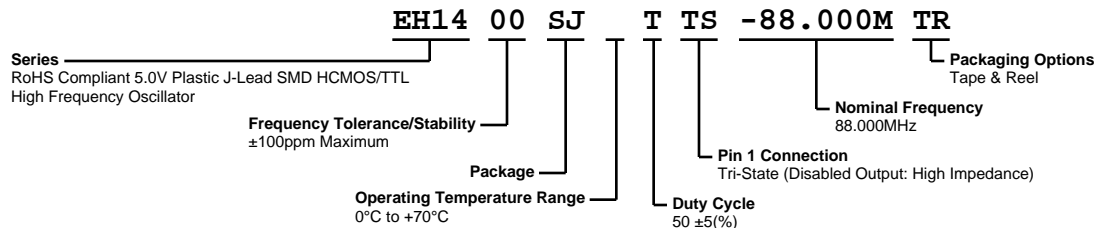


# EH1400SJTS-88.000M TR



## ELECTRICAL SPECIFICATIONS

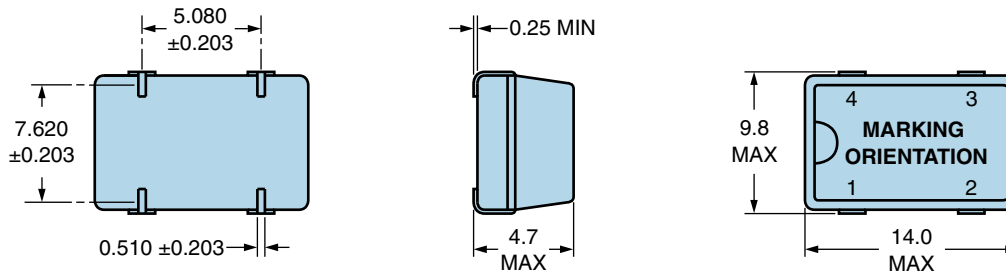
Nominal Frequency	88.000MHz
Frequency Tolerance/Stability	$\pm 100$ ppm Maximum (Inclusive of all conditions: Calibration Tolerance at $25^{\circ}\text{C}$ , Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, 1st Year Aging at $25^{\circ}\text{C}$ , Shock, and Vibration)
Aging at $25^{\circ}\text{C}$	$\pm 5$ ppm/year Maximum
Operating Temperature Range	$0^{\circ}\text{C}$ to $+70^{\circ}\text{C}$
Supply Voltage	$5.0\text{Vdc} \pm 10\%$
Input Current	$50\text{mA}$ Maximum (No Load)
Output Voltage Logic High (Voh)	$2.4\text{Vdc}$ Minimum with TTL Load, $\text{Vdd}-0.4\text{Vdc}$ Minimum with HCMOS Load, $\text{IOH} = -16\text{mA}$
Output Voltage Logic Low (Vol)	$0.4\text{Vdc}$ Maximum with TTL Load, $0.5\text{Vdc}$ Maximum with HCMOS Load, $\text{IOL} = +16\text{mA}$
Rise/Fall Time	$4\text{nSec}$ Maximum (Measured at $0.8\text{Vdc}$ to $2.0\text{Vdc}$ with TTL Load; Measured at 20% to 80% of waveform with HCMOS Load)
Duty Cycle	$50 \pm 5\%$ (Measured at 50% of waveform with TTL Load or with HCMOS Load)
Load Drive Capability	5TTL Load or $15\text{pF}$ HCMOS Load Maximum
Output Logic Type	CMOS
Pin 1 Connection	Tri-State (Disabled Output: High Impedance)
Tri-State Input Voltage (Vih and Vil)	$+2.2\text{Vdc}$ Minimum to enable output, $+0.8\text{Vdc}$ Maximum to disable output (High Impedance), No Connect to enable output.
Absolute Clock Jitter	$\pm 250\text{pSec}$ Maximum, $\pm 100\text{pSec}$ Typical
One Sigma Clock Period Jitter	$\pm 50\text{pSec}$ Maximum, $\pm 30\text{pSec}$ Typical
Start Up Time	$10\text{mSec}$ Maximum
Storage Temperature Range	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

ESD Susceptibility	MIL-STD-883, Method 3015, Class 1, HBM: $1500\text{V}$
Fine Leak Test	MIL-STD-883, Method 1014, Condition A (Internal Crystal Only)
Flammability	UL94-V0
Gross Leak Test	MIL-STD-883, Method 1014, Condition C (Internal Crystal Only)
Mechanical Shock	MIL-STD-202, Method 213, Condition C
Moisture Resistance	MIL-STD-883, Method 1004
Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition K
Resistance to Solvents	MIL-STD-202, Method 215
Solderability	MIL-STD-883, Method 2003
Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A

