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EH14 Series Oscillator

Quartz Crystal Clock Oscillators XO (SPXO) HCMOS/TTL (CMOS) 5.0Vdc J-Lead 9.8mm x 14.0mm Plastic Surface Mount (SMD)



Revision F 08/14/2012

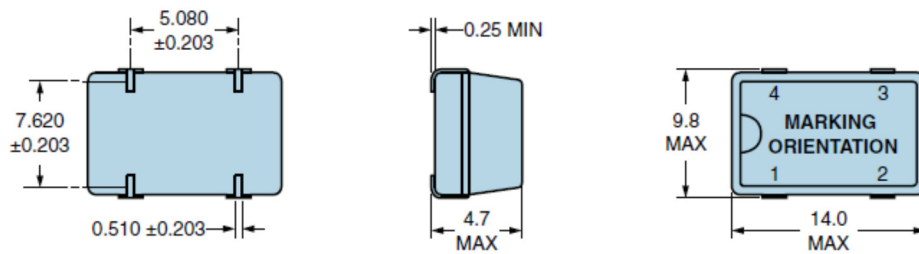
Electrical Specifications

Nominal Frequency	1.000MHz to 155.520MHz <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 -40°C to +85°C
Supply Voltage (V_{DD})	5.0V _{DC} ±10%
Input Current	No Load 50mA Maximum
Output Voltage Logic High (V_{OH})	2.4V _{DC} Minimum with TTL Load, V _{DD} -0.4V _{DC} Minimum with HCMOS Load, IOH = -16mA
Output Voltage Logic Low (V_{OL})	0.4V _{DC} Maximum with TTL Load, 0.5V _{DC} Maximum with HCMOS Load, IOL = +16mA
Duty Cycle	50 ±10%(Measured at 1.4V _{DC} with TTL Load or 50% of waveform with HCMOS Load over Nominal Frequency of 1MHz to 70MHz; Measured at 50% of waveform over Nominal Frequency of 70.000001MHz to 155.52MHz) 50 ±5% (Measured at 50% of waveform with TTL Load or with HCMOS Load)
Rise Time/Fall Time	Measured at 0.8V _{DC} to 2.0V _{DC} with TTL Load; Measured at 20% to 80% of waveform with HCMOS Load 6nSec Maximum over Nominal Frequency of 1MHz to 70MHz 4nSec Maximum over Nominal Frequency of 70.000001MHz to 155.52MHz
Load Drive Capability	10TTL Load or 50pF HCMOS Load Maximum over Nominal Frequency of 1MHz to 70MHz 5TTL Load or 15pF HCMOS Load Maximum over Nominal Frequency of 70.000001MHz to 155.52MHz
Output Logic Type	CMOS TTL
Pin 1 Connection	Tri-State (Disabled Output: High Impedance)
Tri-State Input Voltage (V_{IH} and V_{IL})	+2.2V _{DC} Minimum to enable output, +0.8V _{DC} Maximum to disable output (High Impedance), No Connect to enable output.
Absolute Clock Jitter	±250pSec Maximum, ±100pSec Typical
One Sigma Clock Period Jitter	±50pSec Maximum, ±30pSec Typical
Aging (at 25°C)	±5ppm/year Maximum

Storage Temperature Range -55°C to +125°C

Start Up Time 10mSec Maximum

Mechanical Dimensions



All Dimensions in Millimeters

Pin 1: Tri-State (High Impedance)

