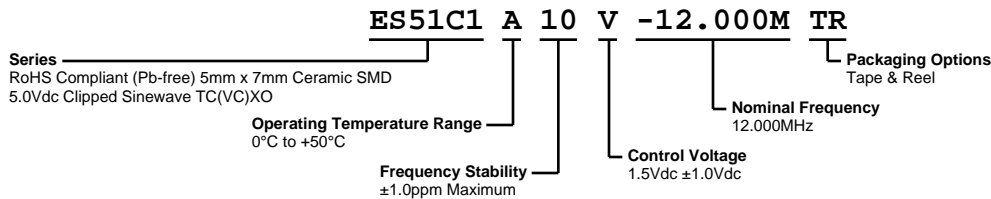


# ES51C1A10V-12.000M TR



**ECLIPTEK**  
CORPORATION



## ELECTRICAL SPECIFICATIONS

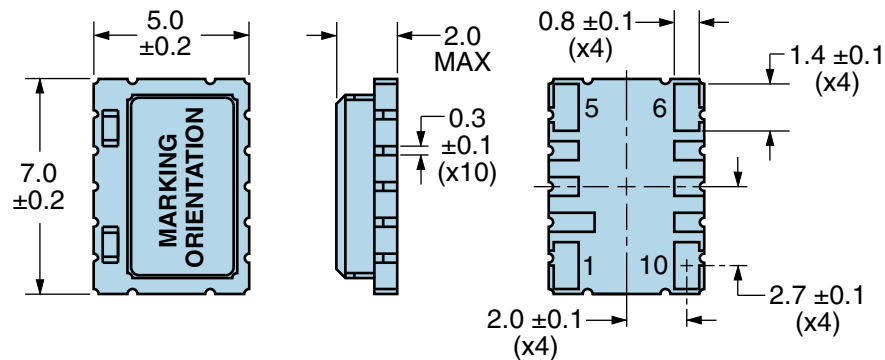
Nominal Frequency	12.000MHz
Frequency Stability vs. Frequency Tolerance	±1.0ppm Maximum (Measured at 25°C ±2°C, Vdd=5.0Vdc, Vc=1.5Vdc)
Frequency Stability	±1.0ppm Maximum
Frequency Stability vs. Input Voltage	±0.2ppm Maximum (Vdd ±5%)
Frequency Stability vs. Aging	±1ppm/Year Maximum (at 25°C)
Frequency Stability vs. Load	±0.2ppm Maximum (±1kOhm//±1pF)
Operating Temperature Range	0°C to +50°C
Supply Voltage	5.0Vdc ±5%
Input Current	1.5mA Maximum
Output Voltage	0.8Vp-p Clipped Sinewave Minimum
Load Drive Capability	10kOhms//10pF
Output Logic Type	Clipped Sinewave
Control Voltage	1.5Vdc ±1.0Vdc
Frequency Deviation	±8ppm Minimum
Linearity	10% Maximum
Transfer Function	Positive Transfer Characteristic
Modulation Bandwidth	3kHz Minimum (Measured at -3dB with a Control Voltage of 1.5Vdc)
Input Impedance	100kOhms Minimum
Phase Noise	-80dBc/Hz at 10Hz offset, -115dBc/Hz at 100Hz offset, -135dBc/Hz at 1kHz offset, -145dBc/Hz at 10kHz offset, -145dBc/Hz at 100kHz offset (Typical Values, at 12.800MHz)
Start Up Time	5mSec 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

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## MECHANICAL DIMENSIONS (all dimensions in millimeters)

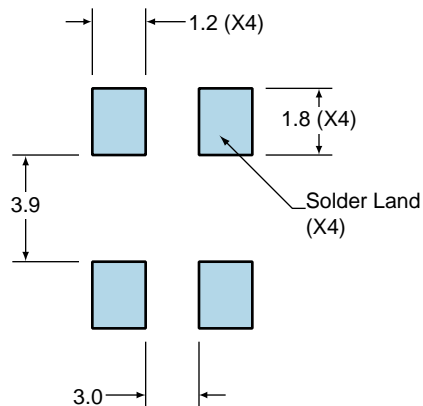


PIN	CONNECTION
1	Voltage Control
2	Do Not Connect
3	Do Not Connect
4	Do Not Connect
5	Case/Ground
6	Output
7	Do Not Connect
8	Do Not Connect
9	Do Not Connect
10	Supply Voltage

