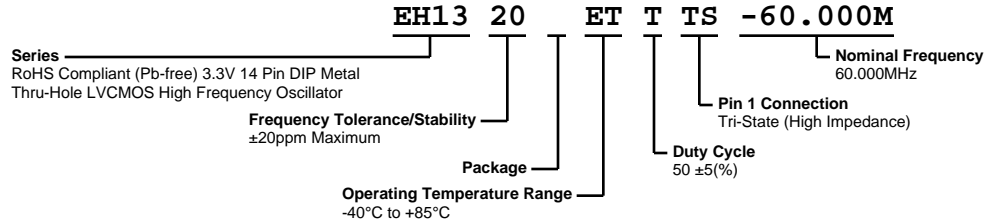


EH1320ETTS-60.000M



ELECTRICAL SPECIFICATIONS

| | |
|---------------------------------------|---|
| Nominal Frequency | 60.000MHz |
| Frequency Tolerance/Stability | ±20ppm Maximum (Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the Operating Temperature Range, Supply Voltage Chngem Output Load Change, Output Load Change, 1st Year Aging at 25°C, Shock, and Vibration) |
| Aging at 25°C | ±5ppm/year Maximum |
| Operating Temperature Range | -40°C to +85°C |
| Supply Voltage | 3.3Vdc ±0.3Vdc |
| Input Current | 35mA Maximum (No Load) |
| Output Voltage Logic High (Voh) | 2.7Vdc Minimum (IOH = -8mA) |
| Output Voltage Logic Low (Vol) | 0.5Vdc Maximum (IOL = +8mA) |
| Rise/Fall Time | 6nSec Maximum (Measured at 20% to 80% of waveform) |
| Duty Cycle | 50 ±5(%) (Measured at 50% of waveform) |
| Load Drive Capability | 30pF Maximum |
| Output Logic Type | CMOS |
| Pin 1 Connection | Tri-State (High Impedance) |
| Tri-State Input Voltage (Vih and Vil) | 70% of Vdd Minimum to Enable Output, 20% of Vdd Maximum to Disable Output, No Connect to Enable Output. |
| Absolute Clock Jitter | ±250pSec Maximum, ±100pSec Typical |
| One Sigma Clock Period Jitter | ±50pSec Maximum, ±40pSec Typical |
| Start Up Time | 10mSec Maximum |
| Storage Temperature Range | -55°C to +125°C |

ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

| | |
|------------------------------|---------------------------------------|
| Fine Leak Test | MIL-STD-883, Method 1014, Condition A |
| Gross Leak Test | MIL-STD-883, Method 1014, Condition C |
| Lead Integrity | MIL-STD-883, Method 2004 |
| Mechanical Shock | MIL-STD-202, Method 213, Condition C |
| Resistance to Soldering Heat | MIL-STD-202, Method 210 |
| Resistance to Solvents | MIL-STD-202, Method 215 |
| Solderability | MIL-STD-883, Method 2003 |
| Temperature Cycling | MIL-STD-883, Method 1010 |
| Vibration | MIL-STD-883, Method 2007, Condition A |

EH1320ETTS-60.000M

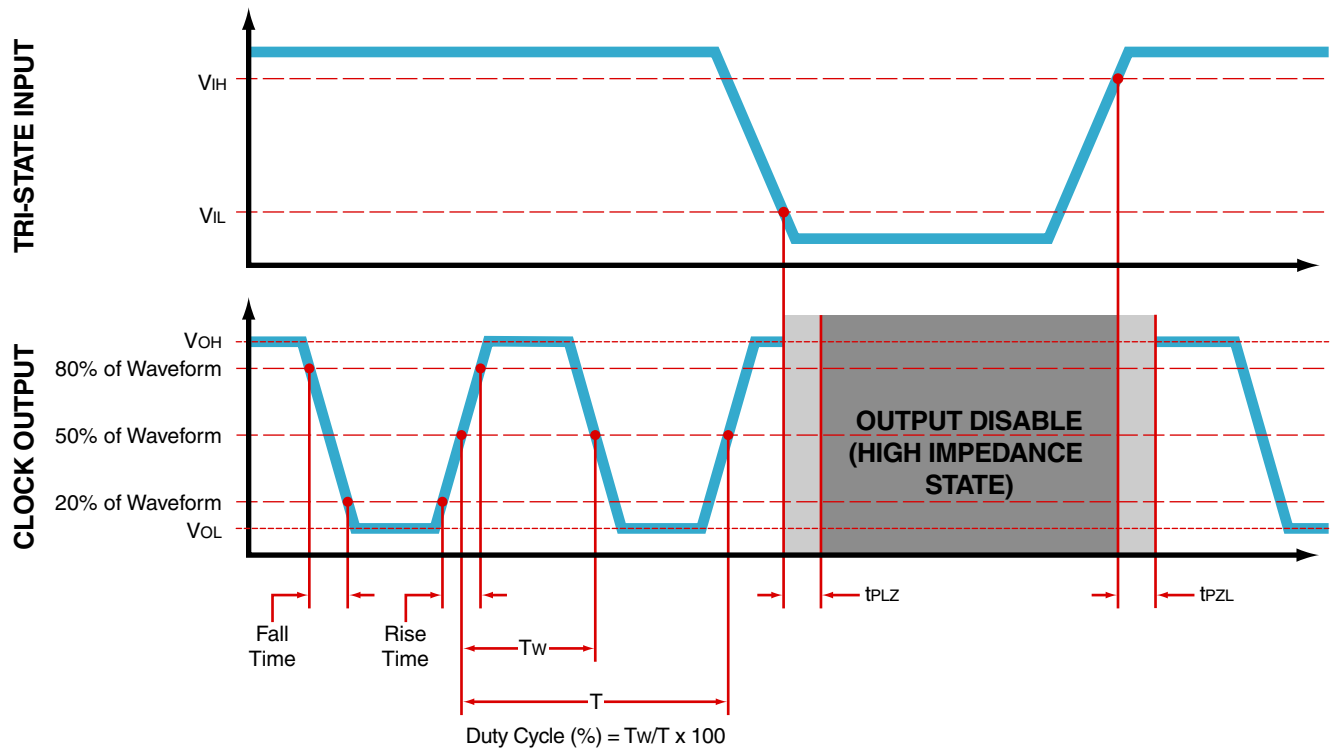
MECHANICAL DIMENSIONS (all dimensions in millimeters)



