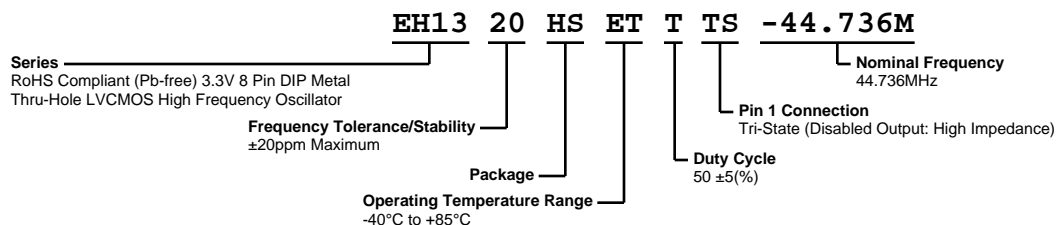


# EH1320HSETTTS-44.736M



**ECLIPTEK**  
CORPORATION



## ELECTRICAL SPECIFICATIONS

Nominal Frequency	44.736MHz
Frequency Tolerance/Stability	±20ppm Maximum (Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the Operating Temperature Range, Supply Voltage 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 (Disabled Output: High Impedance)
Tri-State Input Voltage (Vih and Vil)	70% of Vdd Minimum to enable output, 20% of Vdd 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, ±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

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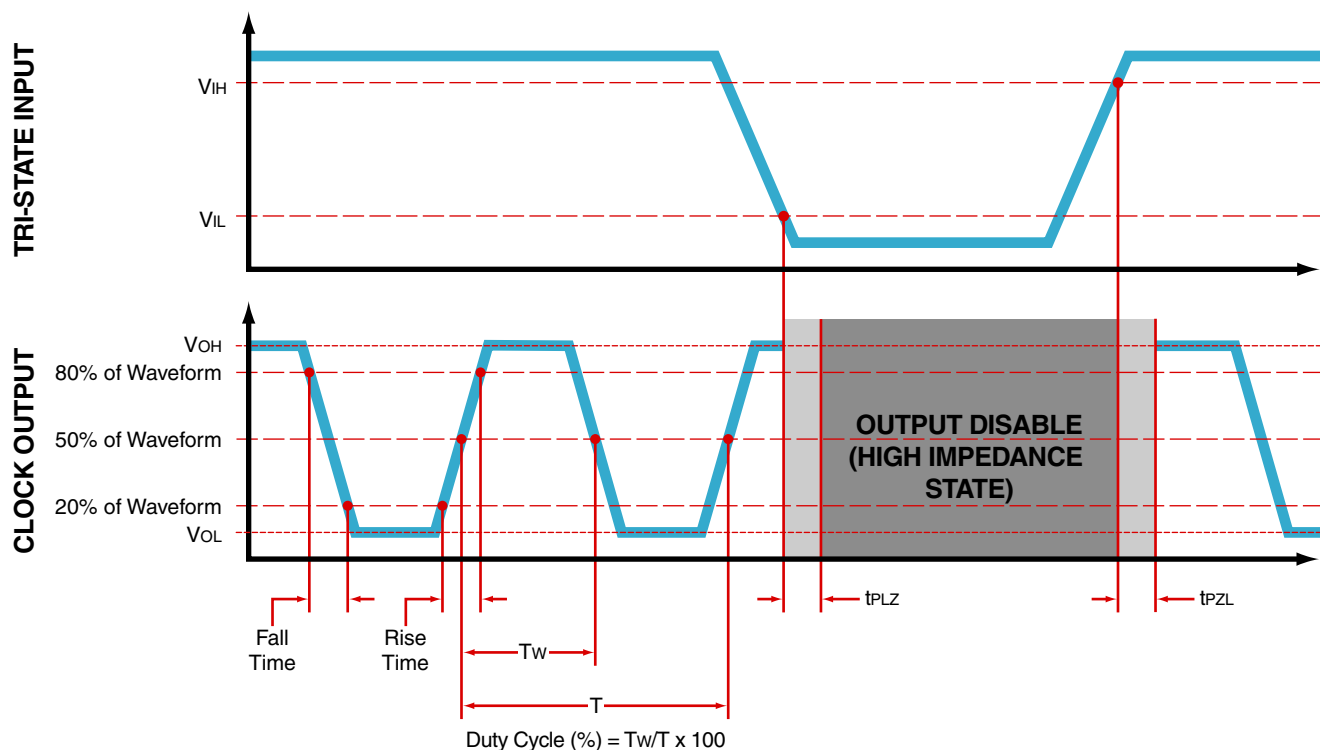
## MECHANICAL DIMENSIONS (all dimensions in millimeters)



PIN	CONNECTION
1	Tri-State (High Impedance)
4	Case/Ground
5	Output
8	Supply Voltage

LINE	MARKING
1	<b>ECLIPTEK</b>
2	<b>EH13TS</b> EH13=Product Series
3	<b>44.736M</b>
4	<b>XXYYZ</b> XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year

## OUTPUT WAVEFORM & TIMING DIAGRAM



# EH1320HSETTTS-44.736M

## 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 Solder Bath (Wave Solder)

$T_s$ MAX to $T_L$ (Ramp-up Rate)	3°C/second Maximum
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#### 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
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#### 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
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Target Peak Temperature ( $T_p$ Target)	250°C +0/-5°C
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Time within 5°C of actual peak ( $t_p$ )	20 - 40 seconds
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Ramp-down Rate	6°C/second Maximum
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Time 25°C to Peak Temperature (t)	8 minutes Maximum
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Moisture Sensitivity Level	Level 1
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## Recommended Solder Reflow Methods



### Low Temperature Infrared/Convection 185°C

<b><math>T_s</math> MAX to <math>T_L</math> (Ramp-up Rate)</b>	5°C/second Maximum
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#### 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

<b>Ramp-up Rate (<math>T_L</math> to <math>T_P</math>)</b>	5°C/second Maximum
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#### Time Maintained Above:

- Temperature ( $T_L$ )	150°C
- Time ( $t_L$ )	200 Seconds Maximum

<b>Peak Temperature (<math>T_P</math>)</b>	185°C Maximum
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<b>Target Peak Temperature (<math>T_P</math> Target)</b>	185°C Maximum 2 Times
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<b>Time within 5°C of actual peak (<math>t_p</math>)</b>	10 seconds Maximum 2 Times
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<b>Ramp-down Rate</b>	5°C/second Maximum
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<b>Time 25°C to Peak Temperature (t)</b>	N/A
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<b>Moisture Sensitivity Level</b>	Level 1
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## 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

### Low Temperature Manual Soldering

185°C Maximum for 10 seconds Maximum, 2 times Maximum.

### High Temperature Manual Soldering

260°C Maximum for 5 seconds Maximum, 2 times Maximum.