

EH2545ETTS-4.9152M

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REGULATORY COMPLIANCE (Data Sheet downloaded on Oct 24, 2017)


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ITEM DESCRIPTION

Quartz Crystal Clock Oscillators XO (SPXO) HCMOS/TTL (CMOS) 5.0Vdc 4 Pad 5.0mm x 7.0mm Ceramic Surface Mount (SMD) 4.9152MHz ± 50 ppm -40°C to +85°C

ELECTRICAL SPECIFICATIONS

Nominal Frequency	4.9152MHz
Frequency Tolerance/Stability	± 50 ppm Maximum (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)
Aging at 25°C	± 5 ppm/year Maximum
Operating Temperature Range	-40°C to +85°C
Supply Voltage	5.0Vdc $\pm 10\%$
Input Current	50mA Maximum (No Load)
Output Voltage Logic High (Voh)	2.4Vdc Minimum with TTL Load, Vdd-0.4Vdc Minimum with HCMOS Load (IOH= -16mA)
Output Voltage Logic Low (Vol)	0.4Vdc Maximum with TTL Load, 0.5Vdc Maximum with HCMOS Load (IOL= +16mA)
Rise/Fall Time	6nSec Maximum (Measured at 0.8Vdc to 2.0Vdc with TTL Load; Measured at 20% to 80% of waveform with HCMOS Load)
Duty Cycle	50 $\pm 5\%$ (Measured at 50% of waveform with TTL Load or with HCMOS Load)
Load Drive Capability	10TTL Load or 50pF HCMOS Load Maximum
Output Logic Type	CMOS
Pin 1 Connection	Tri-State (High Impedance)
Tri-State Input Voltage (Vih and Vil)	+2.2Vdc Minimum to enable output, +0.8Vdc Maximum to disable output (High Impedance), No Connect to enable output.
Absolute Clock Jitter	± 250 pSec Maximum, ± 100 pSec Typical
One Sigma Clock Period Jitter	± 50 pSec Maximum, ± 30 pSec Typical
Start Up Time	10mSec Maximum
Storage Temperature Range	-55°C to +125°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
Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A

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Technical drawings of the marking orientation and dimensions of the device. The top view shows a rectangular device with rounded corners, labeled "MARKING ORIENTATION". The dimensions are 7.00 ±0.15 (width) and 5.00 ±0.15 (height). The side view shows the device's profile with a height of 1.60 ±0.20. The bottom view shows the device's base with four mounting points labeled 1, 2, 3, and 4. The dimensions for the bottom view are 5.08 ±0.15 (width), 2.20 ±0.15 (height), 1.4 ±0.1 (mounting point offset), and 3.68 ±0.15 (mounting point offset).

