EB51F4D15AV-13.560M

ECLIPTEK CORPORATION

EB51F4 D 15 A V -13.560M

- **Series** — 5.0Vdc 14-Pin DIP HCMOS TCXO
- **Initial Tolerance** — ±2.5ppm Maximum
- **Frequency Stability** — ±1.5ppm Maximum
- **Operating Temperature Range** — 0°C to +50°C
- **Control Voltage** — 2.5Vdc ±2.0Vdc
- **Nominal Frequency** — 13.560MHz

ELECTRICAL SPECIFICATIONS

Nominal Frequency	13.560MHz
Initial Tolerance	±2.5ppm Maximum (Measured at Nominal Vdd and Vc)
Frequency Stability	±1.5ppm Maximum
Frequency Stability vs. Input Voltage	±0.3ppm Maximum (Vdd ±5%)
Frequency Stability vs. Aging	±1ppm/Year Maximum (at 25°C)
Frequency Stability vs. Load	±0.2ppm Maximum (±10%)
Operating Temperature Range	0°C to +50°C
Supply Voltage	5.0Vdc ±5%
Input Current	30mA Maximum (Measured at Steady State at 25°C; at Nominal Vdd and Nominal Vc)
Output Voltage Logic High (Voh)	Vdd-0.5Vdc Minimum
Output Voltage Logic Low (Vol)	0.5Vdc Maximum
Rise/Fall Time	6nSec Maximum (Measured at 20% to 80% of waveform)
Duty Cycle	50% ±5% (Measured at 50% of waveform)
Load Drive Capability	30pF HCMOS Load Maximum
Output Logic Type	CMOS
Control Voltage	2.5Vdc ±2.0Vdc
Control Voltage Range	0.0Vdc to Vdd
Frequency Deviation	±7ppm Minimum, ±20ppm Maximum (Referenced to Fo at Vc=2.5Vdc; Vdd=5.0Vdc)
Linearity	±10% Maximum
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°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
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

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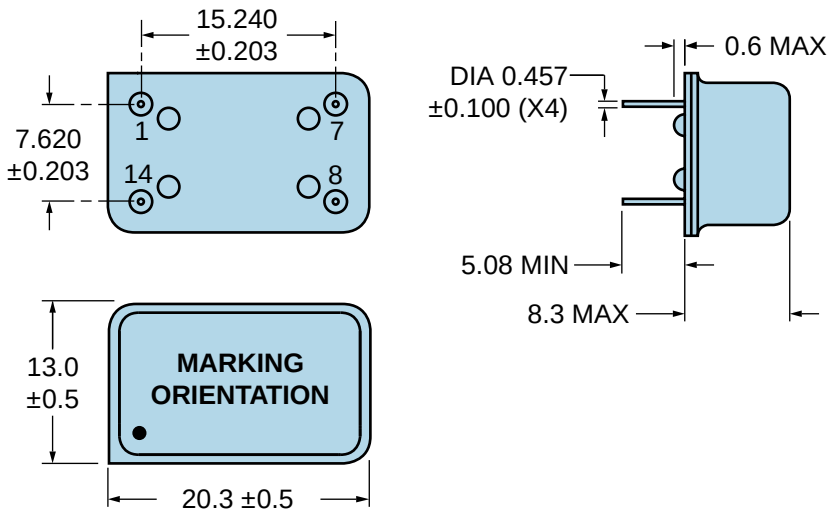
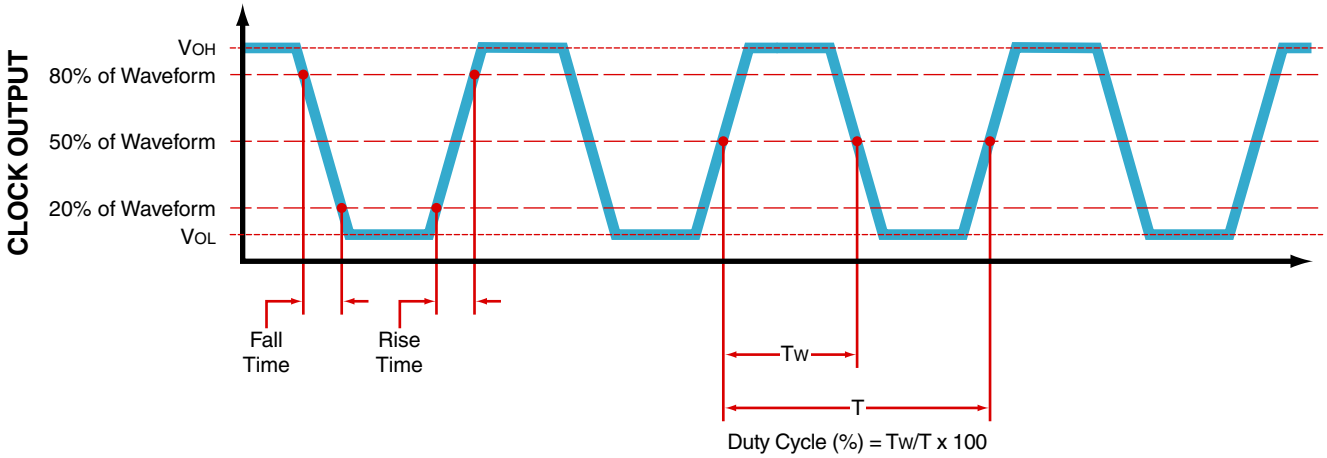
MECHANICAL DIMENSIONS (all dimensions in millimeters)



