EH25 Series Oscillator

Quartz Crystal Clock Oscillators XO (SPXO) HCMOS/TTL (CMOS) 5.0Vdc 4 Pad 5.0mm x 7.0mm Ceramic Surface Mount (SMD)

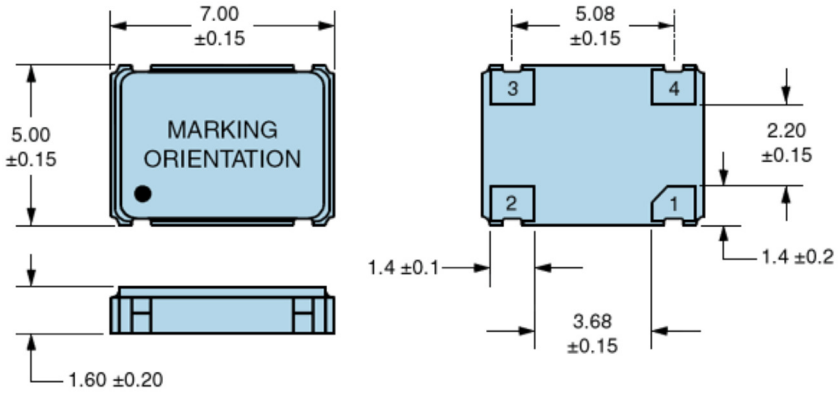
Revision G 06/08/2012

Electrical Specifications

Nominal Frequency	1.000MHz to 155.520MHz *Some frequencies within this range may not be available.*
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
Aging at 25°C	±5ppm/year Maximum
Operating Temperature Range	0°C to +70°C -40°C to +85°C
Supply Voltage	$5.0V_{DC}$ ±10%
Input Current	No Load 50mA Maximum
Output Voltage Logic High (V_{OH})	I_{OH}= -16mA $2.4V_{DC}$ Minimum with TTL Load, V_{DD}-$0.4V_{DC}$ Minimum with HCMOS Load
Output Voltage Logic Low (V_{OL})	I_{OL}= +16mA $0.4V_{DC}$ Maximum with TTL Load, $0.5V_{DC}$ Maximum with HCMOS Load
Duty Cycle	50 ±10(%) Measured at $1.4V_{DC}$ with TTL Load or at 50% of waveform with HCMOS Load from 1MHz to 70MHz Measured at 50% of waveform above 70MHz 50 ±5(%) Measured at 50% of waveform
Rise Time/Fall Time	Measured at $0.8V_{DC}$ to $2.0V_{DC}$ with TTL Load; Masured at 20% to 80% of waveform with HCMOS Load 6nSec Maximum from 1MHz to 70MHz 4nSec Maximum from 70.000001MHz to 155.520MHz
Load Drive Capability	10 TTL Load or 50pF HCMOS Load Maximum from 1MHz to 70MHz 5 TTL Load or 15pF HCMOS Load Maximum from 70.000001MHz to 155.520MHz
Output Logic Type	CMOS
Pin 1 Connection	Tri-State (High Impedance)
Tri-State Input Voltage (Vih and Vil)	$+2.2V_{DC}$ 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

