EB71F51C10AN2-16.000M

ECLIPTEK® CORPORATION

EB71F51 C 10 A N 2 -16.000M

Series
Oven Controlled Quartz Crystal Clock Oscillators OCXO
HCMOS (CMOS) 5.0Vdc AT-Cut 14-Pin DIP Metal
Thru-Hole

Initial Tolerance
±1.0ppm Maximum

Frequency Stability
±100ppb Maximum

Operating Temperature Range
0°C to +50°C

Control Voltage
None (No Connect on Pin 1)

Duty Cycle
50 ±5(%)

Nominal Frequency
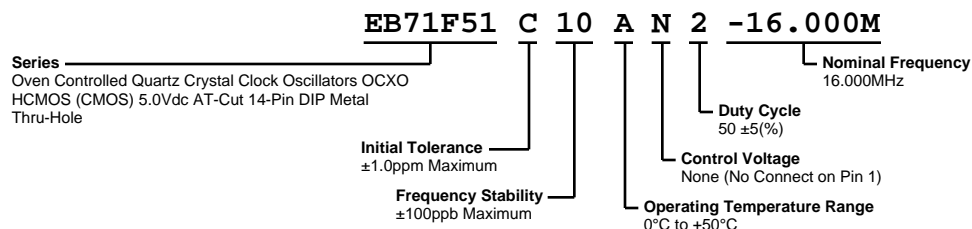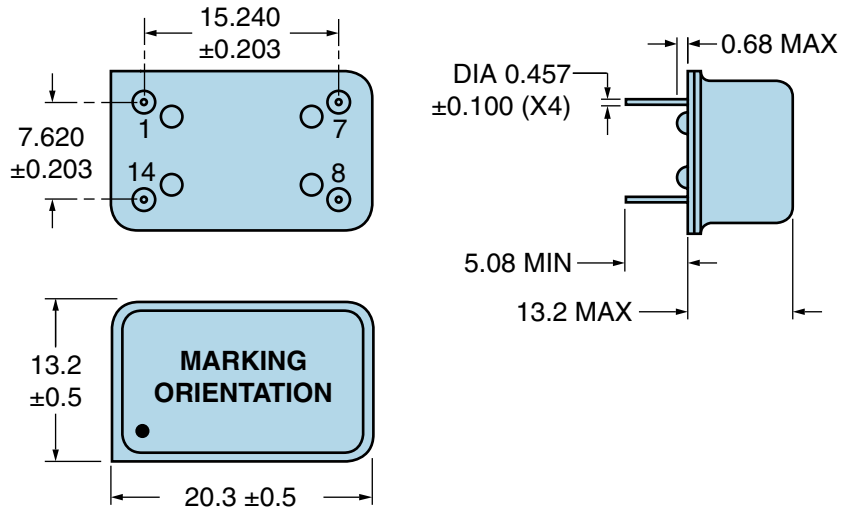16.000MHz

ELECTRICAL SPECIFICATIONS

Nominal Frequency	16.000MHz
Initial Tolerance	±1.0ppm Maximum (Measured at nominal Vdd and Vc; at 25°C)
Frequency Stability	±100ppb Maximum (Measured at nominal Vdd and Vc)
Frequency Stability vs. Input Voltage	±50ppb Maximum (Vdd ±5%)
Frequency Stability vs. Load	±50ppb Maximum (Vload ±5%)
Frequency Stability vs. Aging (1 Day)	±30ppb Maximum (after 72 hours of operation)
Frequency Stability vs. Aging (1 Year)	±500ppb Maximum (after 72 hours of operation)
Frequency Stability vs. Aging (10 Years)	±3.0ppm Maximum (after 72 hours of operation)
Operating Temperature Range	0°C to +50°C
Supply Voltage	5.0Vdc ±5%
Warm Up Time	3 Minutes Maximum (Referenced to ±500ppb of final frequency at 1 hour at 25°C)
Power Consumption	1.6 Watts Maximum at Steady State 2.5 Watts Maximum during Warm Up (Measured at 25°C)
Output Voltage Logic High (Voh)	Vdd-0.5Vdc Minimum (IOH = -8mA)
Output Voltage Logic Low (Vol)	0.5Vdc Maximum (IOL = +8mA)
Rise/Fall Time	6nSec Maximum (Measured at 20% to 80% of waveform)
Duty Cycle	50 ±5(%) (Measured at 50% of waveform)
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Control Voltage	None (No Connect on Pin 1)
Control Voltage Range	0.0Vdc to Vdd
Frequency Deviation	±5ppm Minimum (Referenced to Fo at Vc=2.5Vdc; Vdd=5.0Vdc; over Operating Temperature Range)
Linearity	±10% Maximum
Transfer Function	Positive Transfer Characteristic
Input Impedance	10kOhms Typical
Phase Noise	-95dBc/Hz at 10Hz Offset -120dBc/Hz at 100Hz Offset -135dBc/Hz at 1kHz Offset -140dBc/Hz at 10kHz Offset (Measures at 12.800MHz)
Start Up Time	10mSec Maximum
Storage Temperature Range	-55°C to +125°C

ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

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)

15.240 ±0.203

7.620 ±0.203

1
7
14
8

DIA 0.457 ±0.100 (X4)

