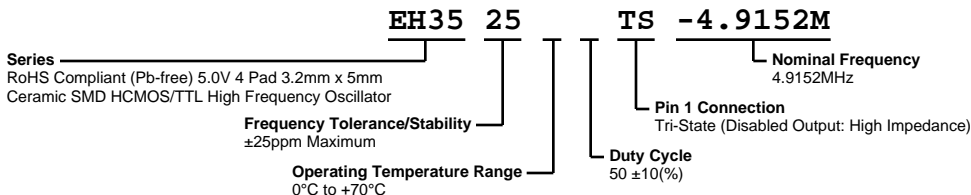


# EH3525TS-4.9152M



**ECLIPTEK**  
CORPORATION



## ELECTRICAL SPECIFICATIONS

Nominal Frequency	4.9152MHz
Frequency Tolerance/Stability	$\pm 25$ 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	5.0Vdc $\pm 10\%$
Input Current	50mA Maximum (No Load)
Output Voltage Logic High (Voh)	2.4Vdc Minimum with TTL Load, Vdd-0.4Vdc Minimum with HCMOS Load (IOH = -16mA)
Output Voltage Logic Low (Vol)	0.4Vdc Maximum with TTL Load, 0.5Vdc Maximum with HCMOS Load (IOL = +16mA)
Rise/Fall Time	6nSec Maximum (Measured at 0.8Vdc to 2.0Vdc with TTL Load or at 20% to 80% of waveform with HCMOS Load)
Duty Cycle	$50 \pm 10(\%)$ (Measured at 1.4Vdc with TTL Load or at 50% of waveform with HCMOS Load)
Load Drive Capability	10TTL Load or 50pF HCMOS Load Maximum
Output Logic Type	CMOS
Pin 1 Connection	Tri-State (Disabled Output: High Impedance)
Tri-State Input Voltage (Vih and Vil)	+2.2Vdc Minimum to enable output, +0.8Vdc Maximum to disable output (High Impedance), No Connect to enable output.
Absolute Clock Jitter	$\pm 250$ pSec Maximum, $\pm 100$ pSec Typical
One Sigma Clock Period Jitter	$\pm 50$ pSec Maximum, $\pm 30$ pSec Typical
Start Up Time	10mSec Maximum
Storage Temperature Range	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$

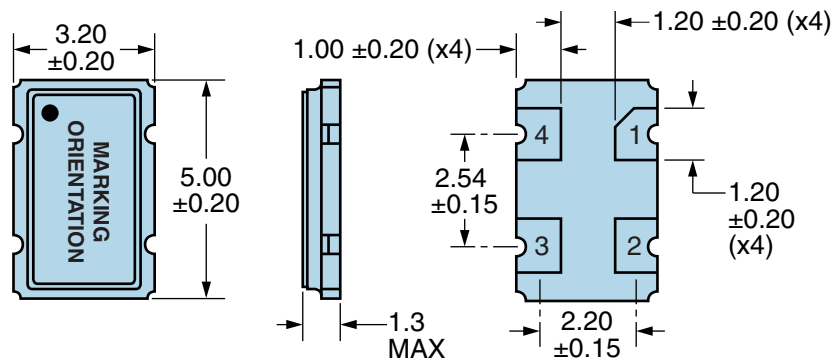
## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

Fine Leak Test	MIL-STD-883, Method 1014, Condition A
Gross Leak Test	MIL-STD-883, Method 1014, Condition C
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



# EH3525TS-4.9152M

## MECHANICAL DIMENSIONS (all dimensions in millimeters)

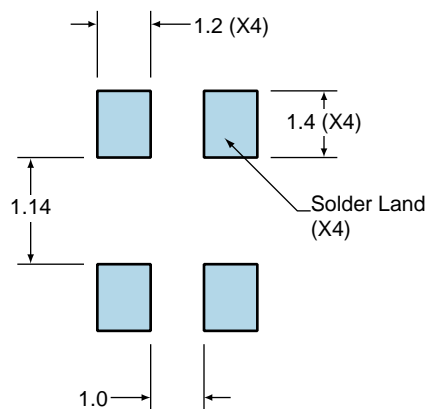


PIN	CONNECTION
1	Tri-State
2	Ground/Case Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	<b>E4.9152</b> <i>E=Ecliptek Designator</i>