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## MECHANICAL DIMENSIONS (all dimensions in millimeters)

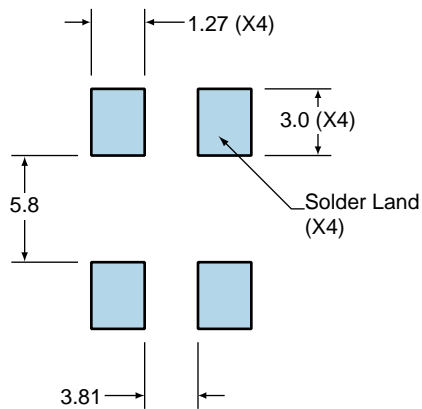


PIN	CONNECTION
1	Tri-State (High Impedance)
2	Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	<b>ECLIPTEK</b>
2	<b>88.000M</b>
3	<b>XXXXXX</b> XXXXXX=Ecliptek Manufacturing Identifier

## Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are  $\pm 0.1$

## OUTPUT WAVEFORM & TIMING DIAGRAM



### Test Circuit for TTL Output

Output Load Drive Capability	$R_L$ Value (Ohms)	$C_L$ Value (pF)
10TTL	390	15
5TTL	780	15
2TTL	1100	6
10LSTTL	2000	15
1TTL	2200	3

Table 1:  $R_L$  Resistance Value and  $C_L$  Capacitance Value Vs. Output Load Drive Capability



- 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.
- Note 4: Resistance value  $R_L$  is shown in Table 1. See applicable specification sheet for 'Load Drive Capability'.
- Note 5: All diodes are MMBD7000, MMBD914, or equivalent.

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## 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.

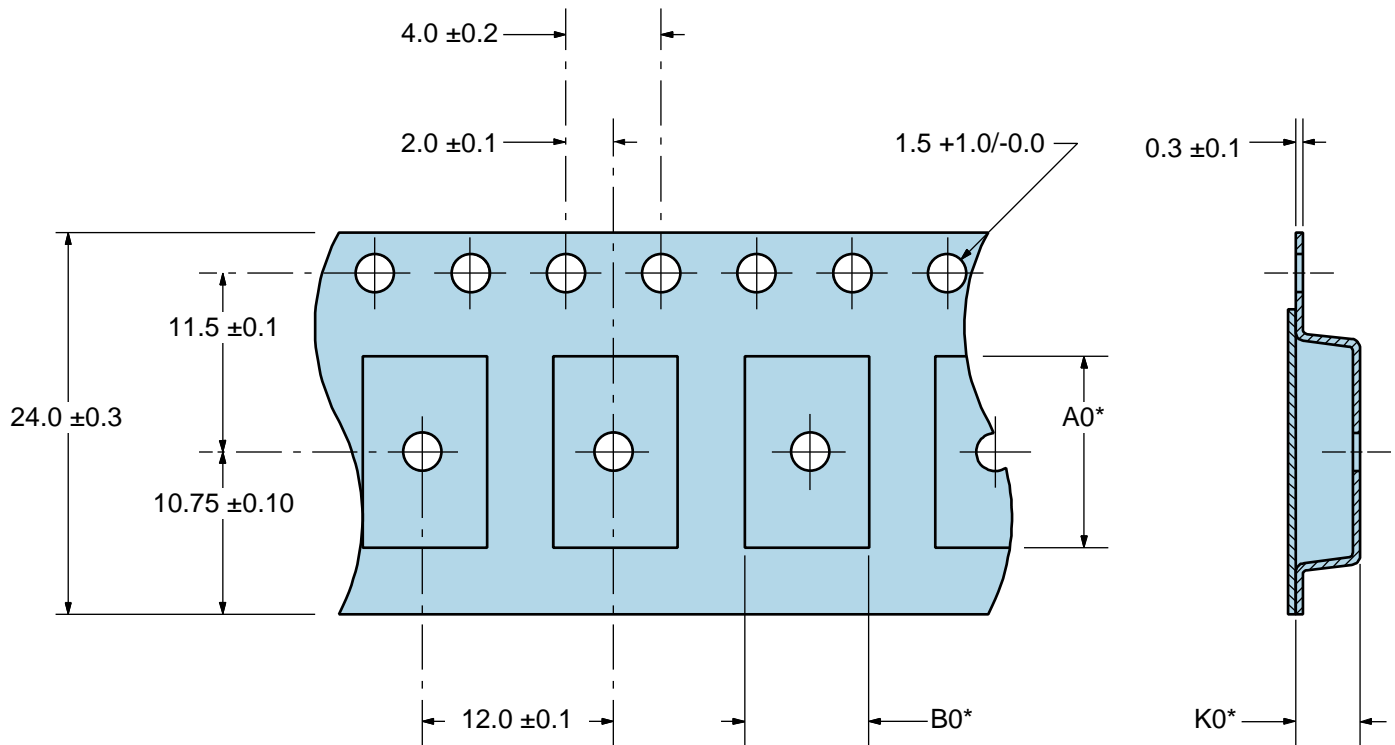
Note 2: A low capacitance ( $<12\text{pF}$ ), 10X attenuation factor, high impedance ( $>10\text{Mohms}$ ), and high bandwidth ( $>300\text{MHz}$ ) passive probe is recommended.

