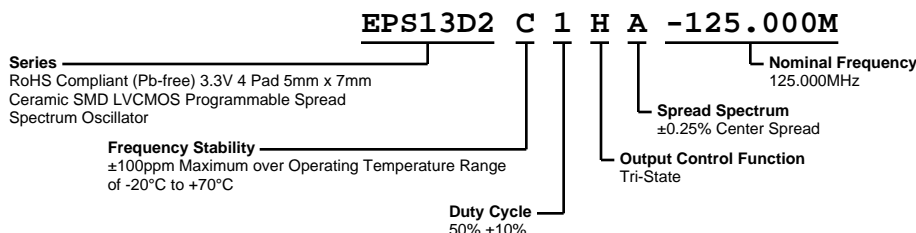


# EPS13D2C1HA-125.000M



**ECLIPTEK**  
CORPORATION



## ELECTRICAL SPECIFICATIONS

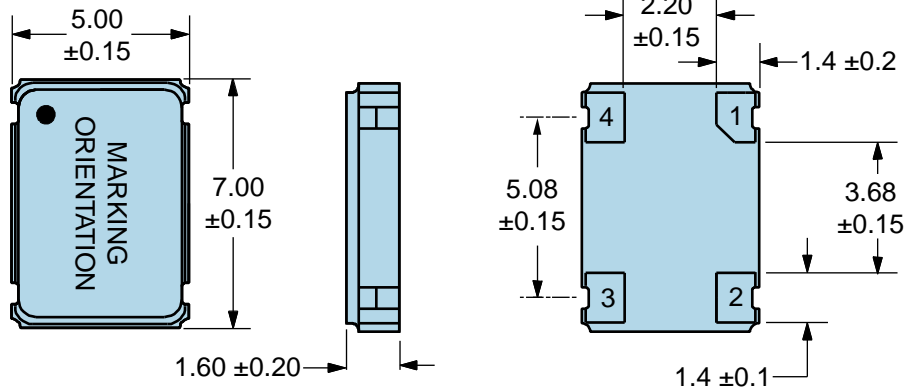
Nominal Frequency	125.000MHz
Frequency Stability	±100ppm Maximum over Operating Temperature Range of -20°C to +70°C (Inclusive of all conditions: Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°C, Shock, and Vibration.)
Aging at 25°C	±5ppm First Year Maximum
Supply Voltage	3.3Vdc ±0.3Vdc
Maximum Supply Voltage	-0.5Vdc to +7.0Vdc
Input Current	30mA Maximum (Unloaded; Vdd=3.3Vdc)
Output Voltage Logic High (Voh)	Vdd-0.4Vdc Minimum (IOH=-8mA)
Output Voltage Logic Low (Vol)	0.4Vdc Maximum (IOL=+8mA)
Rise/Fall Time	2.7nSec Maximum (Measured at 20% to 80% of Waveform)
Duty Cycle	50% ±10% (Measured at 50% of Waveform)
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Output Control Function	Tri-State (High Impedance Internal Pull Down Resistor of 100kOhms Typical on Pad 3, Internal Pull Up Resistor of 100kOhms Typical on Pad 1)
Tri-State Input Voltage (Vih and Vil)	70% of Vdd Minimum or No Connection to Enable Output, 30% of Vdd Maximum to Disable Output
Tri-State Output Disable Time	350nSec Maximum
Tri-State Output Enable Time	350nSec Maximum
Disable Current	20mA Maximum (Unloaded; Pad 1=Ground; Vdd=3.3Vdc)
Spread Spectrum	±0.25% Center Spread
Modulation Frequency	30kHz Minimum, 31.5kHz Typical, 33kHz Maximum
Period Jitter	400pSec Maximum (Cycle to Cycle; Spread Spectrum-On; Vdd=3.3Vdc)
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
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

# EPS13D2C1HA-125.000M

## MECHANICAL DIMENSIONS (all dimensions in millimeters)

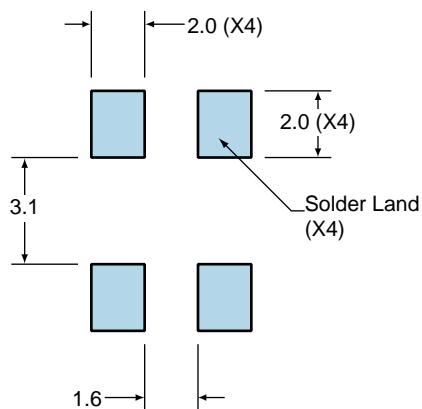


PIN	CONNECTION
1	Tri-State
2	Case/Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	<b>ECLIPTEK</b>
2	<b>125.00M</b>
3	<b>SXXYYZZ</b> <i>S=Configuration Designator</i> <i>XX=Ecliptek Manufacturing Code</i> <i>Y=Last Digit of the Year</i> <i>ZZ=Week of the Year</i>

## Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are  $\pm 0.1$

# EPS13D2C1HA-125.000M

## OUTPUT WAVEFORM & TIMING DIAGRAM



## 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 (<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

$T_S$  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) 60 - 120 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 ( $T_P$ ) 240°C Maximum

Target Peak Temperature ( $T_P$  Target) 240°C Maximum 1 Time / 230°C Maximum 2 Times

Time within 5°C of actual peak ( $t_P$ ) 10 seconds Maximum 2 Times / 80 seconds Maximum 1 Time

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.