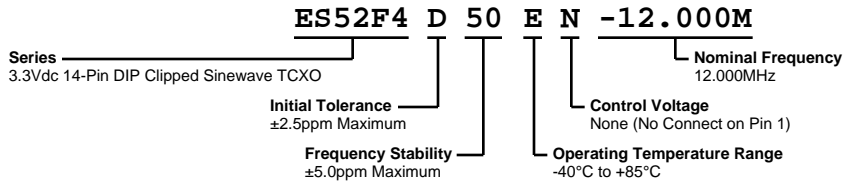


# ES52F4D50EN-12.000M



## ELECTRICAL SPECIFICATIONS

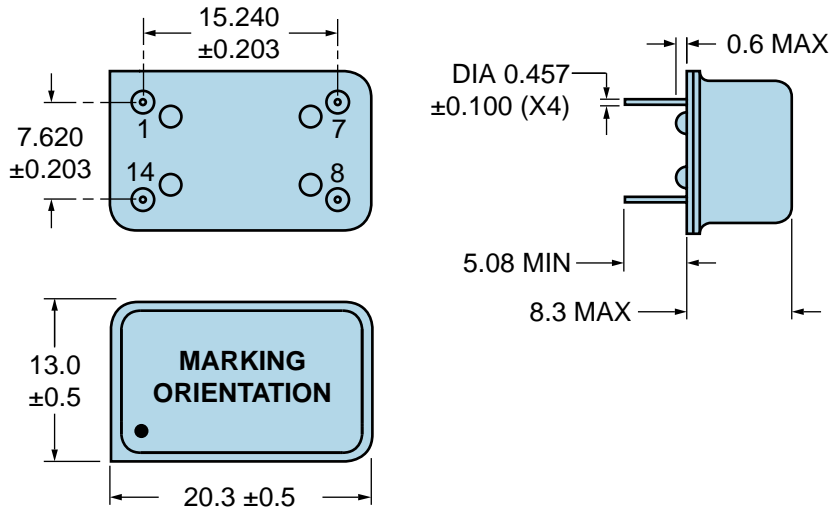
Nominal Frequency	12.000MHz
Initial Tolerance	$\pm 2.5\text{ppm}$ Maximum (Measured at Nominal Vdd and Vc)
Frequency Stability	$\pm 5.0\text{ppm}$ Maximum
Frequency Stability vs. Input Voltage	$\pm 0.3\text{ppm}$ Maximum (Vdd $\pm 5\%$ )
Frequency Stability vs. Aging	$\pm 1\text{ppm/Year}$ Maximum (at $25^{\circ}\text{C}$ )
Frequency Stability vs. Load	$\pm 0.2\text{ppm}$ Maximum ( $\pm 10\%$ )
Operating Temperature Range	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$
Supply Voltage	3.3Vdc $\pm 5\%$
Input Current	10mA Maximum (Measured at Steady State at $25^{\circ}\text{C}$ )
Output Voltage	0.7Vp-p Minimum Clipped Sinewave
Load Drive Capability	10kOhms//10pF
Output Logic Type	Clipped Sinewave
Control Voltage	None (No Connect on Pin 1)
Input Impedance	10kOhms Typical
Phase Noise	-70dBc/Hz at 10Hz Offset, -100dBc/Hz at 100Hz Offset, -130dBc/Hz at 1kHz Offset, -140dBc/Hz at 10kHz Offset, -145dBc/Hz at 100kHz Offset (Typical Values at 19.440MHz)
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
Lead Integrity	MIL-STD-883, Method 2004
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

# ES52F4D50EN-12.000M

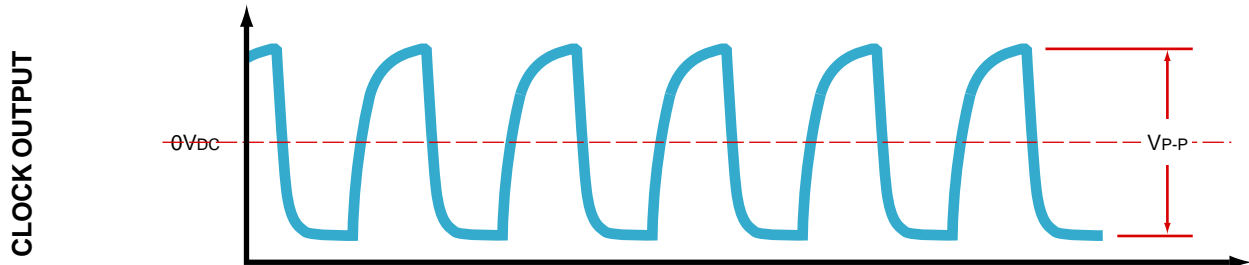
## MECHANICAL DIMENSIONS (all dimensions in millimeters)