Start Up Time	10mSec Maximum
Storage Temperature	-55°C to +125°C

Mechanical Dimensions



All Dimensions in Millimeters

Pin 1: Tri-State

Pin 2: Case/Ground

Pin 3: Output

Pin 4: Supply Voltage

Marking Specifications

Line 1: **ECLIPTEK**

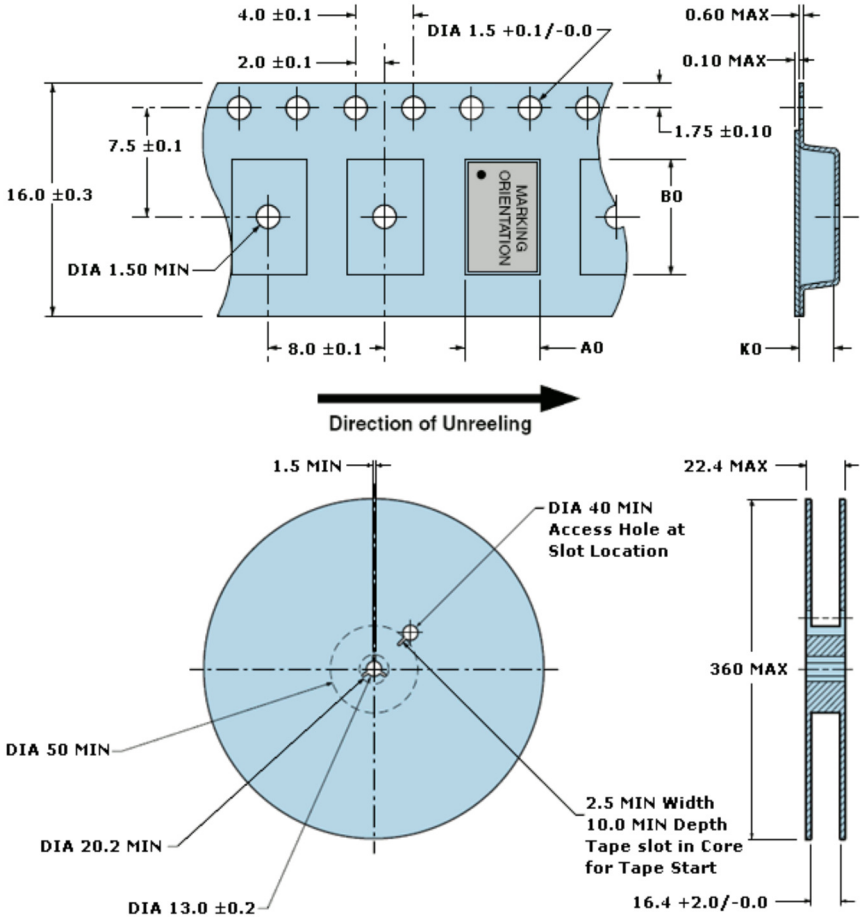
Line 2: **XXXXXXM**
- XXXXXX = Nominal Frequency (5 Digits + Decimal)
- M = Frequency unit of measure (MHz)

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
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)

Tape & Reel Dimensions

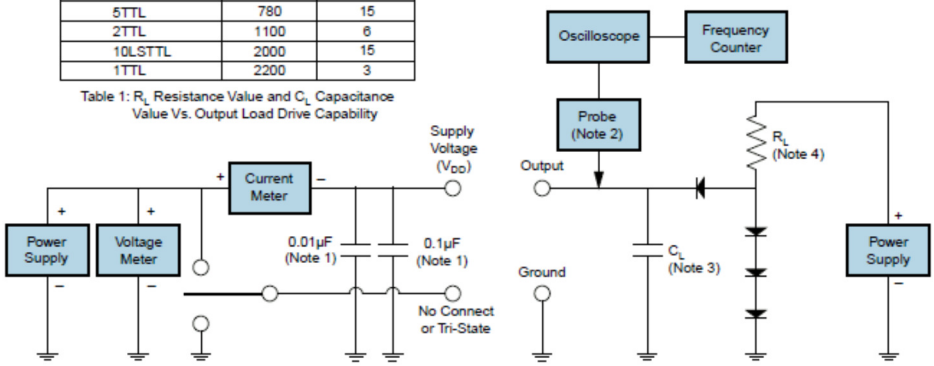


1000 pieces per reel
Compliant to EIA-481
All Dimensions in Millimeters

Test Circuit for TTL Output

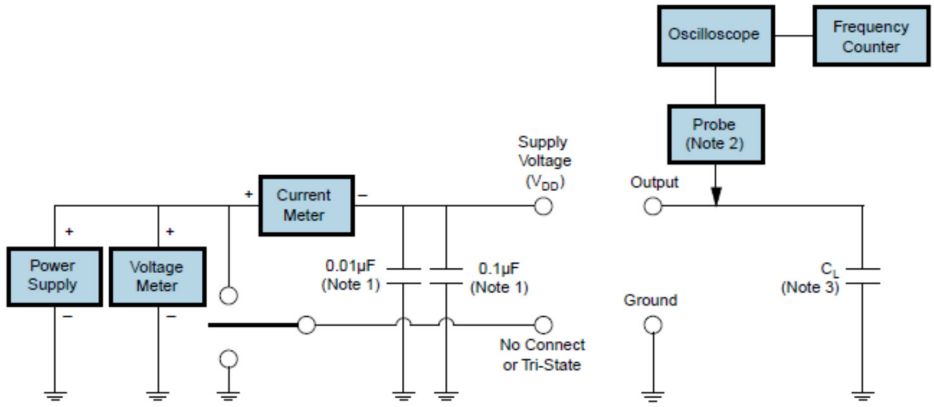
Output Load Drive Capability	R_L Value (Ohms)	C_L Value (pF)
10TTL	390	15
5TTL	780	15
2TTL	1100	6
10LSTTL	2000	15
1TTL	2200	3