## Suggested Solder Pad Layout

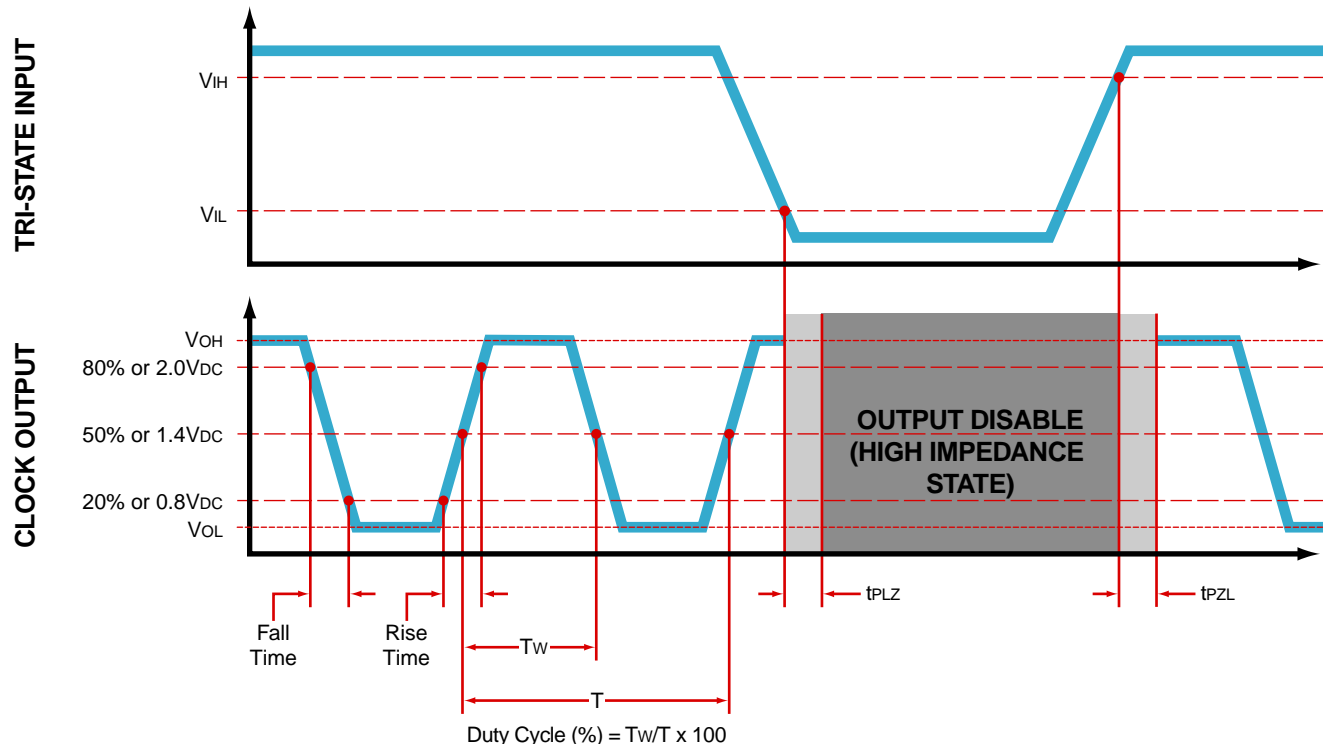
All Dimensions in Millimeters



All Tolerances are  $\pm 0.1$



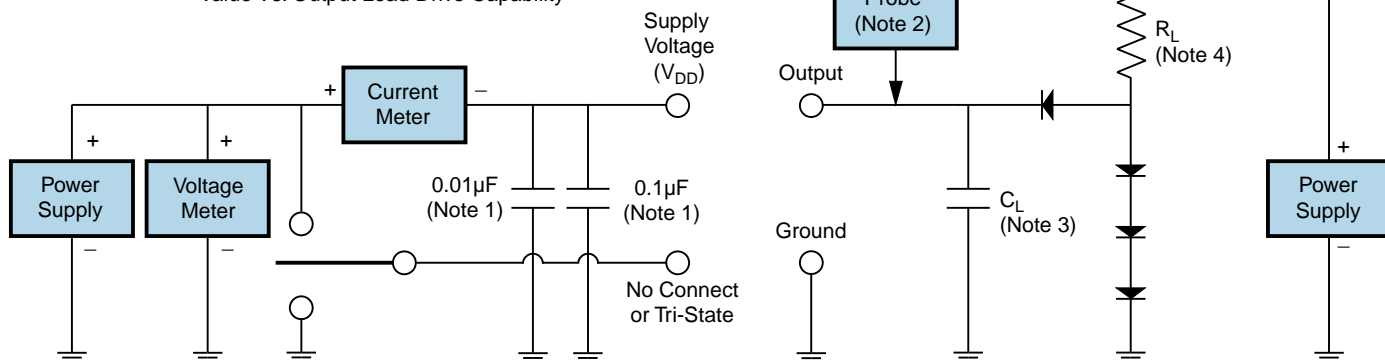
## OUTPUT WAVEFORM & TIMING DIAGRAM



## 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 0.1 $\mu$ 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.

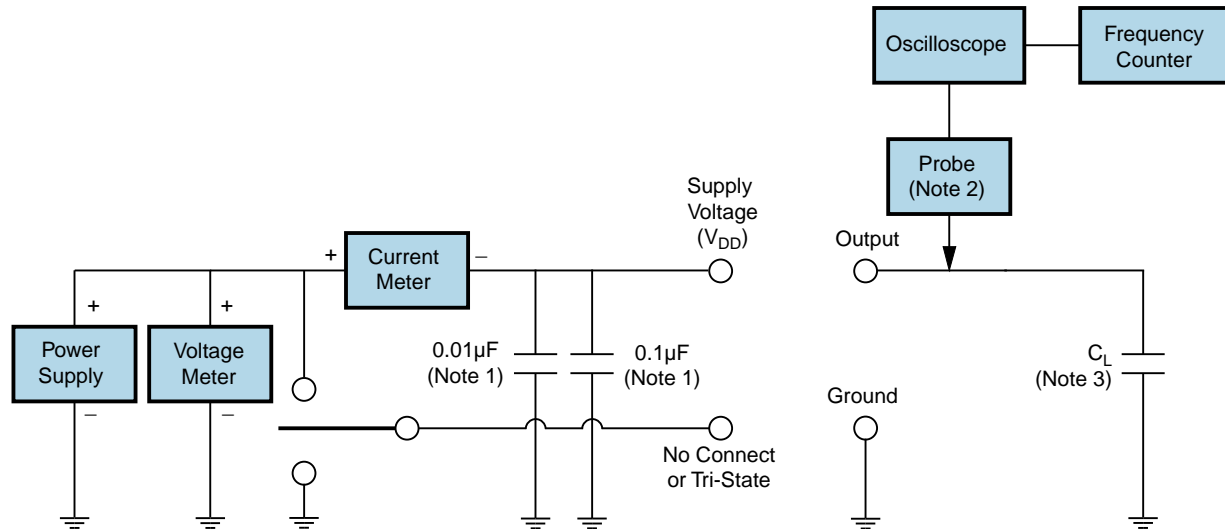
Note 4: Resistance value  $R_L$  is shown in Table 1. See applicable specification sheet for 'Load Drive Capability'.

Note 5: All diodes are MMBD7000, MMBD914, or equivalent.



