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EQRD13 Series Oscillator

Quartz Crystal Clock Oscillators XO (SPXO) LVPECL (PECL) 3.3Vdc 6 Pad 5.0mm x 7.0mm Ceramic Surface Mount (SMD)



Revision C 06/11/2014

Electrical Specifications

Nominal Frequency	10.000MHz to 200.000MHz <i>Some frequencies within this range may not be available.</i>
Frequency Tolerance/Stability	Inclusive of all conditions: Calibration Tolerance (at 25°C), Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°C, Shock, and Vibration ±100ppm Maximum ±50ppm Maximum ±25ppm Maximum ±20ppm Maximum
Operating Temperature Range	0°C to +70°C -20°C to +70°C -40°C to +85°C
Aging at 25°C	±3ppm Maximum First Year
Supply Voltage	3.3V _{DC} ±5%
Input Current	50mA Maximum
Output Voltage Logic High (V_{OH})	V _{DD} -1.025V _{DC} Minimum, 2.35V _{DC} Typical, V _{DD} -0.88V _{DC} Maximum
Output Voltage Logic Low (V_{OL})	V _{DD} -1.81V _{DC} Minimum, 1.60V _{DC} Typical, V _{DD} -1.62V _{DC} Maximum
Duty Cycle	Measured at 50% of waveform 50 ±10(%) 50 ±5(%)
Rise Time/Fall Time	Measured at 20% to 80% of Waveform 400pSec Maximum
Load Drive Capability	50 Ohms into V _{DD} -2.0V _{DC}
Output Logic Type	LVPECL
Phase Noise	Click to Open Phase Noise Table
Output Control Function	Standby (on Pad 1) Standby (on Pad 2)
Output Control Input Voltage Logic High (V_{Ih})	70% of V _{DD} Minimum or No Connect to Enable Output and Complementary Output
Output Control Input Voltage Logic Low (V_{Il})	30% of V _{DD} Maximum to Disable Output and Complementary Output (High Impedance)
Standby Output Enable Time	10mSec Maximum
Standby Output Disable Time	200nSec Maximum

Standby Current	Without Load 10 μ A Maximum
RMS Phase Jitter	Click to Open RMS Phase Jitter Table
Period Jitter (Deterministic)	0.2pSec Typical
Period Jitter (Random)	1.0pSec Typical
Period Jitter (One Sigma)	1.5pSec Typical
Period Jitter (tp-p)	40pSec Maximum
Storage Temperature Range	-55°C to +125°C
Start Up Time	10mSec Maximum

Phase Noise

All Values are Typical

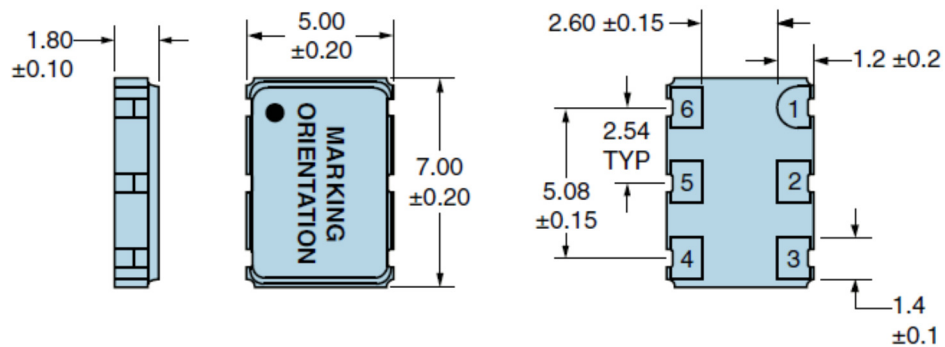
<i>Offset</i>	<i>Phase Noise</i>
10Hz	-50dBc/Hz
100Hz	-82dBc/Hz
1kHz	-116dBc/Hz
10kHz	-138dBc/Hz
100kHz	-144dBc/Hz
1MHz	-149dBc/Hz
10MHz	-155dBc/Hz
20MHz	-155dBc/Hz

RMS Phase Jitter

Fj=12kHz to 20MHz (Random)

<i>Nominal Frequency Range</i>	<i>RMS Phase Jitter</i>
10MHz to 50MHz	600fSec Maximum
50.000001MHz to 99.999999MHz	450fSec Maximum
100MHz to 200MHz	200fSec Maximum

Mechanical Dimensions



All Dimensions in Millimeters

Pin 1: No Connect Or Standby

Pin 2: No Connect Or Standby

Pin 3: Case/Ground

Pin 4: Output

Pin 5: Complementary Output

Pin 6: Supply Voltage

Marking Specifications

Line 1: **ECLIPTEK**

Line 2: **XXXXXXM**

- XXXXXX = Nominal Frequency (5 digits + Decimal)
- M = Frequency Unit of Measure (MHz)