Pin 2: Ground

Pin 3: Output

Pin 4: Supply Voltage

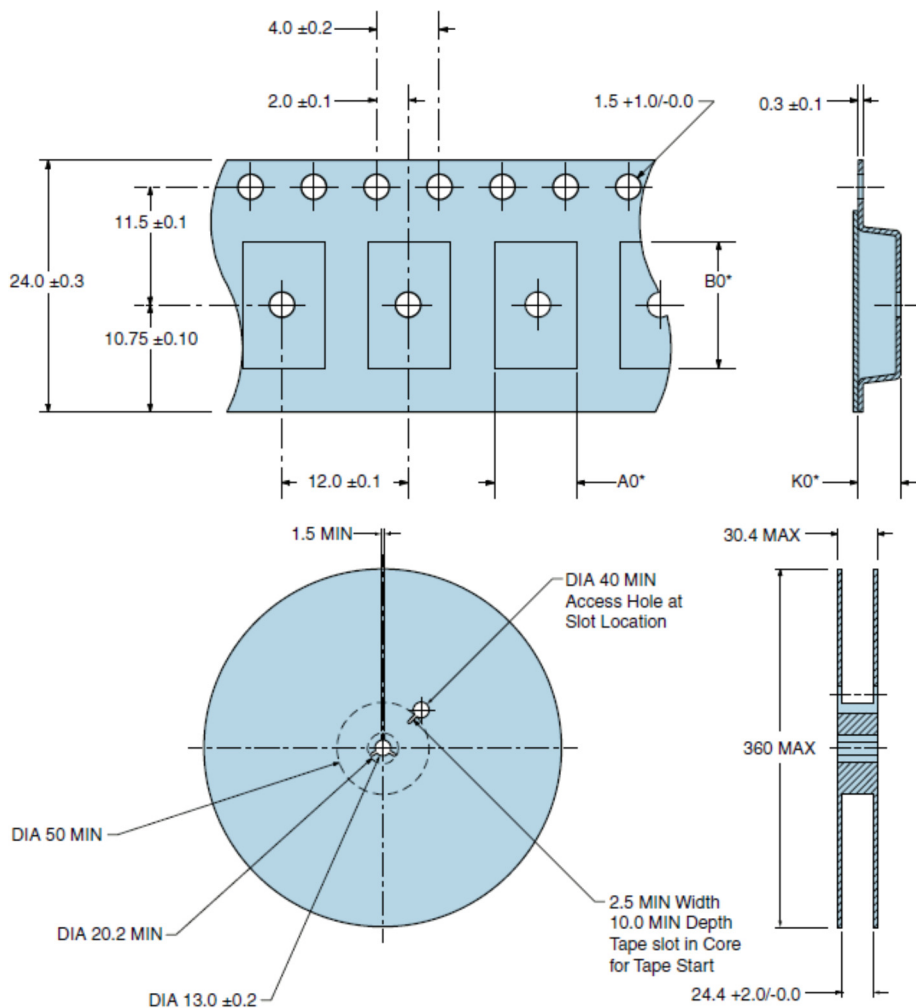
Marking Specifications

- 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 (Internal Crystal Only)
Flammability:	UL94-V0
Gross Leak Test:	MIL-STD-883, Method 1014, Condition C (Internal Crystal Only)
Mechanical Shock:	MIL-STD-202, Method 213, Condition C
Moisture Resistance:	MIL-STD-883, Method 1004
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}):	81°C/W (degrees Celsius per Watt)
Thermal Resistance (θ_{JC}):	31°C/W (degrees Celsius per Watt)

Tape & Reel Dimensions

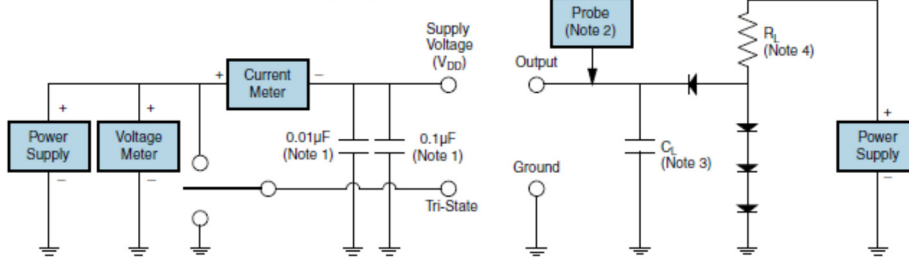


1000 pieces per reel
 Compliant to EIA-481
 All Dimensions in Millimeters

TTL Test Circuit

Output Load Drive Capability	R_L Value (Ohms)	C_L Value (pF)
10TTL	390	15
5TTL	780	15

Table 1: R_L Resistance Value and C_L Capacitance Value Vs. Output Load Drive Capability



Note 1: An external 0.1µF low frequency tantalum bypass capacitor in parallel with a 0.01µF high frequency ceramic bypass capacitor close to the package ground and V_{DD} pin is required.

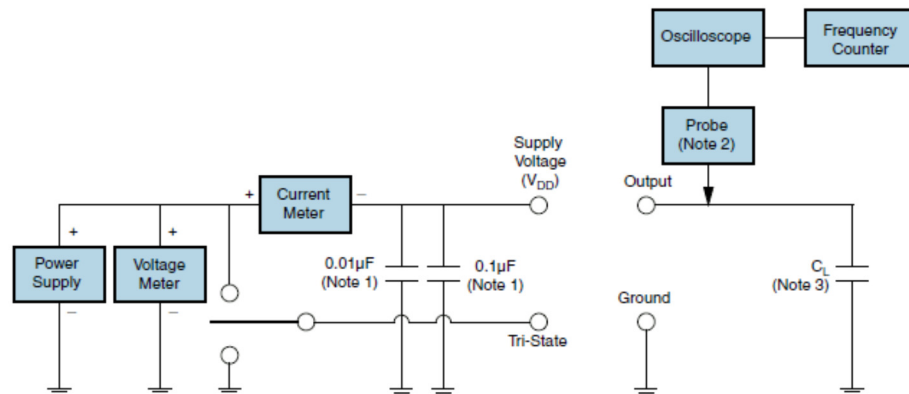
Note 2: A low input capacitance (<12pF), 10X Attenuation Factor, High Impedance (>10Mohms), and High bandwidth (>300MHz) passive probe is recommended.