LINE	MARKING
1	<b>E12.000</b> <i>E=Ecliptek</i>
2	<b>XXYYZZ</b> <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

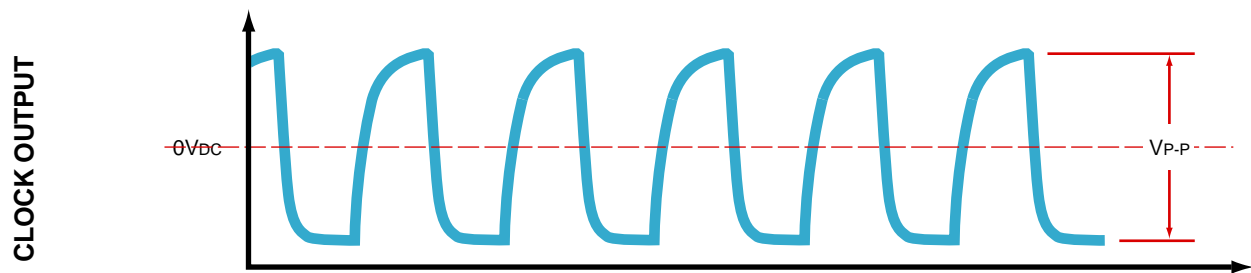
All Dimensions in Millimeters



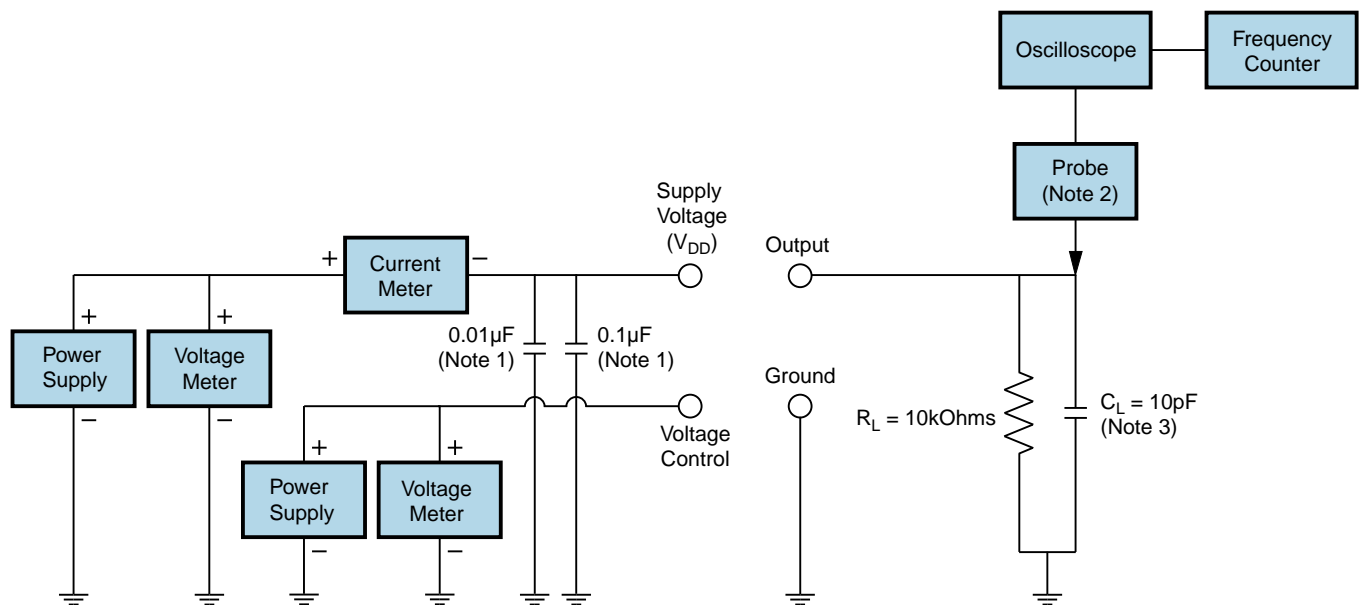
All Tolerances are  $\pm 0.1$

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## OUTPUT WAVEFORM