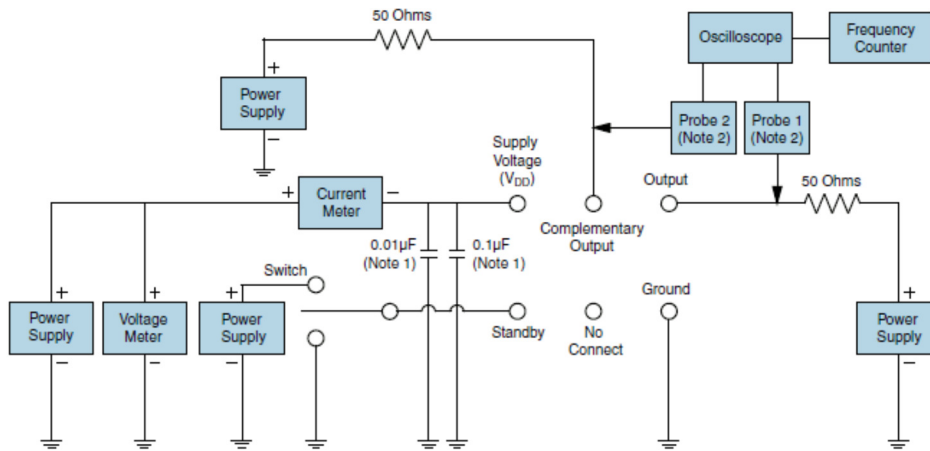
Line 3: **XXXXX**

- XXXXX = Ecliptek Manufacturing Identifier

Environmental and 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
Thermal Resistance (θ_{JA})	42°C/W (degrees Celsius per Watt)
Thermal Resistance (θ_{JC})	15°C/W (degrees Celsius per Watt)

Test Circuit for Standby (Pad 1) and Complementary Output

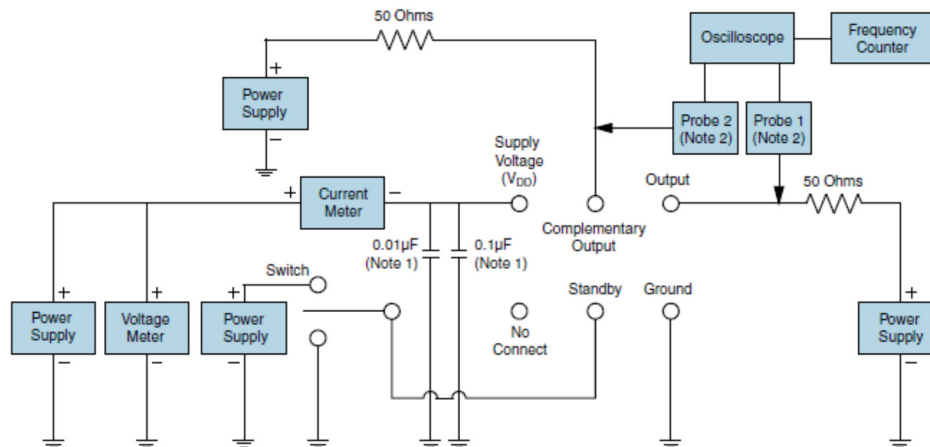


Note 1: An external $0.01\mu\text{F}$ ceramic bypass capacitor in parallel with a $0.1\mu\text{F}$ high frequency ceramic bypass capacitor close to (less than 2mm) the package ground and supply voltage pin is required.

Note 2: A low capacitance ($<12\text{pF}$), 10X Attenuation Factor, High Impedance ($>10\text{Mohms}$), and High bandwidth ($>500\text{MHz}$) passive probe is recommended.

Note 3: Test circuit PCB traces need to be designed for a characteristic line impedance of 50 ohms.

Test Circuit for Standby (Pad 2) and Complementary Output

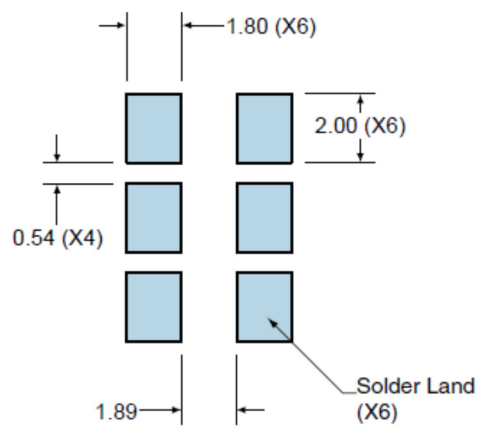


Note 1: An external $0.01\mu\text{F}$ ceramic bypass capacitor in parallel with a $0.1\mu\text{F}$ high frequency ceramic bypass capacitor close to (less than 2mm) the package ground and supply voltage pin is required.

Note 2: A low capacitance ($<12\text{pF}$), 10X Attenuation Factor, High Impedance ($>10\text{Mohms}$), and High bandwidth ($>500\text{MHz}$) passive probe is recommended.

