

# EH3900TS-48.000M TR

[Click part number to visit Part Number Details page](#)

## REGULATORY COMPLIANCE (Data Sheet downloaded on Apr 6, 2018)


[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

Quartz Crystal Clock Oscillators XO (SPXO) LVCMOS (CMOS) 1.8Vdc 4 Pad 3.2mm x 5.0mm Ceramic Surface Mount (SMD) 48.000MHz  $\pm 100$ ppm 0°C to +70°C

## ELECTRICAL SPECIFICATIONS

|                                       |                                                                                                                                                                                                                                                      |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal Frequency                     | 48.000MHz                                                                                                                                                                                                                                            |
| Frequency Tolerance/Stability         | $\pm 100$ 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°, 260°C Reflow, Shock, and Vibration) |
| Aging at 25°C                         | $\pm 5$ ppm/Year Maximum                                                                                                                                                                                                                             |
| Operating Temperature Range           | 0°C to +70°C                                                                                                                                                                                                                                         |
| Supply Voltage                        | 1.8Vdc $\pm 5\%$                                                                                                                                                                                                                                     |
| Input Current                         | 4mA Maximum (No Load)                                                                                                                                                                                                                                |
| Output Voltage Logic High (Voh)       | 90% of Vdd Minimum (IOH = -8mA)                                                                                                                                                                                                                      |
| Output Voltage Logic Low (Vol)        | 10% of Vdd Maximum (IOL = +8mA)                                                                                                                                                                                                                      |
| Rise/Fall Time                        | 6nSec Maximum (Measured at 20% to 80% of waveform)                                                                                                                                                                                                   |
| Duty Cycle                            | 50 $\pm 10$ (%) (Measured at 50% of waveform)                                                                                                                                                                                                        |
| Load Drive Capability                 | 15pF Maximum                                                                                                                                                                                                                                         |
| Output Logic Type                     | CMOS                                                                                                                                                                                                                                                 |
| Pin 1 Connection                      | Tri-State (High Impedance)                                                                                                                                                                                                                           |
| Tri-State Input Voltage (Vih and Vil) | 90% of Vdd Minimum or No Connect to Enable Output, 10% of Vdd Maximum to Disable Output (High Impedance)                                                                                                                                             |
| Standby Current                       | 10 $\mu$ A Maximum (Pin 1 = Ground)                                                                                                                                                                                                                  |
| RMS Phase Jitter                      | 20pSec Typical, 30pSec Maximum (Fj = 12kHz to 20MHz)                                                                                                                                                                                                 |
| Period Jitter (RMS)                   | 15pSec Typical                                                                                                                                                                                                                                       |
| Period Jitter (pk-pk)                 | 100pSec Typical, 200pSec Maximum                                                                                                                                                                                                                     |
| Start Up Time                         | 10mSec Maximum                                                                                                                                                                                                                                       |
| Storage Temperature Range             | -55°C to +125°C                                                                                                                                                                                                                                      |

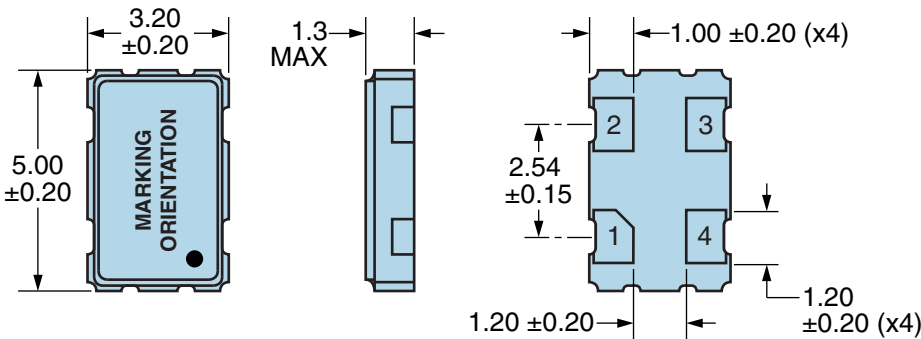
## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

|                              |                                               |
|------------------------------|-----------------------------------------------|
| 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         |