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



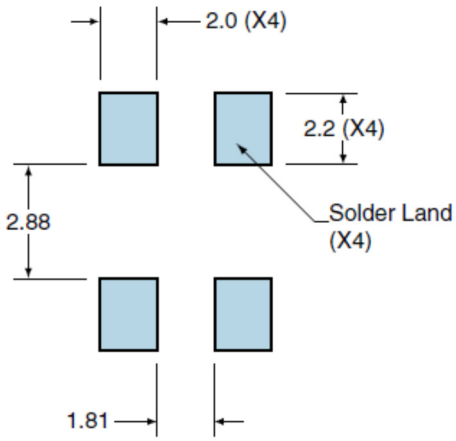
Note 1: An external 0.1µF low frequency tantalum bypass capacitor in parallel with a 0.01µF high frequency ceramic bypass capacitor close to the package ground and V_{DD} pin is required.
Note 2: A low capacitance (<12pF), 10X attentuation factor, high impedance (>10Mohms), and high bandwidth (>300MHz) 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 1. See applicable specification sheet for â€˜Load Drive Capabilityâ€™.
Note 5: All diodes are MMBD7000, MMBD914, or equivalent.

Test Circuit for CMOS Output



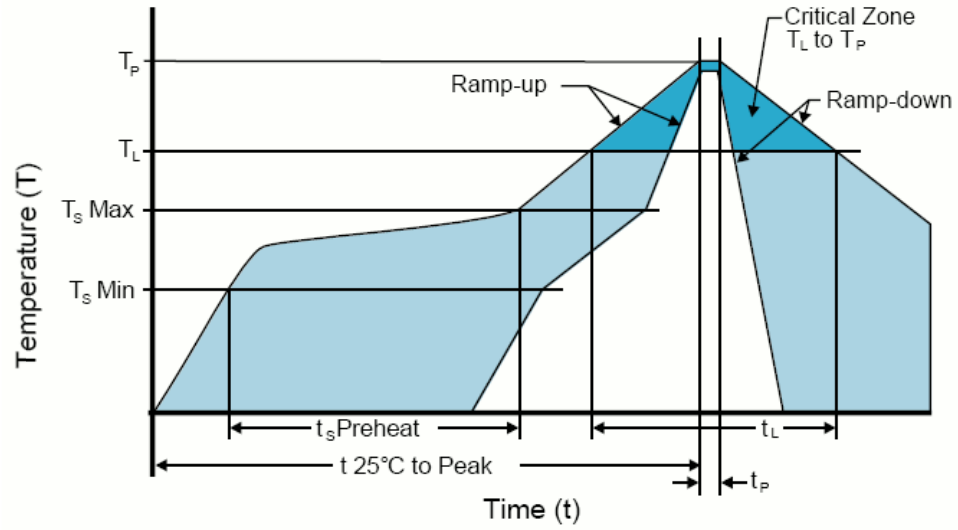
Note 1: An external 0.1µF low frequency tantalum bypass capacitor in parallel with a 0.01µF high frequency ceramic bypass capacitor close to the package ground and V_{DD} pin is required.
Note 2: A low capacitance (<12pF), 10X attentuation factor, high impedance (>10Mohms), and high bandwidth (>300MHz) passive probe is recommended.
Note 3: Capacitance value C_L includes sum of all probe and fixture capacitance.

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

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 155.520):
Some frequencies within this range may not be available

Frequency Tolerance/Stability: ±100ppm Maximum

Operating Temperature Range: 0°C to +70°C

Duty Cycle: 50 ±10%

Packaging Options: Tape & Reel

Next

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Access these Part Number specific resources and tools

- P/N Specific Data Sheet
- Automated Quick Quote
- Request Sample
- Download IPC-1752
- My Parts List
- My Part Number

Part Numbering Guide

EH25 00 ET T TS -24.000M TR

Series
Quartz Crystal Clock Oscillators XO (SPXO)
HCMOS/TTL (CMOS) 5.0Vdc 4 Pad 5.0mm x 7.0mm
Ceramic Surface Mount (SMD)

Frequency Tolerance/Stability
00 = ±100ppm Maximum
20 = ±20ppm Maximum
25 = ±25ppm Maximum
45 = ±50ppm Maximum

Operating Temperature Range
Blank = 0°C to +70°C
ET = -40°C to +85°C

Duty Cycle
Blank = 50 ±10(%)
T = 50 ±5(%)

Pin 1 Connection
TS = Tri-State (High Impedance)

Nominal Frequency

Packaging Options
Blank = Bulk (Cut Tape)
TR = Tape & Reel

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