

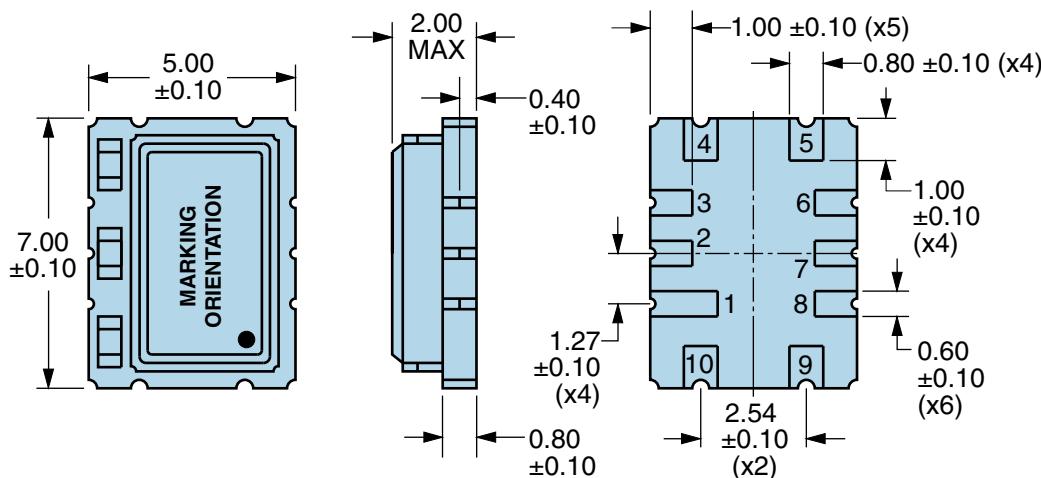
## ELECTRICAL SPECIFICATIONS

<b>Nominal Frequency</b>	16.000MHz
<b>Total Frequency Tolerance</b>	±4.6ppm Maximum (Inclusive of Frequency Tolerance, Frequency Stability, Vdd (±1%), Load (±5%), solder reflow, and 20 year aging)
<b>Frequency Stability</b>	±0.28ppm Maximum (Measured at Vdd=3.3Vdc and Vc=1.5Vdc)
<b>Operating Temperature Range</b>	-20°C to +70°C
<b>Supply Voltage</b>	3.3Vdc ±5%
<b>Total Holdover Stability</b>	±0.37ppm Maximum (Inclusive of Frequency Stability and 24 hours aging)
<b>Input Current</b>	2.0mA Maximum
<b>Output Voltage</b>	0.8Vp-p Clipped Sinewave Minimum (External DC-Cut capacitor required, 150pF recommended)
<b>Load Drive Capability</b>	10kOhms // 10pF
<b>Output Logic Type</b>	Clipped Sinewave
<b>Control Voltage</b>	None (No Connect Pad 10)
<b>Phase Noise</b>	-80dBc/Hz at 10Hz Offset, -115dBc/Hz at 100Hz Offset, -135dBc/Hz at 1kHz Offset, and -145dBc/Hz at >=10kHz Offset (Typical Values at 12.800MHz)
<b>RMS Phase Jitter</b>	1pSec Maximum (Fj = 12kHz to 20MHz)
<b>Start Up Time</b>	10mSec Maximum
<b>Storage Temperature Range</b>	-40°C to +125°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

## MECHANICAL DIMENSIONS (all dimensions in millimeters)



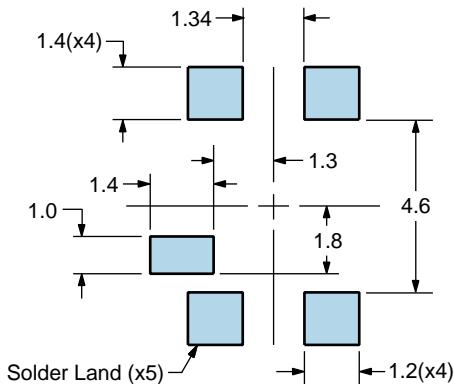
PIN	CONNECTION
1	Do Not Connect
2	Do Not Connect
3	Do Not Connect
4	Ground
5	Output
6	Do Not Connect
7	Do Not Connect
8	Do Not Connect
9	Supply Voltage
10	No Connect

LINE	MARKING
1	<b>EXX.XXX</b> E=Ecliptek Designator XX.XXX=Nominal Frequency in MHz
2	<b>XXYZZ</b> XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year