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

Note 4: Resistance value R_L is shown in Table I. See applicable specification sheet for "Load Drive Capability".

Note 5: All diodes are MMBD7000, MMBD914, or equivalent.

CMOS Test Circuit

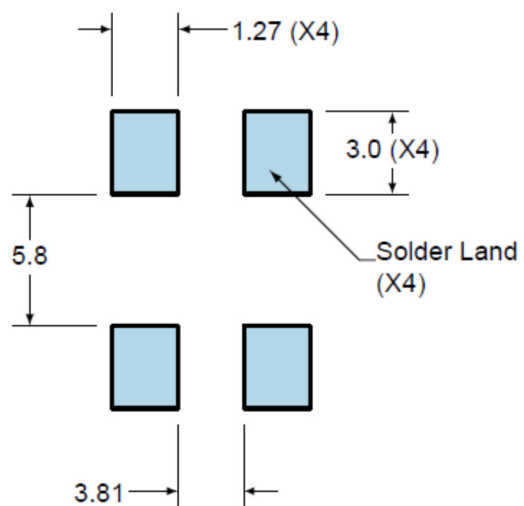


Note 1: An external 0.1µF low frequency tantalum bypass capacitor in parallel with a 0.01µF high frequency ceramic bypass capacitor close to the package ground pin is required.

Note 2: A low input capacitance (<12pF), 10X Attenuation Factor, High Impedance (>10Mohms), and High bandwidth (>300MHz) passive probe is recommended.

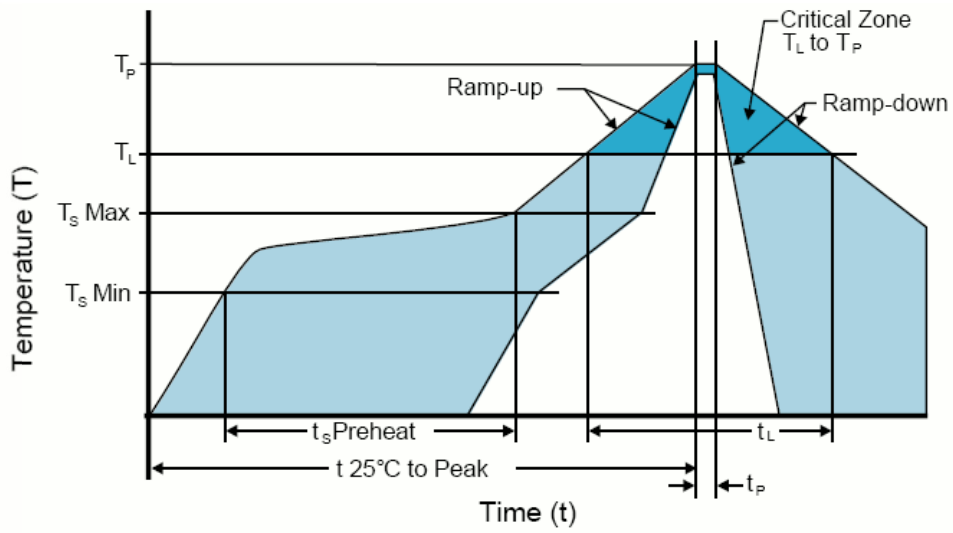
Note 3: Capacitance value includes sum of all probe and fixture capacitance. See applicable specification sheet for "Load Drive Capability".

Recommended Solder Pad Dimensions



Tolerances = ± 0.1
All Dimensions in Millimeters

Solder Reflow Profile



Low Temperature Infrared/Convection**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 (1 to 155.52):
Some frequencies within this range may not be available

Frequency Tolerance/Stability:

Operating Temperature Range:







Duty Cycle:

Packaging Options:

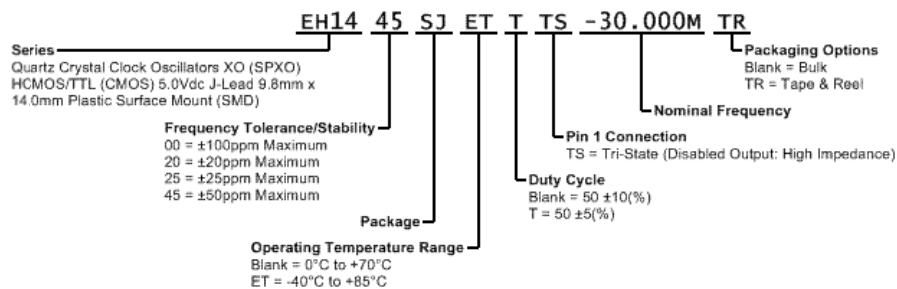
 Next

2 - Next Page

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