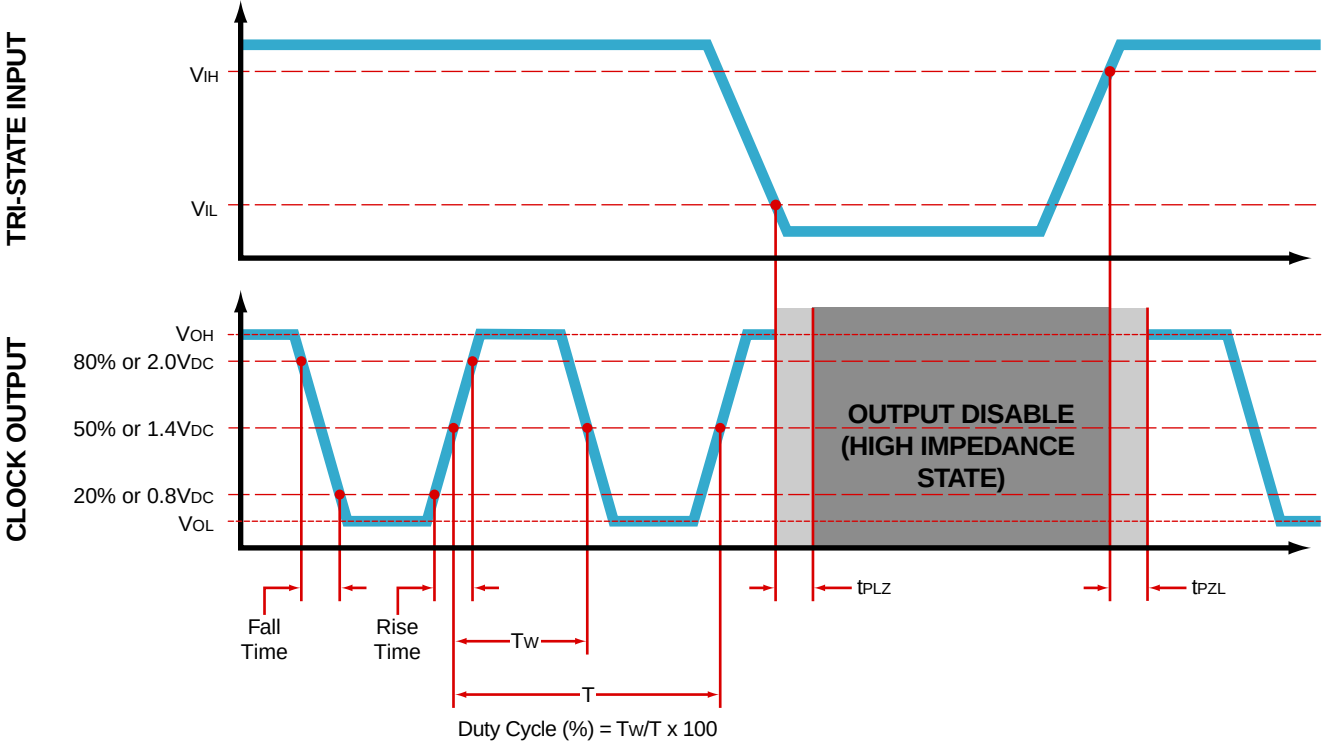
LINE	MARKING
1	ECLIPTEK
2	4.9152M
3	XXXXXX XXXXXX=Ecliptek Manufacturing Identifier

1-800-ECLIPTEK or 714.433.1200

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OUTPUT WAVEFORM & TIMING DIAGRAM



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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

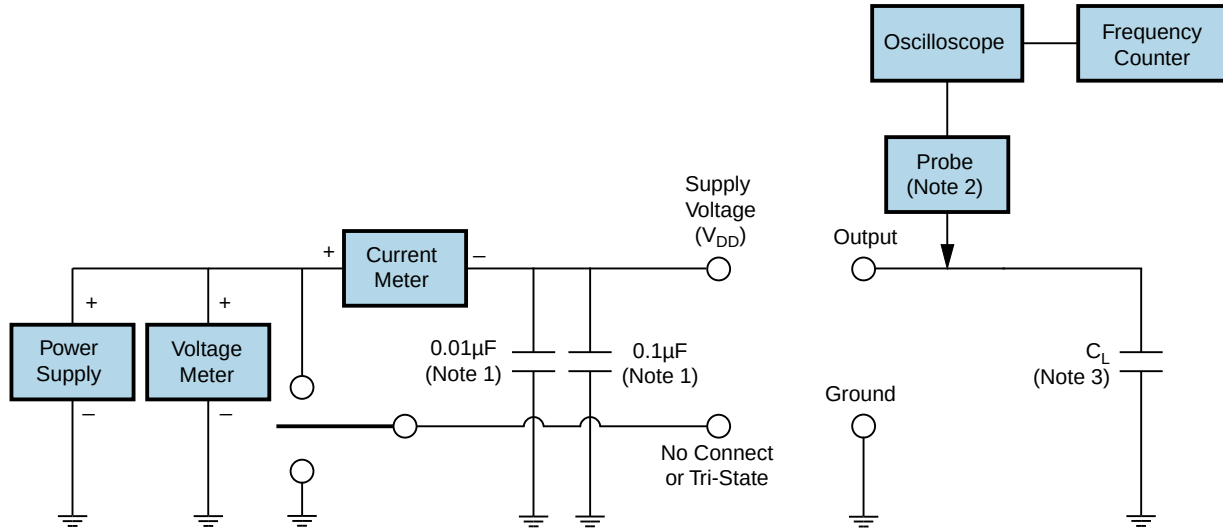
The diagram illustrates the test circuit for the 74VHC00. It features a Power Supply connected to the VDD pin of the 74VHC00. A Voltage Meter is connected across the VDD pin and ground. A Current Meter is connected in series with the VDD pin. The output of the 74VHC00 is connected to a load resistor (RL) and a capacitor (CL). The output is also connected to a diode and a ground connection. The circuit is labeled with various components and their values, including R1 (10k), R2 (10k), R3 (10k), R4 (10k), R5 (10k), R6 (10k), R7 (10k), R8 (10k), R9 (10k), R10 (10k), R11 (10k), R12 (10k), R13 (10k), R14 (10k), R15 (10k), R16 (10k), R17 (10k), R18 (10k), R19 (10k), R20 (10k), R21 (10k), R22 (10k), R23 (10k), R24 (10k), R25 (10k), R26 (10k), R27 (10k), R28 (10k), R29 (10k), R30 (10k), R31 (10k), R32 (10k), R33 (10k), R34 (10k), R35 (10k), R36 (10k), R37 (10k), R38 (10k), R39 (10k), R40 (10k), R41 (10k), R42 (10k), R43 (10k), R44 (10k), R45 (10k), R46 (10k), R47 (10k), R48 (10k), R49 (10k), R50 (10k), R51 (10k), R52 (10k), R53 (10k), R54 (10k), R55 (10k), R56 (10k), R57 (10k), R58 (10k), R59 (10k), R60 (10k), R61 (10k), R62 (10k), R63 (10k), R64 (10k), R65 (10k), R66 (10k), R67 (10k), R68 (10k), R69 (10k), R70 (10k), R71 (10k), R72 (10k), R73 (10k), R74 (10k), R75 (10k), R76 (10k), R77 (10k), R78 (10k), R79 (10k), R80 (10k), R81 (10k), R82 (10k), R83 (10k), R84 (10k), R85 (10k), R86 (10k), R87 (10k), R88 (10k), R89 (10k), R90 (10k), R91 (10k), R92 (10k), R93 (10k), R94 (10k), R95 (10k), R96 (10k), R97 (10k), R98 (10k), R99 (10k), R100 (10k).