0.68 MAX

5.08 MIN
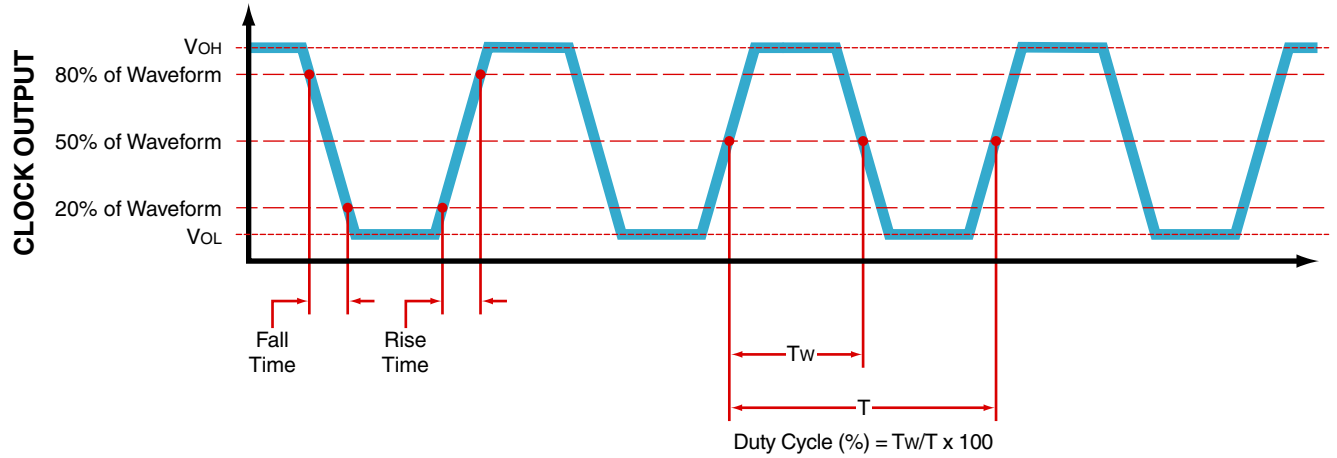
13.2 MAX

MARKING ORIENTATION

13.2 ±0.5

20.3 ±0.5

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

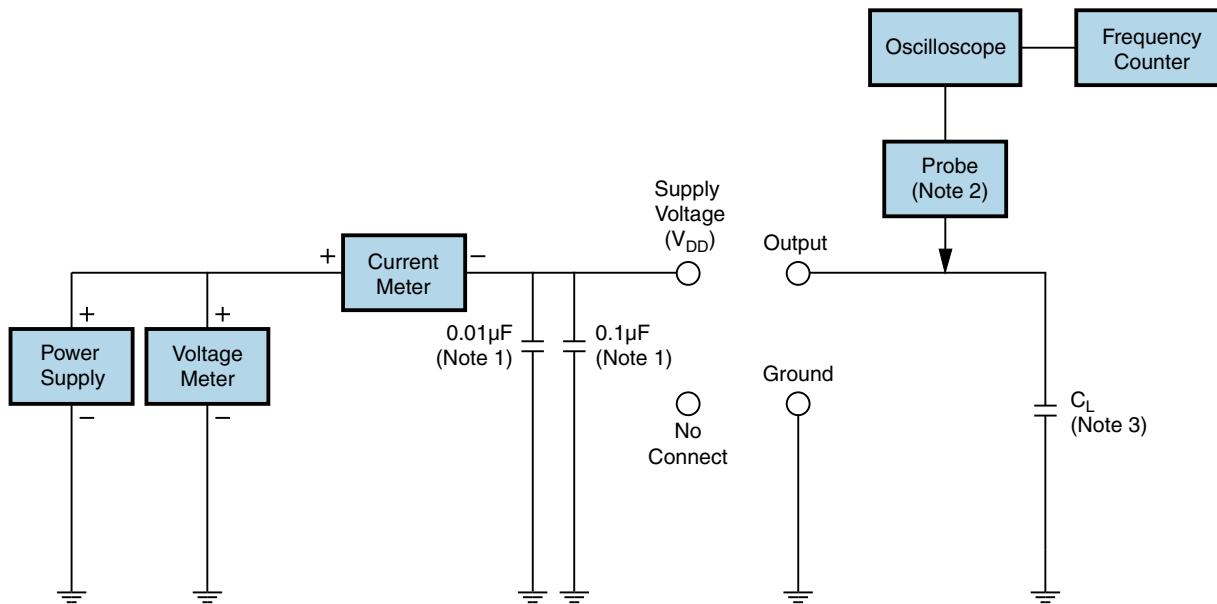| LINE	MARKING
1	**ECLIPTEK**
2	**16.000M**
3	**XXXXX** *XXXXX=Ecliptek* *Manufacturing Identifier*

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OUTPUT WAVEFORM

Duty Cycle (%) = Tw/T x 100

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Test Circuit for No Connect Option

Note 1: An external 0.01µF ceramic bypass capacitor in parallel with a 0.1µF high frequency
ceramic bypass capacitor close (less than 2mm) to the package ground and supply voltage 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 Infrared/Convection 185°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$_P$)	185°C Maximum
Target Peak Temperature (T$_P$ Target)	185°C Maximum 2 Times
Time within 5°C of actual peak (t$_P$)	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
Additional Notes	Temperatures shown are applied to body of device. Use this method only for product with the Gull Wing option.

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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
Additional Notes	Temperatures shown are applied to back of PCB board and device leads only. Do not use this method for product with the Gull Wing option.

Low Temperature Manual Soldering

185°C Maximum for 10 seconds Maximum, 2 times Maximum. (Temperatures listed are applied to device leads only. This method can be utilized with both Gull Wing and Non-Gull Wing devices.)

High Temperature Manual Soldering

260°C Maximum for 5 seconds Maximum, 2 times Maximum. (Temperatures listed are applied to device leads only. This method can be utilized with both Gull Wing and Non-Gull Wing devices.)