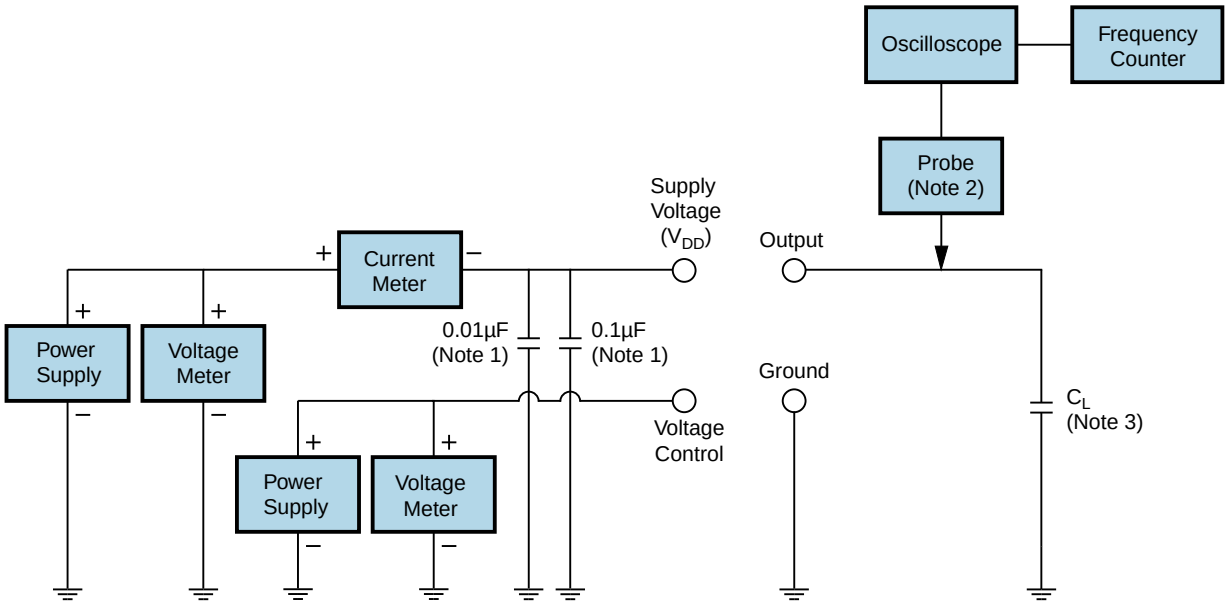
PIN	CONNECTION
1	Voltage Control
7	Case Ground
8	Output
14	Supply Voltage

LINE	MARKING
1	**ECLIPTEK**
2	**13.560M**
3	**XXYZZ** *XX=Ecliptek Manufacturing Code* *Y=Last Digit of the Year* *ZZ=Week of the Year*

OUTPUT WAVEFORM



Test Circuit for Voltage Control Option



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.

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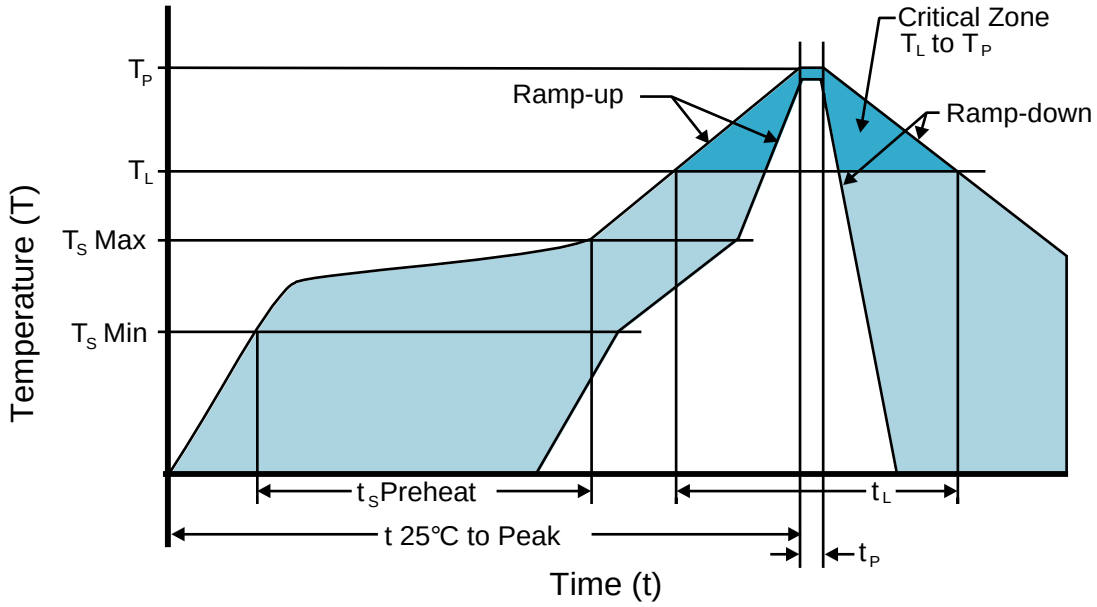
Recommended Solder Reflow Methods



Low Temperature Solder Bath (Wave Solder)

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)	30 - 60 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)	245°C Maximum
Target Peak Temperature (T_P Target)	245°C Maximum 1 Time / 235°C Maximum 2 Times
Time within 5°C of actual peak (t_p)	5 seconds Maximum 1 Time / 15 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.