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

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Test Circuit for CMOS Output



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

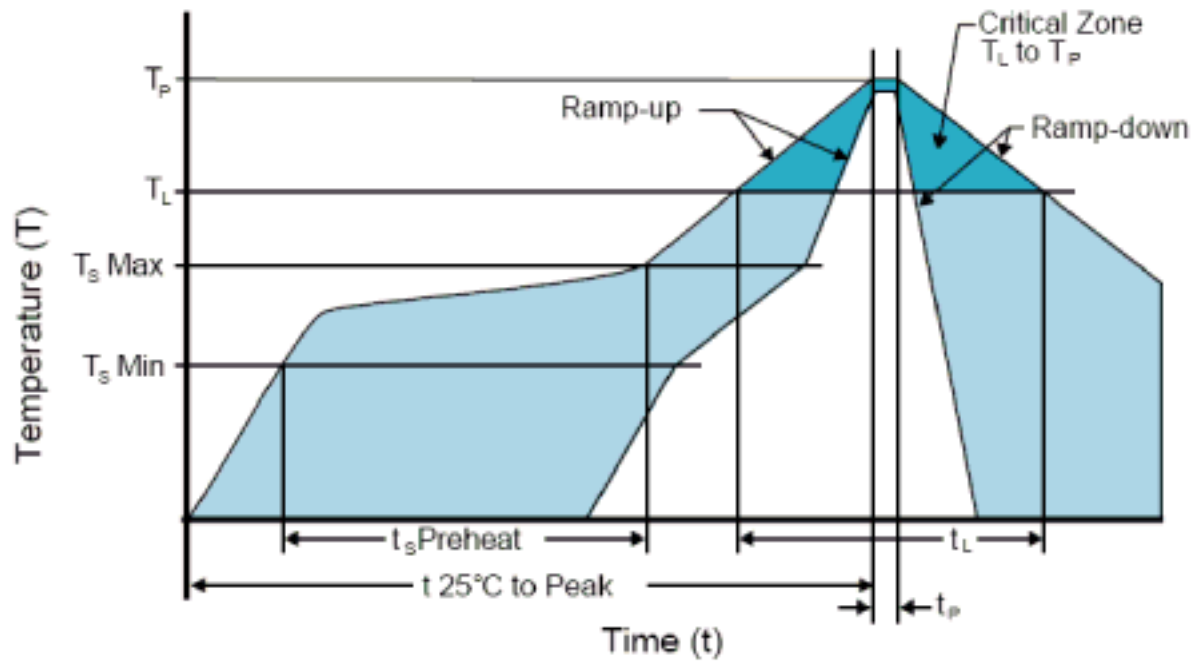
Note 2: A low capacitance ($<12\text{pF}$), 10X attenuation factor, high impedance ($>10\text{Mohms}$), and high bandwidth ($>300\text{MHz}$) passive probe is recommended.