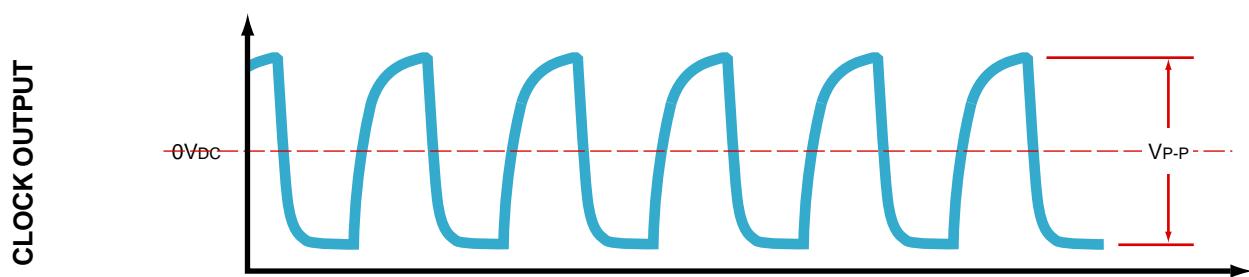
## Suggested Solder Pad Layout

All Dimensions in Millimeters

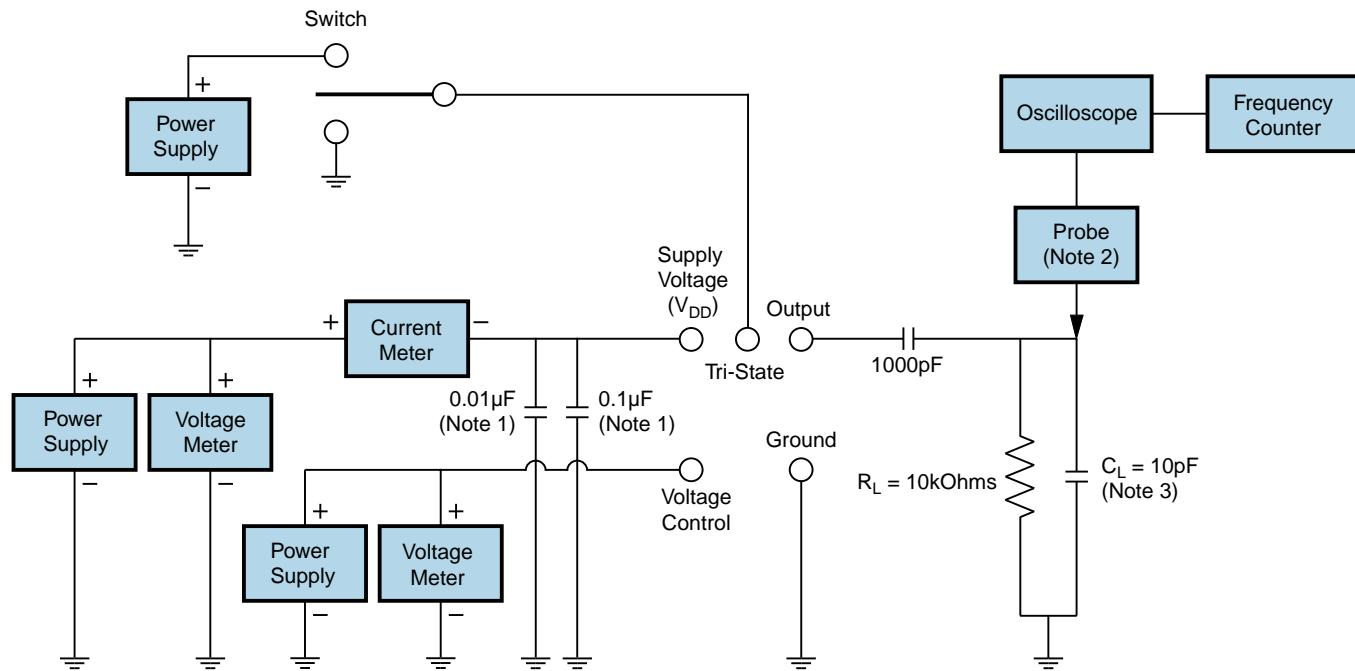


All Tolerances are ±0.1

## OUTPUT WAVEFORM



## Test Circuit for Voltage Control Option

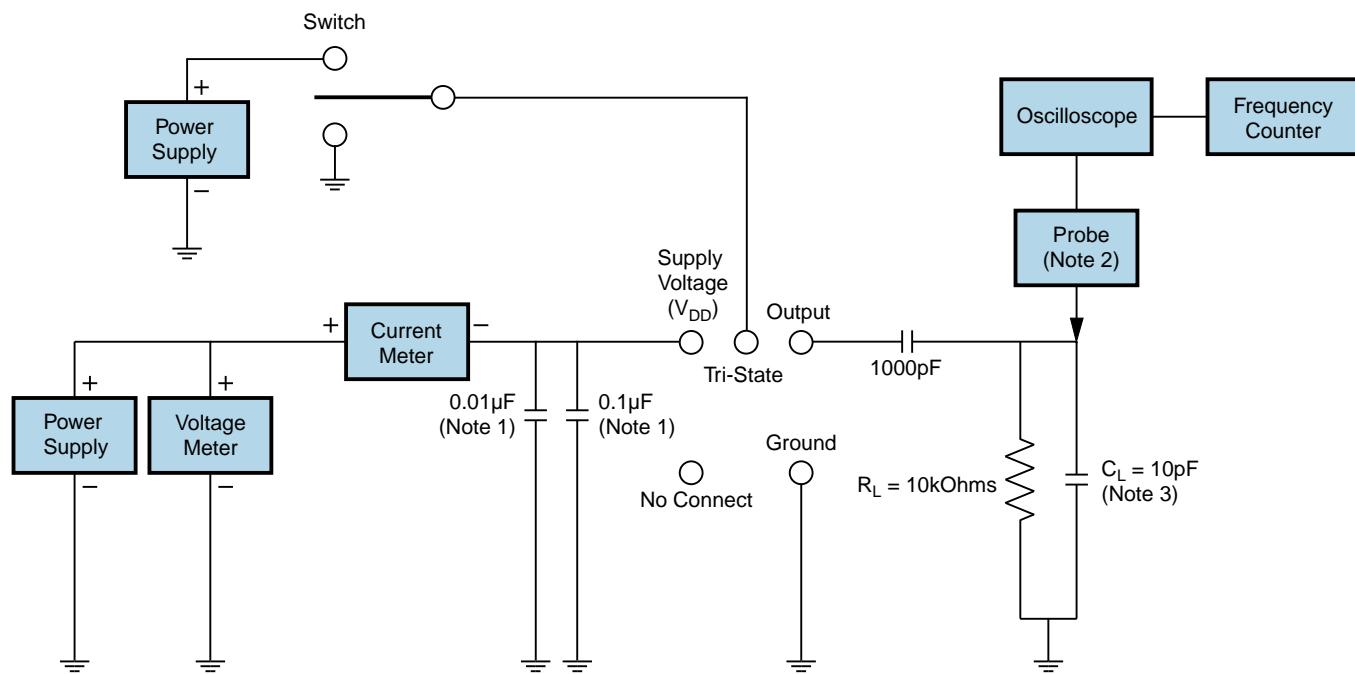


Note 1: An external  $0.1\mu\text{F}$  low frequency tantalum bypass capacitor in parallel with a  $0.01\mu\text{F}$  high frequency ceramic bypass capacitor close to the package ground and  $V_{DD}$  pin is required.

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.