PIN	CONNECTION
1	No Connect
7	Case Ground
8	Output
14	Supply Voltage

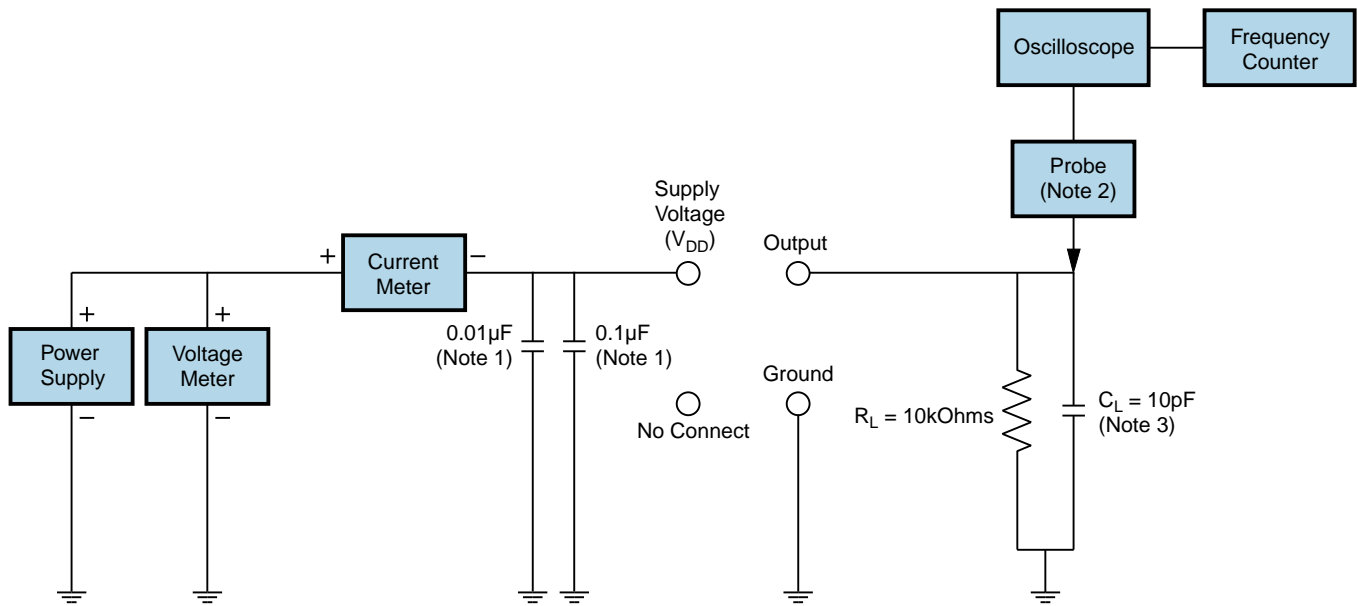
LINE	MARKING
1	<b>ECLIPTEK</b>
2	<b>12.000M</b>
3	<b>XXYYZ</b> <i>XX=Ecliptek Manufacturing Code</i> <i>Y=Last Digit of the Year</i> <i>ZZ=Week of the Year</i>

## OUTPUT WAVEFORM



# ES52F4D50EN-12.000M

## Test Circuit for No Connect Option



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.

## Recommended Solder Reflow Methods



### Low Temperature Solder Bath (Wave Solder)

<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)	30 - 60 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>	245°C Maximum
<b>Target Peak Temperature (T<sub>p</sub> Target)</b>	245°C Maximum 1 Time / 235°C Maximum 2 Times
<b>Time within 5°C of actual peak (t<sub>p</sub>)</b>	5 seconds Maximum 1 Time / 15 seconds Maximum 2 Times
<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.