Note 3: Capacitance value  $C_L$  includes sum of all probe and fixture capacitance.

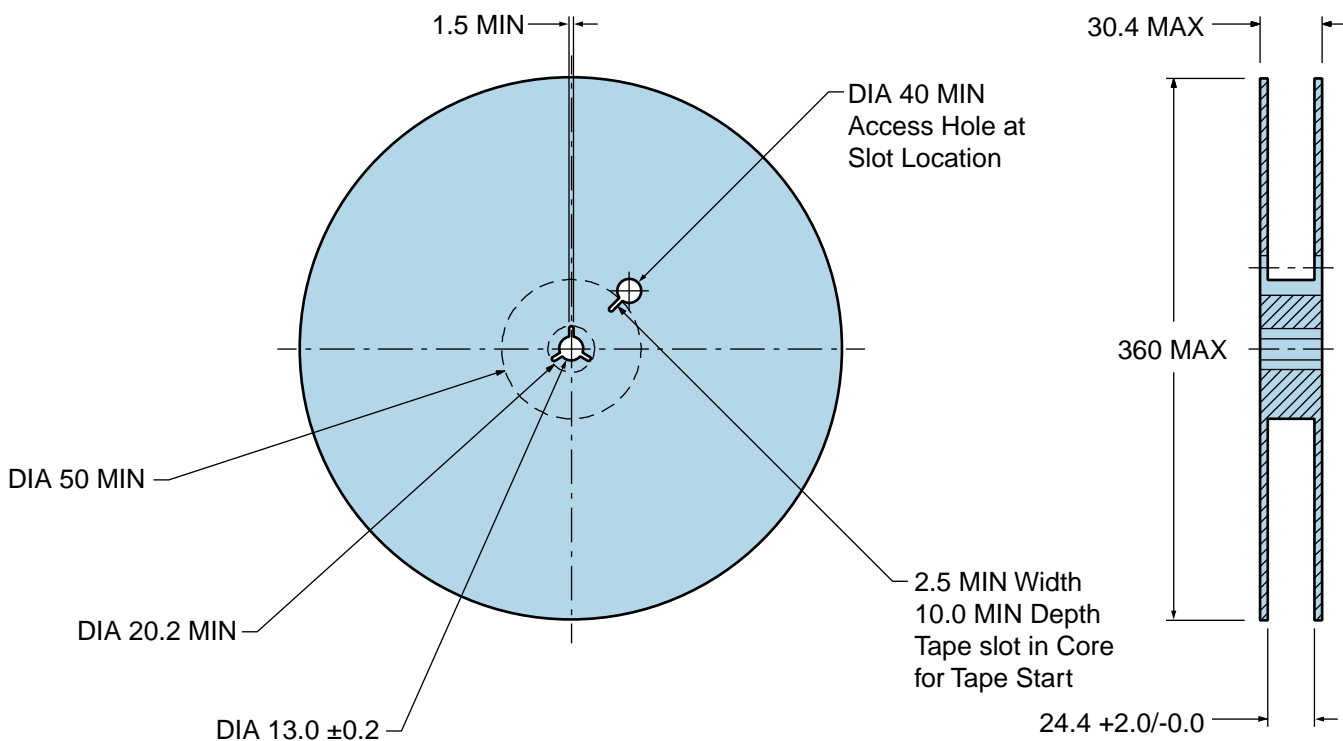
# EH1400SJTTS-88.000M TR

## Tape & Reel Dimensions

Quantity Per Reel: 1,000 units



\*Compliant to EIA 481A



## 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.