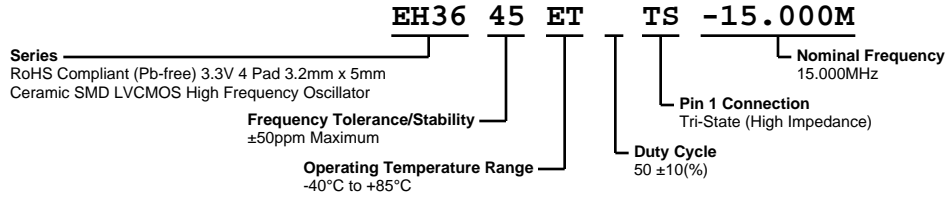


# EH3645ETTS-15.000M



## ELECTRICAL SPECIFICATIONS

<b>Nominal Frequency</b>	15.000MHz
<b>Frequency Tolerance/Stability</b>	$\pm 50$ ppm Maximum (Inclusive of all conditions: Calibration Tolerance at $25^{\circ}\text{C}$ , Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, 1st Year Aging at $25^{\circ}\text{C}$ , Shock, and Vibration)
<b>Aging at <math>25^{\circ}\text{C}</math></b>	$\pm 5$ ppm/year Maximum
<b>Operating Temperature Range</b>	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$
<b>Supply Voltage</b>	3.3Vdc $\pm 0.3$ Vdc
<b>Input Current</b>	35mA Maximum (No Load)
<b>Output Voltage Logic High (Voh)</b>	2.7Vdc Minimum (IOH = -8mA)
<b>Output Voltage Logic Low (Vol)</b>	0.5Vdc Maximum (IOL = +8mA)
<b>Rise/Fall Time</b>	6nSec Maximum (Measured at 20% to 80% of waveform)
<b>Duty Cycle</b>	$50 \pm 10\%$ (Measured at 50% of waveform)
<b>Load Drive Capability</b>	30pF Maximum
<b>Output Logic Type</b>	CMOS
<b>Pin 1 Connection</b>	Tri-State (High Impedance)
<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>Absolute Clock Jitter</b>	$\pm 250$ pSec Maximum, $\pm 100$ pSec Typical
<b>One Sigma Clock Period Jitter</b>	$\pm 50$ pSec Maximum, $\pm 40$ pSec Typical
<b>Start Up Time</b>	10mSec Maximum
<b>Storage Temperature Range</b>	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

<b>Fine Leak Test</b>	MIL-STD-883, Method 1014, Condition A
<b>Gross Leak Test</b>	MIL-STD-883, Method 1014, Condition C
<b>Mechanical Shock</b>	MIL-STD-202, Method 213, Condition C
<b>Resistance to Soldering Heat</b>	MIL-STD-202, Method 210
<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
<b>Vibration</b>	MIL-STD-883, Method 2007, Condition A

# EH3645ETTS-15.000M

## MECHANICAL DIMENSIONS (all dimensions in millimeters)



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

LINE	MARKING
1	<b>E15.000</b> <i>E=Ecliptek Designator</i>

## Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are ±0.1

# EH3645ETTS-15.000M

## OUTPUT WAVEFORM & TIMING DIAGRAM



### Test Circuit for CMOS Output



Note 1: An external 0.1µF low frequency tantalum bypass capacitor in parallel with a 0.01µF 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

**$T_s \text{ MAX}$  to  $T_L$  (Ramp-up Rate)** 3°C/second Maximum

#### Preheat

- Temperature Minimum ( $T_s \text{ MIN}$ ) 150°C
- Temperature Typical ( $T_s \text{ TYP}$ ) 175°C
- Temperature Maximum ( $T_s \text{ MAX}$ ) 200°C
- Time ( $t_s \text{ MIN}$ ) 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 ( $T_p \text{ Target}$ )** 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

## Recommended Solder Reflow Methods



### Low Temperature Infrared/Convection 240°C

<b>T<sub>s</sub> MAX to T<sub>L</sub> (Ramp-up Rate)</b>	5°C/second Maximum
<b>Preheat</b>	
- Temperature Minimum (T <sub>s</sub> MIN)	N/A
- Temperature Typical (T <sub>s</sub> TYP)	150°C
- Temperature Maximum (T <sub>s</sub> MAX)	N/A
- Time (t <sub>s</sub> MIN)	60 - 120 Seconds
<b>Ramp-up Rate (T<sub>L</sub> to T<sub>p</sub>)</b>	5°C/second Maximum
<b>Time Maintained Above:</b>	
- Temperature (T <sub>L</sub> )	150°C
- Time (t <sub>L</sub> )	200 Seconds Maximum
<b>Peak Temperature (T<sub>p</sub>)</b>	240°C Maximum
<b>Target Peak Temperature (T<sub>p</sub> Target)</b>	240°C Maximum 1 Time / 230°C Maximum 2 Times
<b>Time within 5°C of actual peak (t<sub>p</sub>)</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

### 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.