## Test Circuit for No Connect Option

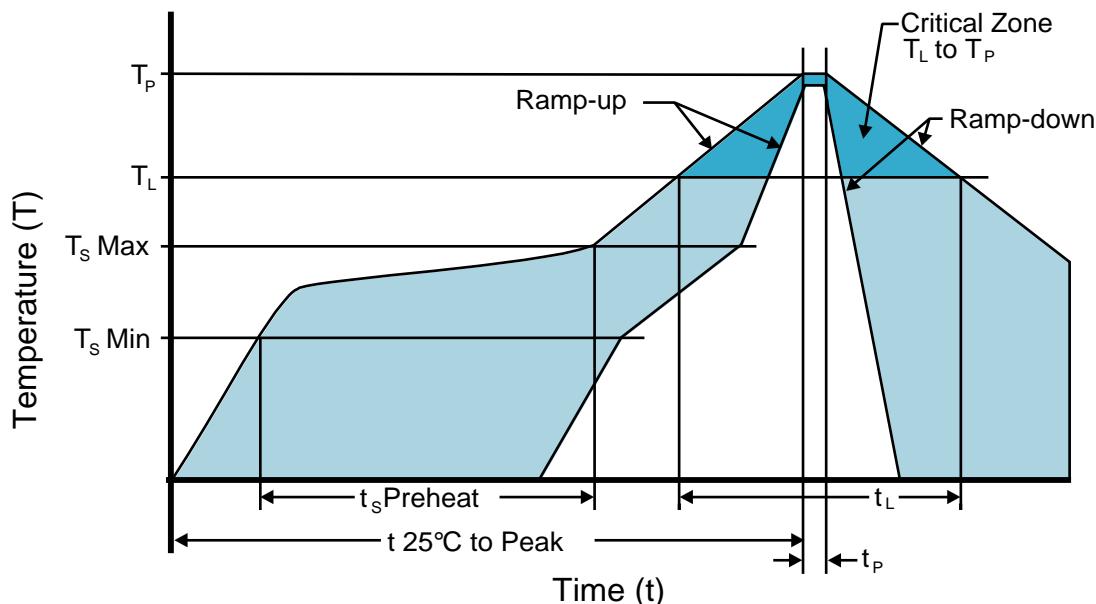


Note 1: An external  $0.1\mu\text{F}$  low frequency tantalum bypass capacitor in parallel with a  $0.01\mu\text{F}$  high frequency ceramic bypass capacitor close to the package ground and  $V_{DD}$  pin is required.

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.

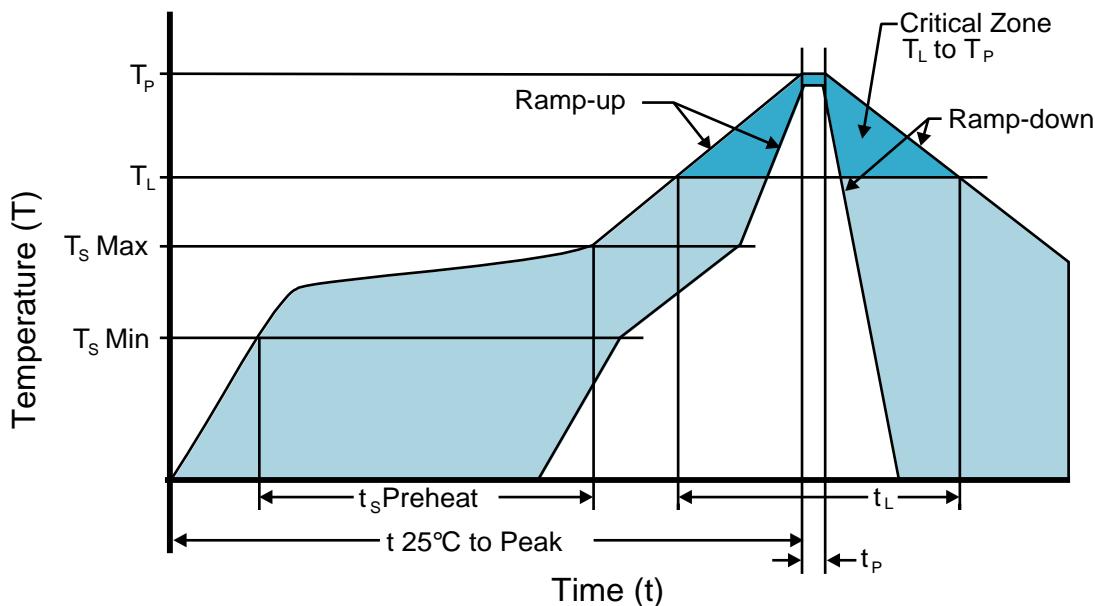
## Recommended Solder Reflow Methods



### High Temperature Infrared/Convection

<b><math>T_S \text{ MAX to } T_L</math> (Ramp-up Rate)</b>	3°C/second Maximum
<b>Preheat</b>	
- 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
<b>Ramp-up Rate (<math>T_L</math> to <math>T_P</math>)</b>	3°C/second Maximum
<b>Time Maintained Above:</b>	
- Temperature ( $T_L$ )	217°C
- Time ( $t_L$ )	60 - 150 Seconds
<b>Peak Temperature (<math>T_P</math>)</b>	260°C Maximum for 10 Seconds Maximum
<b>Target Peak Temperature (<math>T_P</math> Target)</b>	250°C +0/-5°C
<b>Time within 5°C of actual peak (<math>t_P</math>)</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 230°C

**T<sub>s</sub> MAX to T<sub>L</sub> (Ramp-up Rate)** 5°C/second Maximum

#### Preheat

- 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

**Ramp-up Rate (T<sub>L</sub> to T<sub>P</sub>)** 5°C/second Maximum

#### Time Maintained Above:

- Temperature (T<sub>L</sub>) 150°C  
 - Time (t<sub>L</sub>) 200 Seconds Maximum

**Peak Temperature (T<sub>P</sub>)** 230°C Maximum

**Target Peak Temperature (T<sub>P</sub> Target)** 230°C Maximum 2 Times

**Time within 5°C of actual peak (t<sub>p</sub>)** 10 seconds Maximum 2 Times

**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.