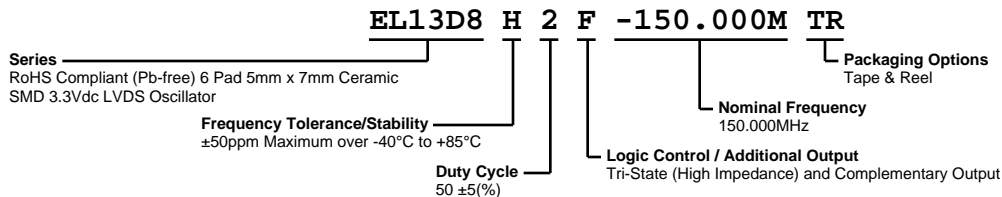


# EL13D8H2F-150.000M TR



**ECLIPTEK**  
CORPORATION



## ELECTRICAL SPECIFICATIONS

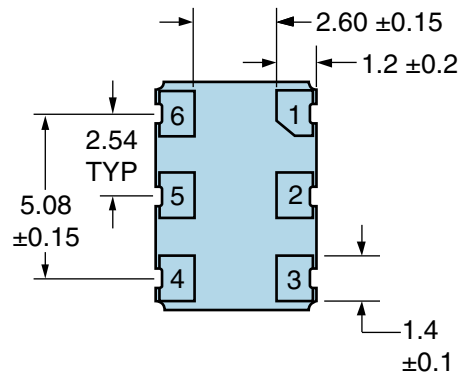
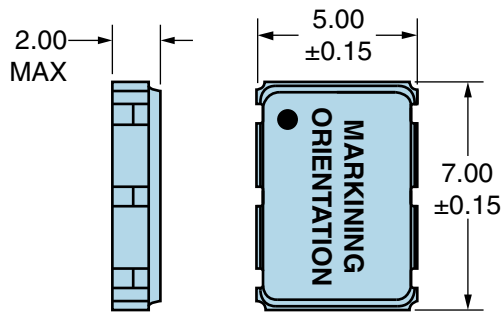
<b>Nominal Frequency</b>	150.000MHz
<b>Frequency Tolerance/Stability</b>	$\pm 50$ ppm Maximum over $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ (Inclusive of all conditions: Calibration Tolerance at $25^{\circ}\text{C}$ , Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at $25^{\circ}\text{C}$ , Shock, and Vibration)
<b>Supply Voltage</b>	3.3Vdc $\pm 5\%$
<b>Input Current</b>	85mA Maximum (with Load)
<b>Output Voltage Logic High (Voh)</b>	1.45Vdc Typical, 1.6Vdc Maximum
<b>Output Voltage Logic Low (Vol)</b>	1.1Vdc Typical, 0.9Vdc Minimum
<b>Vod Magnitude Change (dVod)</b>	-50mV Minimum, +50mV Maximum
<b>Differential Output Voltage (Vod)</b>	247mV Minimum, 350mV Typical, 454mV Maximum
<b>Offset Voltage (Vos)</b>	1.125Vdc Minimum, 1.250Vdc Typical, 1.375Vdc Maximum
<b>Rise/Fall Time</b>	300pSec Typical, 600pSec Maximum (Measured over 20% to 80% of waveform)
<b>Duty Cycle</b>	$50 \pm 5\%$ (Measured at 50% of waveform)
<b>Vos Magnitude Change (dVos)</b>	-150mV Minimum, +150mV Maximum
<b>Load Drive Capability</b>	100 Ohms (Between Output and Complementary Output)
<b>Output Logic Type</b>	LVDS
<b>Phase Noise</b>	-60dBc/Hz at 10Hz offset, -90dBc/Hz at 100Hz offset, -115dBc/Hz at 1kHz offset, -129dBc/Hz at 10kHz offset, -130dBc/Hz at 100kHz offset, -131dBc/Hz at 1MHz offset, -148dBc/Hz at 10MHz offset (Typical Values, $F_0 = 156.250\text{MHz}$ )
<b>Logic Control / Additional Output</b>	Tri-State (High Impedance) and Complementary Output
<b>Tri-State Input Voltage (Vih and Vil)</b>	Vih of 70% of Vcc Minimum or No Connect to Enable Output, Vil of 30% of Vcc to Disable Output (High Impedance)
<b>Standby Current</b>	600 $\mu\text{A}$ Maximum (Disabled Output, High Impedance, without Load)
<b>RMS Phase Jitter</b>	0.7pSec Typical, 1pSec Maximum ( $F_j = 12\text{kHz}$ to $20\text{MHz}$ )
<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