EH3900TS-48.000M TR

[Click part number to visit Part Number Details page](#)

MECHANICAL DIMENSIONS (all dimensions in millimeters)

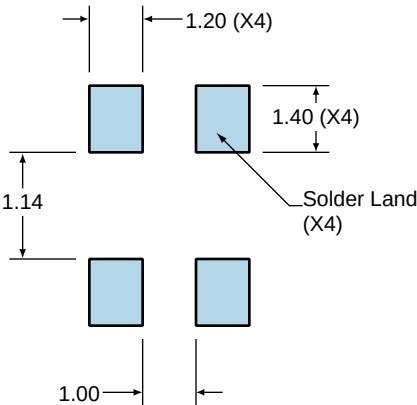


| PIN | CONNECTION     |
|-----|----------------|
| 1   | Tri-State      |
| 2   | Case Ground    |
| 3   | Output         |
| 4   | Supply Voltage |

| LINE | MARKING                                                        |
|------|----------------------------------------------------------------|
| 1    | <b>E48.000</b><br><i>E=Ecliptek Designator</i>                 |
| 2    | <b>XXXXX</b><br><i>XXXXX=Ecliptek Manufacturing Identifier</i> |

Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are ±0.1

EH3900TS-48.000M TR

[Click part number to visit Part Number Details page](#)

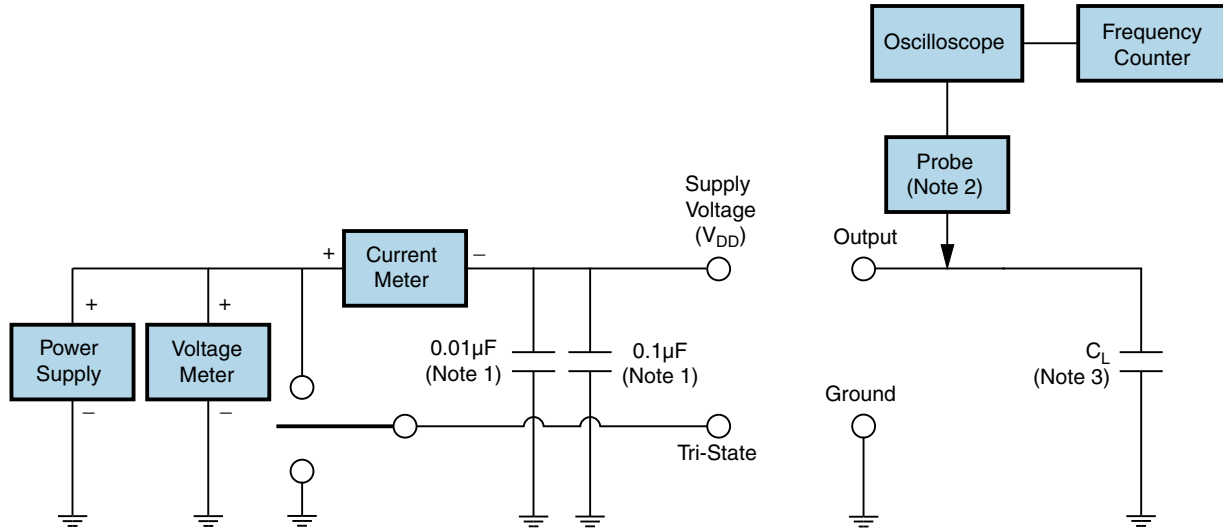
OUTPUT WAVEFORM & TIMING DIAGRAM



# EH3900TS-48.000M TR

[Click part number to visit Part Number Details page](#)

## Test Circuit for CMOS Output



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

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

Note 3: Capacitance value C<sub>L</sub> includes sum of all probe and fixture capacitance.

# EH3900TS-48.000M TR

## Tape & Reel Dimensions

Quantity Per Reel: 1,000 units

All Dimensions in Millimeters

Compliant to EIA-481