# EH3525TS-4.9152M

## Test Circuit for CMOS Output



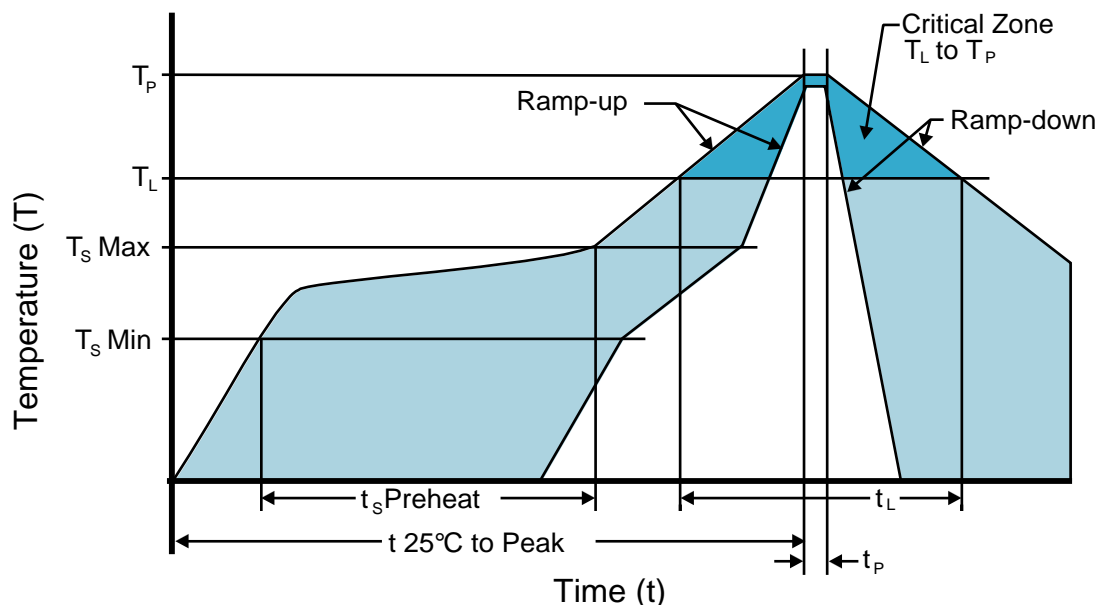
Note 1: An external  $0.1\mu F$  low frequency tantalum bypass capacitor in parallel with a  $0.01\mu F$  high frequency ceramic bypass capacitor close to the package ground and  $V_{DD}$  pin is required.

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 Infrared/Convection

**$T_s$  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

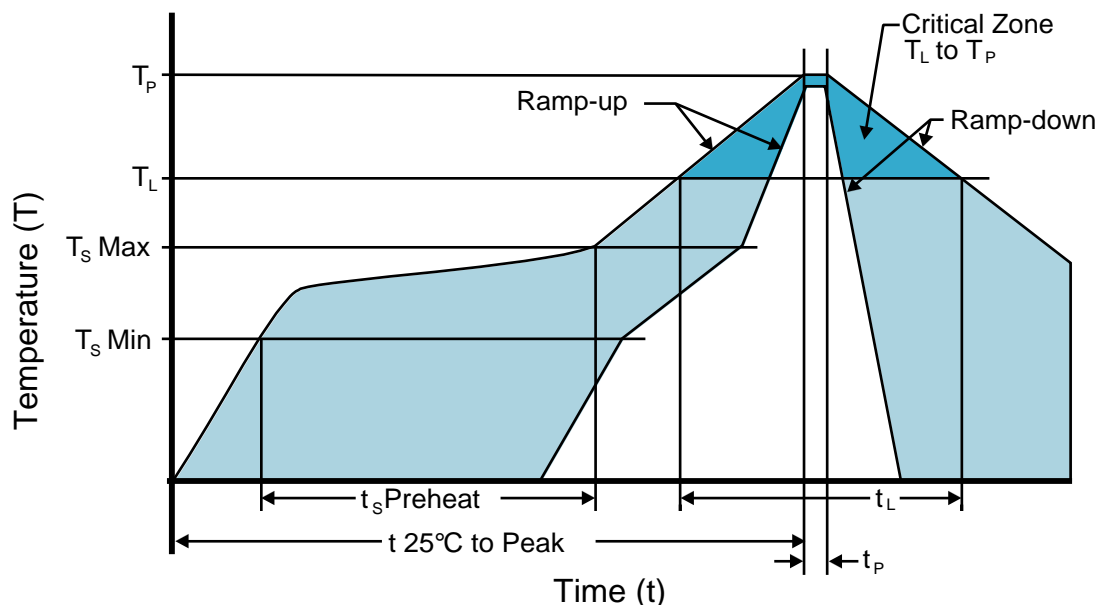
**Ramp-down Rate** 6°C/second Maximum

**Time 25°C to Peak Temperature (t)** 8 minutes Maximum

**Moisture Sensitivity Level** Level 1



## Recommended Solder Reflow Methods



### Low Temperature Infrared/Convection 240°C

$T_S$ MAX to $T_L$ (Ramp-up Rate)	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

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

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

Peak Temperature ( $T_P$ )	240°C Maximum
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Target Peak Temperature ( $T_P$ Target)	240°C Maximum 1 Time / 230°C Maximum 2 Times
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Time within 5°C of actual peak ( $t_p$ )	10 seconds Maximum 2 Times / 80 seconds Maximum 1 Time
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Ramp-down Rate	5°C/second Maximum
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Time 25°C to Peak Temperature (t)	N/A
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Moisture Sensitivity Level	Level 1
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### 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.