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## MECHANICAL DIMENSIONS (all dimensions in millimeters)

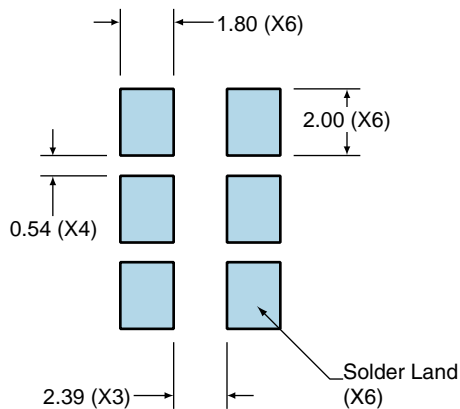


PIN	CONNECTION
1	Tri-State
2	No Connect
3	Case/Ground
4	Output
5	Complementary Output
6	Supply Voltage

LINE	MARKING
1	<b>ECLIPTEK</b>
2	<b>150.00M</b>
3	<b>XXYZZ</b> XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year

## Suggested Solder Pad Layout

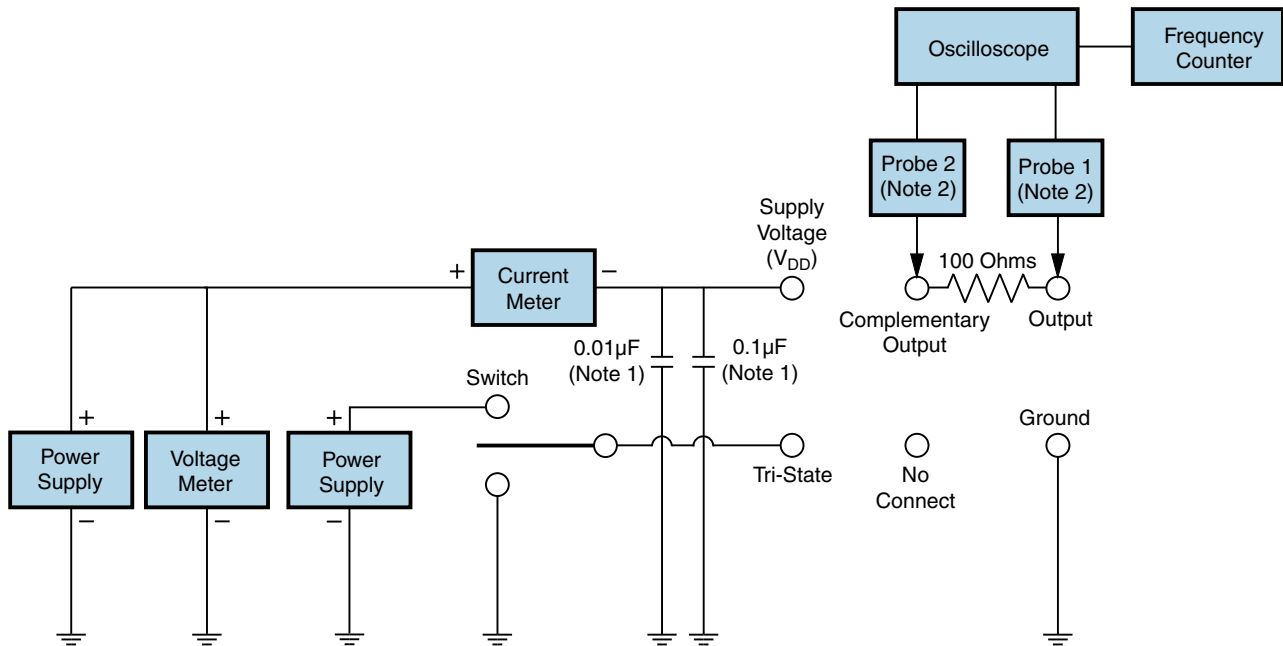
All Dimensions in Millimeters



All Tolerances are ±0.1

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## Test Circuit for Tri-State and Complementary Output