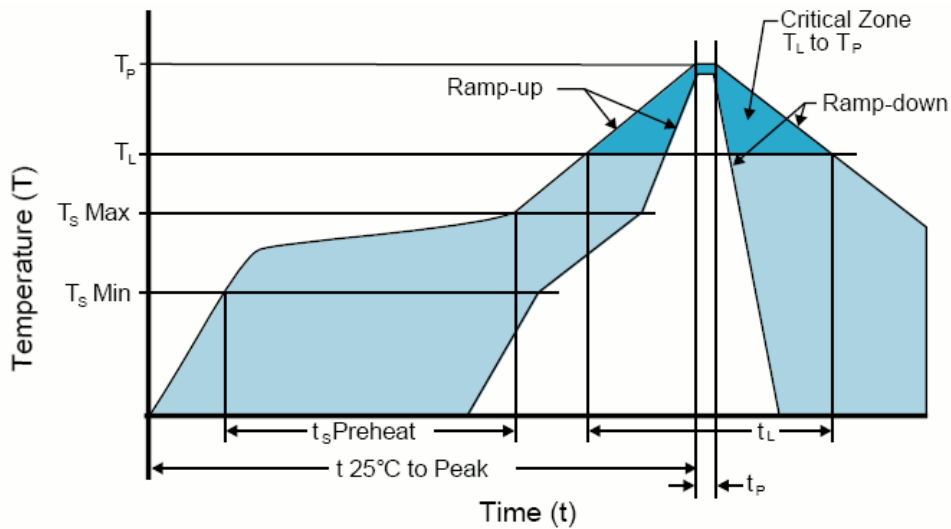
Note 3: Test circuit PCB traces need to be designed for a characteristic line impedance of 50 ohms.

Recommended Solder Pad Dimensions



Tolerances = ± 0.1
All Dimensions in Millimeters

Solder Reflow Profile



High Temperature Infrared/Convection

Note: Temperatures shown are applied to body of device.

T_S MAX to T_L (Ramp-up Rate)	3°C/second Maximum
Preheat	
- Temperature Minimum (T _S MIN)	150°C
- Temperature Typical (T _S TYP)	175°C
- Temperature Maximum (T _S MAX)	200°C
- Time (t _s)	60 - 180 seconds
Ramp-up Rate (T_L to T_P)	3°C/second Maximum
Time Maintained Above:	
- Temperature (T _L)	217°C
- Time (t _L)	60 - 150 seconds
Peak Temperature (T_P)	260°C Maximum for 10 seconds Maximum
Target Peak Temperature (T_P Target)	250°C +0/-5°C
Time within 5°C of actual peak (t_p)	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

Low Temperature Infrared/Convection 240°C

Note: Temperatures shown are applied to body of device.

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)	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)	240°C Maximum
Target Peak Temperature (T_P Target)	240°C Maximum 2 Times / 230°C Maximum 1 Time
Time within 5°C of actual peak (t_p)	10 seconds Maximum 2 Times / 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

High Temperature Manual Soldering

Note: Temperatures listed are applied to body of device.
260°C Maximum for 5 seconds Maximum, 2 times Maximum.

Low Temperature Manual Soldering

Note: Temperatures listed are applied to body of device.
185°C Maximum for 10 seconds Maximum, 2 times Maximum.

1 - Build A Part Number

Select the parameters that meet your requirements and then click Next

Frequency in Megahertz (10 to 200):

Some frequencies within this range may not be available

Frequency Tolerance/Stability: ±100ppm Maximum over 0°C to +70°C

Duty Cycle: 50 ±10(%)

Output Control Function: Standby (on Pad 1)

Packaging Options: Tape & Reel

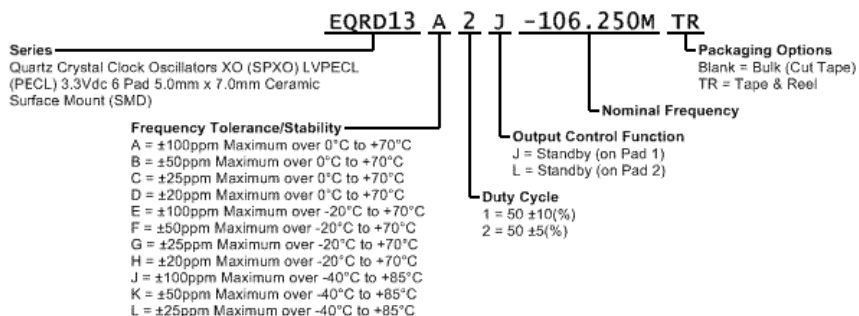
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Access these Part Number specific resources and tools

- P/N Specific Data Sheet
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Part Numbering Guide



TOOLS

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- Competitor Cross Reference

PRODUCT

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- Oscillators
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- RoHS Resources
- End of Life

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