## Test Circuit for Voltage Control Option



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<sub>DD</sub> pin is required.

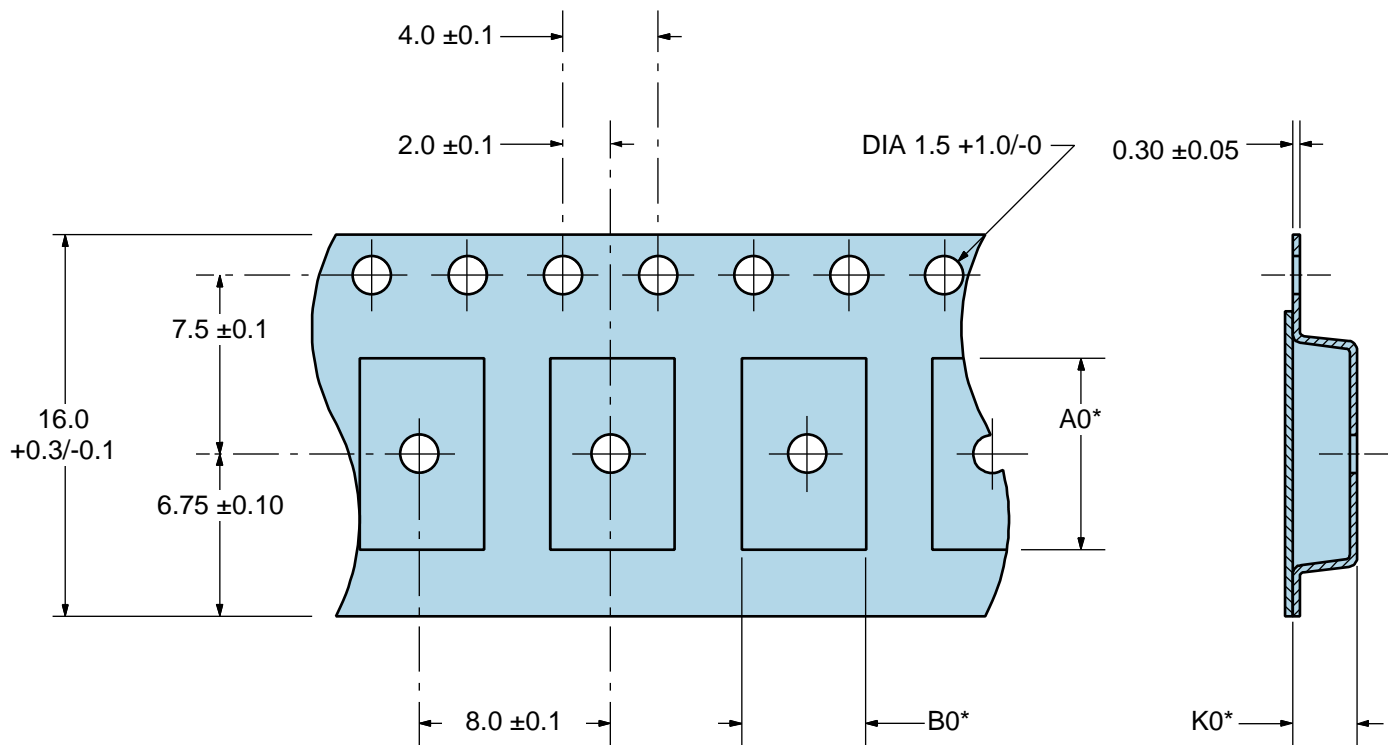
Note 2: A low capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), and high bandwidth (>300MHz) passive probe is recommended.