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

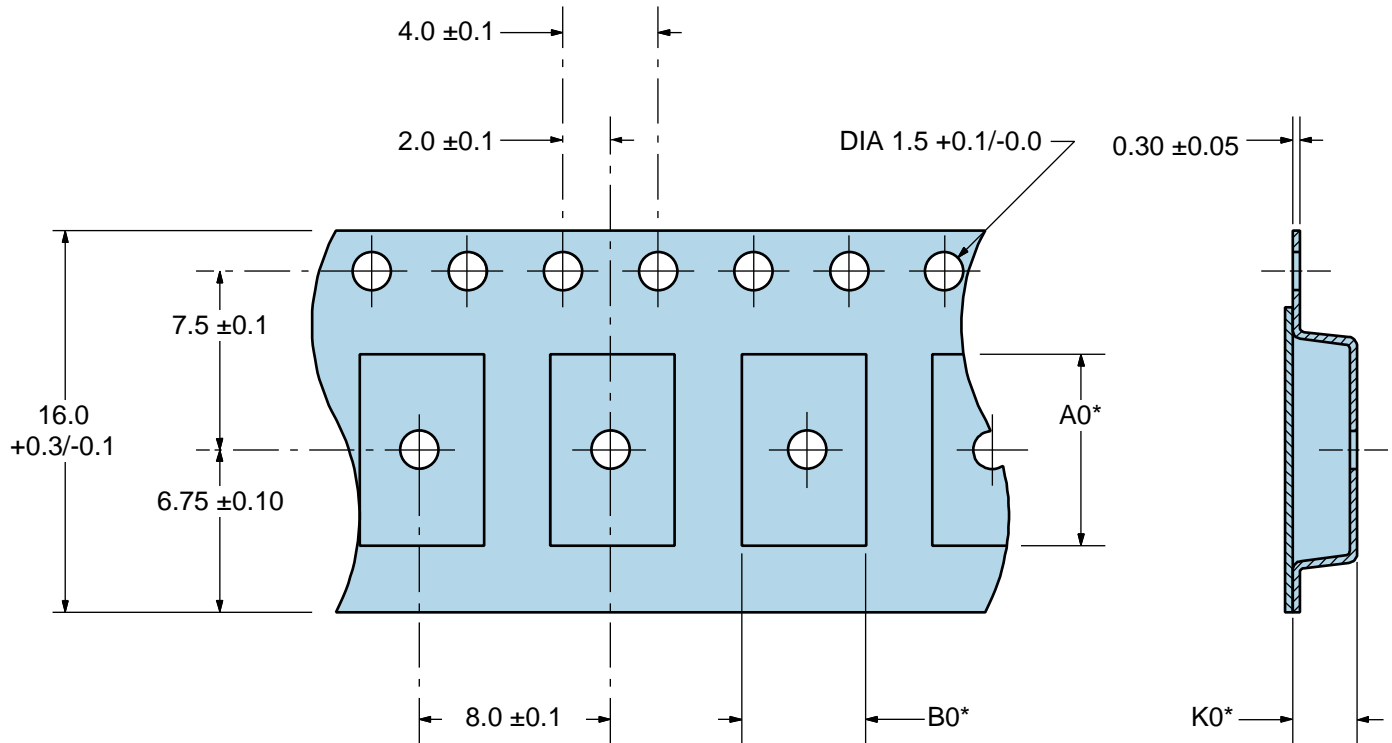
Note 2: A low capacitance ( $<12\text{pF}$ ), 10X attenuation factor, high impedance ( $>10\text{Mohms}$ ), and high bandwidth ( $>500\text{MHz}$ ) passive probe is recommended.

Note 3: Test circuit PCB traces need to be designed for a characteristic line impedance of 50 ohms.

