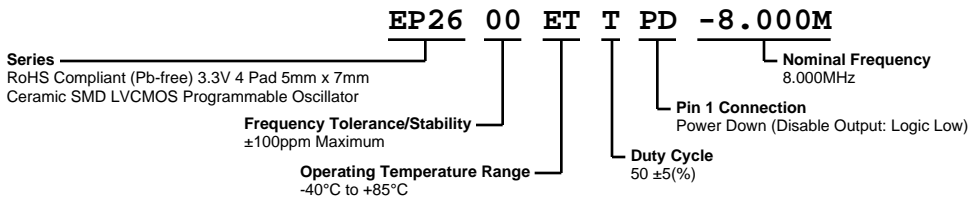


# EP2600ETTPD-8.000M



**ECLIPTEK**<sup>®</sup>  
CORPORATION



## ELECTRICAL SPECIFICATIONS

|  |   |
|--|---|
| <b>Nominal Frequency</b>                     | 8.000MHz  |
| <b>Frequency Tolerance/Stability</b>         | ±100ppm 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) |
| <b>Aging at 25°C</b>                         | ±5ppm/year Maximum  |
| <b>Operating Temperature Range</b>           | -40°C to +85°C  |
| <b>Supply Voltage</b>                        | 3.3Vdc ±0.3Vdc  |
| <b>Input Current</b>                         | 28mA Maximum (Unloaded)   |
| <b>Output Voltage Logic High (Voh)</b>       | Vdd-0.4Vdc Minimum (IOH= -8mA)  |
| <b>Output Voltage Logic Low (Vol)</b>        | 0.4Vdc Maximum (IOL= +8mA)  |
| <b>Rise/Fall Time</b>                        | 4nSec Maximum (Measured at 20% to 80% of waveform)  |
| <b>Duty Cycle</b>                            | 50 ±5(%) (Measured at 50% of waveform)  |
| <b>Load Drive Capability</b>                 | 30pF Maximum  |
| <b>Output Logic Type</b>                     | CMOS  |
| <b>Pin 1 Connection</b>                      | Power Down (Disable Output: Logic Low)  |
| <b>Tri-State Input Voltage (Vih and Vil)</b> | 70% of Vdd Minimum to enable output, 20% of Vdd Maximum to disable output, No Connect to enable output.   |
| <b>Standby Current</b>                       | 20µA Maximum (Pin 1 = Ground)   |
| <b>Disable Current</b>                       | 16mA Maximum (Pin 1 = Ground)   |
| <b>Absolute Clock Jitter</b>                 | ±250pSec Maximum, ±100pSec Typical  |
| <b>One Sigma Clock Period Jitter</b>         | ±50pSec Maximum   |
| <b>Start Up Time</b>                         | 10mSec Maximum  |
| <b>Storage Temperature Range</b>             | -55°C to +125°C   |

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

|                                     |   |
|-------------------------------------|---|
| <b>ESD Susceptibility</b>           | MIL-STD-883, Method 3015, Class 1, HBM: 1500V |
| <b>Fine Leak Test</b>               | MIL-STD-883, Method 1014, Condition A         |
| <b>Flammability</b>                 | UL94-V0                                       |
| <b>Gross Leak Test</b>              | MIL-STD-883, Method 1014, Condition C         |
| <b>Mechanical Shock</b>             | MIL-STD-883, Method 2002, Condition B         |
| <b>Moisture Resistance</b>          | MIL-STD-883, Method 1004                      |
| <b>Moisture Sensitivity</b>         | J-STD-020, MSL 1                              |
| <b>Resistance to Soldering Heat</b> | MIL-STD-202, Method 210, Condition K          |
| <b>Resistance to Solvents</b>       | MIL-STD-202, Method 215                       |
| <b>Solderability</b>                | MIL-STD-883, Method 2003                      |
| <b>Temperature Cycling</b>          | MIL-STD-883, Method 1010, Condition B         |
| <b>Vibration</b>                    | MIL-STD-883, Method 2007, Condition A         |

