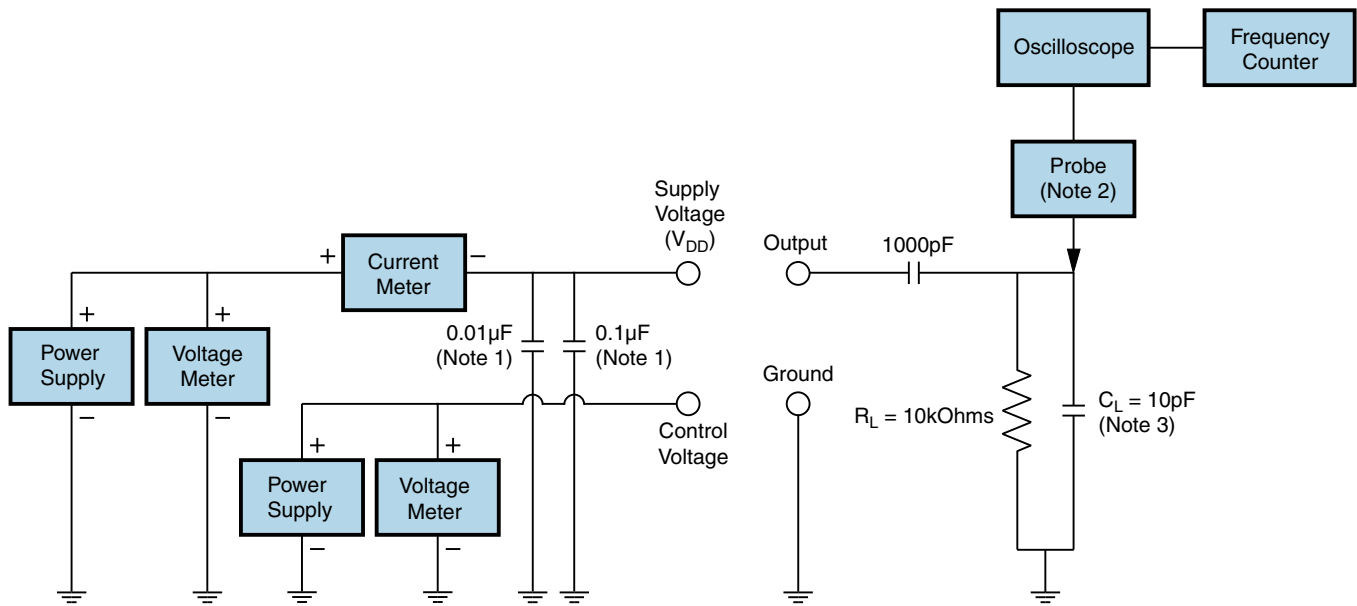
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OUTPUT WAVEFORM



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Test Circuit for Clipped Sinewave Output



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.