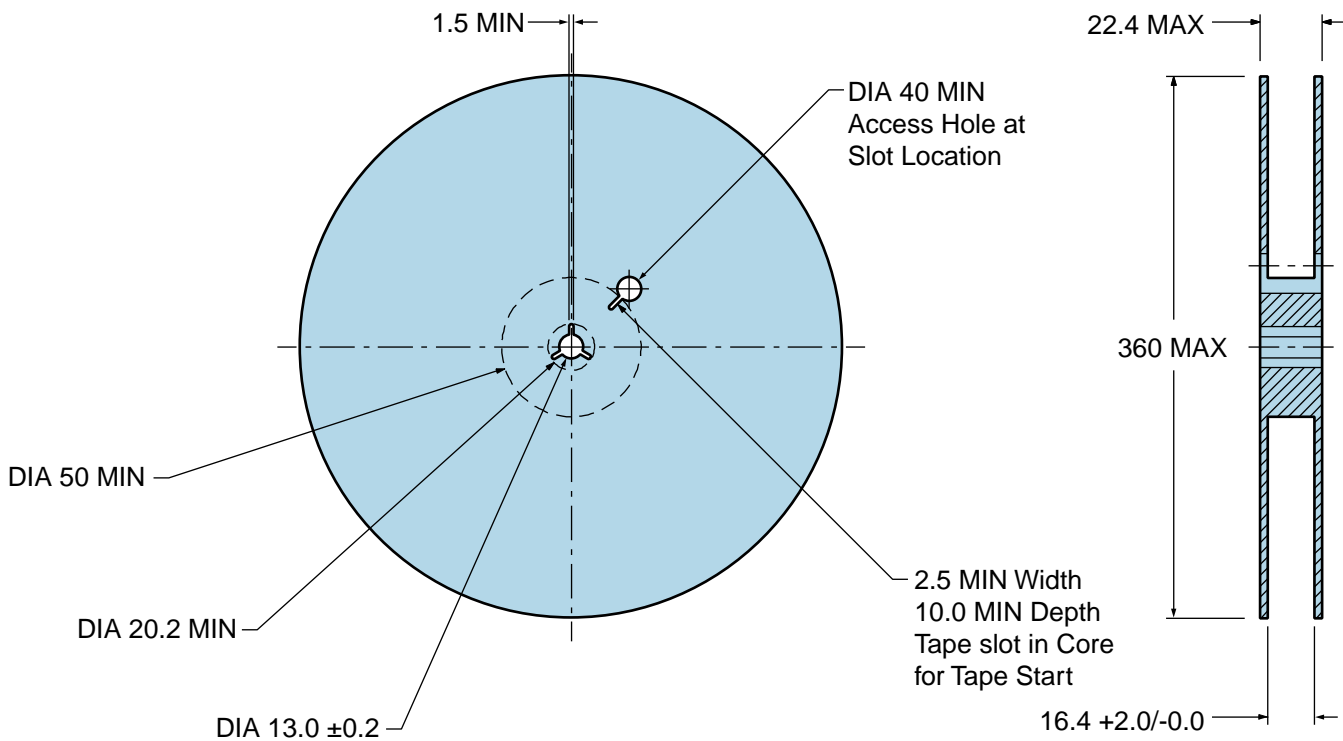
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## Tape & Reel Dimensions

Quantity Per Reel: 1,000 units



\*Compliant to EIA 481A



# EL13D8H2F-150.000M TR

## Recommended Solder Reflow Methods



### High Temperature Infrared/Convection

<b>T<sub>s</sub> MAX to T<sub>L</sub> (Ramp-up Rate)</b>	3°C/second Maximum
<b>Preheat</b>	
- Temperature Minimum (T <sub>s</sub> MIN)	150°C
- Temperature Typical (T <sub>s</sub> TYP)	175°C
- Temperature Maximum (T <sub>s</sub> MAX)	200°C
- Time (t <sub>s</sub> MIN)	60 - 180 Seconds
<b>Ramp-up Rate (T<sub>L</sub> to T<sub>p</sub>)</b>	3°C/second Maximum
<b>Time Maintained Above:</b>	
- Temperature (T <sub>L</sub> )	217°C
- Time (t <sub>L</sub> )	60 - 150 Seconds
<b>Peak Temperature (T<sub>p</sub>)</b>	260°C Maximum for 10 Seconds Maximum
<b>Target Peak Temperature (T<sub>p</sub> Target)</b>	250°C +0/-5°C
<b>Time within 5°C of actual peak (t<sub>p</sub>)</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

## 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.