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

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Recommended Solder Reflow Methods



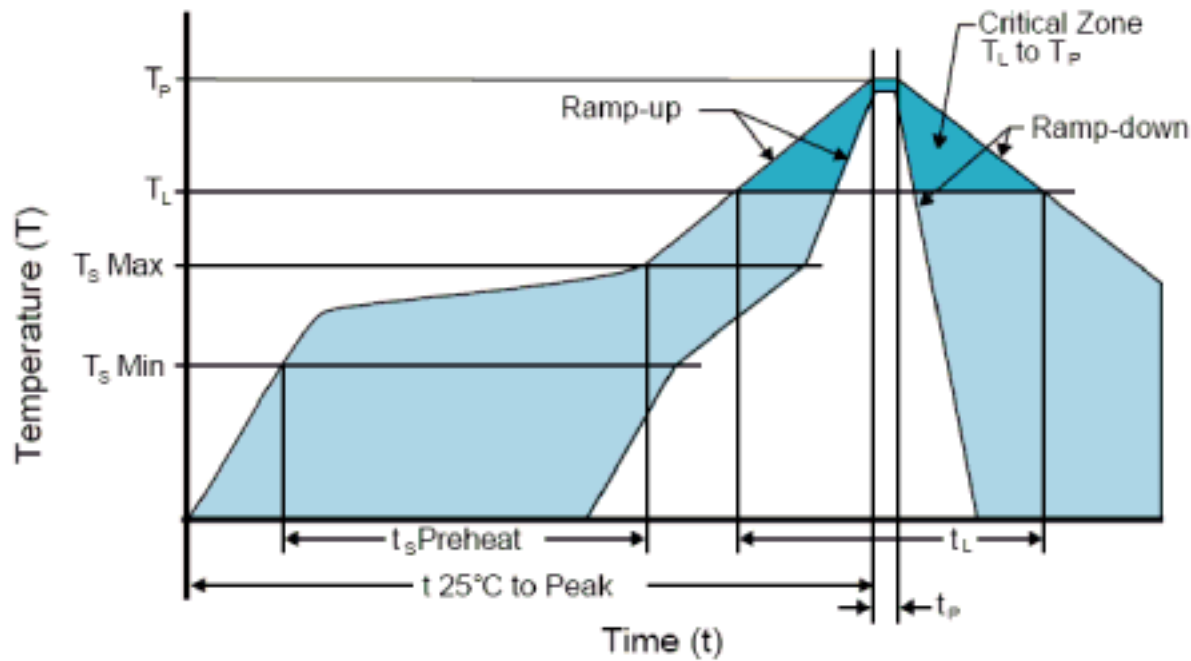
High Temperature Infrared/Convection

Ts MAX to TL (Ramp-up Rate)	3°C/Second Maximum
Preheat	
- Temperature Minimum (Ts MIN)	150°C
- Temperature Typical (Ts TYP)	175°C
- Temperature Maximum (Ts MAX)	200°C
- Time (ts MIN)	60 - 180 Seconds
Ramp-up Rate (TL to TP)	3°C/Second Maximum
Time Maintained Above:	
- Temperature (TL)	217°C
- Time (tL)	60 - 150 Seconds
Peak Temperature (TP)	260°C Maximum for 10 Seconds Maximum
Target Peak Temperature (TP Target)	250°C +0/-5°C
Time within 5°C of actual peak (tp)	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
Additional Notes	Temperatures shown are applied to body of device.

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Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 240°C

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)	60 - 120 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)	240°C Maximum
Target Peak Temperature (TP Target)	240°C Maximum 2 Times / 230°C Maximum 1 Time
Time within 5°C of actual peak (tP)	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
Additional Notes	Temperatures shown are applied to body of device.

Low Temperature Manual Soldering

185°C Maximum for 10 Seconds Maximum, 2 times Maximum. (Temperatures shown are applied to body of device.)

High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum. (Temperatures shown are applied to body of device.)