Note 3: Capacitance value C<sub>L</sub> includes sum of all probe and fixture capacitance.

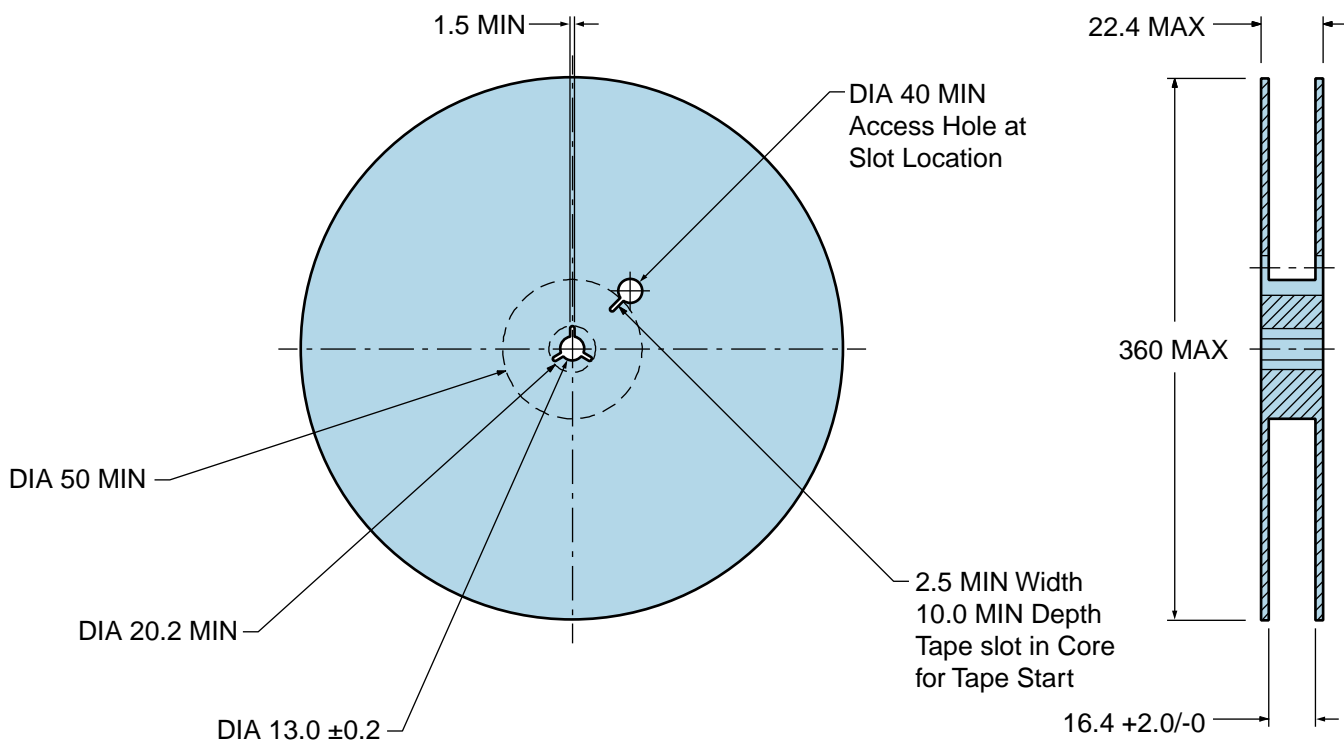
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## Tape & Reel Dimensions

Quantity Per Reel: 1,000 units



\*Compliant to EIA 481A



## Recommended Solder Reflow Methods



### Low Temperature Infrared/Convection 220°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 ( $T_P$ )	220°C Maximum
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Target Peak Temperature ( $T_P$ Target)	220°C Maximum 1 Time / 215°C Maximum 1 Time
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Time within 5°C of actual peak ( $t_p$ )	15 seconds Maximum 1 Time / 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.