| PIN | CONNECTION |
|-----|----------------------------|
| 1 | Tri-State (High Impedance) |
| 7 | Ground/Case Ground |
| 8 | Output |
| 14 | Supply Voltage |

| LINE | MARKING |
|------|---|
| 1 | ECLIPTEK |
| 2 | EH13TS EH13=Product Series |
| 3 | 60.000M |
| 4 | XXYYZ XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year |

OUTPUT WAVEFORM & TIMING DIAGRAM



EH1320ETTS-60.000M

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.

Recommended Solder Reflow Methods



High Temperature Solder Bath (Wave Solder)

| | |
|--|--|
| 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 MIN) | 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 |
| Additional Notes | Temperatures shown are applied to back of PCB board and device leads only. Do not use this method for product with the Gull Wing option. |

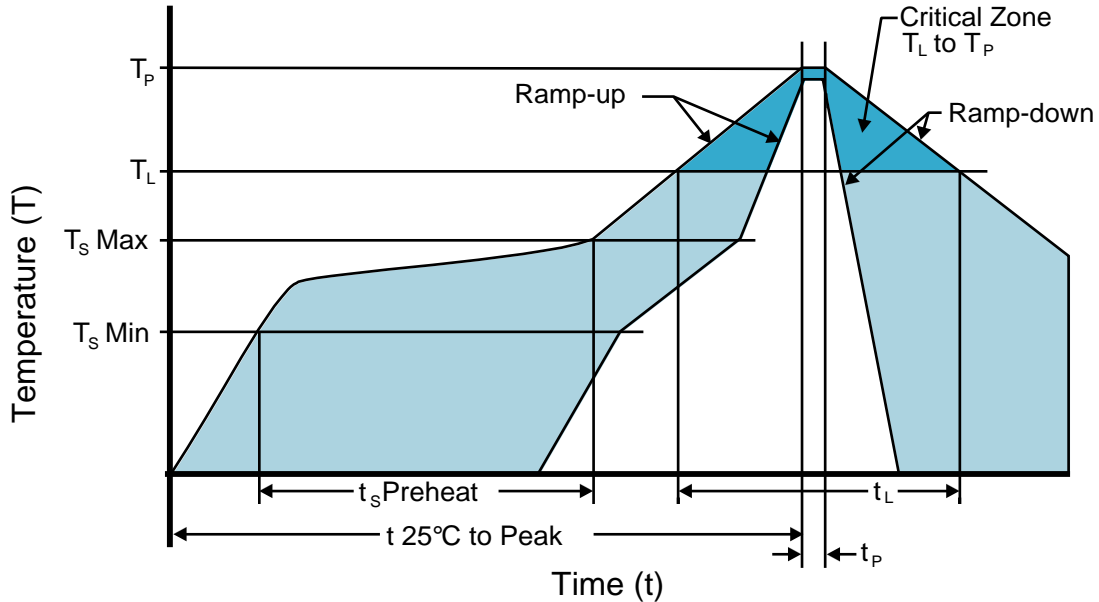
Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 185°C

| | |
|--|---|
| 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 MIN) | 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) | 185°C Maximum |
| Target Peak Temperature (T_p Target) | 185°C Maximum 2 Times |
| Time within 5°C of actual peak (t_p) | 10 seconds Maximum 2 Times |
| 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. Use this method only for product with the Gull Wing option. |

Recommended Solder Reflow Methods



Low Temperature Solder Bath (Wave Solder)

| | |
|--|--|
| 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 MIN) | 30 - 60 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) | 245°C Maximum |
| Target Peak Temperature (T_p Target) | 245°C Maximum 1 Time / 235°C Maximum 2 Times |
| Time within 5°C of actual peak (t_p) | 5 seconds Maximum 1 Time / 15 seconds Maximum 2 Times |
| 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 back of PCB board and device leads only. Do not use this method for product with the Gull Wing option. |

Low Temperature Manual Soldering

185°C Maximum for 10 seconds Maximum, 2 times Maximum. (Temperatures listed are applied to device leads only. This method can be utilized with both Gull Wing and Non-Gull Wing devices.)

High Temperature Manual Soldering

260°C Maximum for 5 seconds Maximum, 2 times Maximum. (Temperatures listed are applied to device leads only. This method can be utilized with both Gull Wing and Non-Gull Wing devices.)