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## MECHANICAL DIMENSIONS (all dimensions in millimeters)



| PIN | CONNECTION             |
|-----|------------------------|
| 1   | Power Down (Logic Low) |
| 2   | Ground/Case Ground     |
| 3   | Output                 |
| 4   | Supply Voltage         |

| LINE | MARKING  |
|------|--|
| 1    | <b>ECLIPTEK</b>  |
| 2    | <b>8.000M</b>  |
| 3    | <b>PXXYZZ</b><br><i>P=Configuration Designator</i><br><i>XX=Ecliptek Manufacturing Code</i><br><i>Y=Last Digit of the Year</i><br><i>ZZ=Week of the Year</i> |

## Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are  $\pm 0.1$

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## OUTPUT WAVEFORM & TIMING DIAGRAM



### Test Circuit for CMOS Output



Note 1: An external 0.1 $\mu$ F low frequency tantalum bypass capacitor in parallel with a 0.01 $\mu$ F high frequency ceramic bypass capacitor close to the package ground and  $V_{DD}$  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  $C_L$  includes sum of all probe and fixture capacitance.

## Recommended Solder Reflow Methods



### High Temperature Infrared/Convection

|  |   |
|--|---|
| <b><math>T_S</math> MAX to <math>T_L</math> (Ramp-up Rate)</b> | 3°C/second Maximum                                |
| <b>Preheat</b>   |   |
| - Temperature Minimum ( $T_S$ MIN)                             | 150°C   |
| - Temperature Typical ( $T_S$ TYP)                             | 175°C   |
| - Temperature Maximum ( $T_S$ MAX)                             | 200°C   |
| - Time ( $t_s$ MIN)  | 60 - 180 Seconds                                  |
| <b>Ramp-up Rate (<math>T_L</math> to <math>T_P</math>)</b>     | 3°C/second Maximum                                |
| <b>Time Maintained Above:</b>                                  |   |
| - Temperature ( $T_L$ )  | 217°C   |
| - Time ( $t_L$ )   | 60 - 150 Seconds                                  |
| <b>Peak Temperature (<math>T_P</math>)</b>                     | 260°C Maximum for 10 Seconds Maximum              |
| <b>Target Peak Temperature (<math>T_P</math> Target)</b>       | 250°C +0/-5°C                                     |
| <b>Time within 5°C of actual peak (<math>t_p</math>)</b>       | 20 - 40 seconds                                   |
| <b>Ramp-down Rate</b>  | 6°C/second Maximum                                |
| <b>Time 25°C to Peak Temperature (t)</b>                       | 8 minutes Maximum                                 |
| <b>Moisture Sensitivity Level</b>                              | Level 1   |
| <b>Additional Notes</b>  | Temperatures shown are applied to body of device. |

## Recommended Solder Reflow Methods



### Low Temperature Infrared/Convection 240°C

|  |  |
|--|--|
| <b><math>T_S</math> MAX to <math>T_L</math> (Ramp-up Rate)</b> | 5°C/second Maximum                                     |
| <b>Preheat</b>   |  |
| - Temperature Minimum ( $T_S$ MIN)                             | N/A  |
| - Temperature Typical ( $T_S$ TYP)                             | 150°C  |
| - Temperature Maximum ( $T_S$ MAX)                             | N/A  |
| - Time ( $t_s$ MIN)  | 60 - 120 Seconds                                       |
| <b>Ramp-up Rate (<math>T_L</math> to <math>T_P</math>)</b>     | 5°C/second Maximum                                     |
| <b>Time Maintained Above:</b>                                  |  |
| - Temperature ( $T_L$ )  | 150°C  |
| - Time ( $t_L$ )   | 200 Seconds Maximum                                    |
| <b>Peak Temperature (<math>T_P</math>)</b>                     | 240°C Maximum  |
| <b>Target Peak Temperature (<math>T_P</math> Target)</b>       | 240°C Maximum 1 Time / 230°C Maximum 2 Times           |
| <b>Time within 5°C of actual peak (<math>t_p</math>)</b>       | 10 seconds Maximum 2 Times / 80 seconds Maximum 1 Time |
| <b>Ramp-down Rate</b>  | 5°C/second Maximum                                     |
| <b>Time 25°C to Peak Temperature (t)</b>                       | N/A  |
| <b>Moisture Sensitivity Level</b>                              | Level 1  |
| <b>Additional Notes</b>  | 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.)