

EB71F72D10CV2-20.000M

[Click part number to visit Part Number Details page](#)

REGULATORY COMPLIANCE (Data Sheet downloaded on Feb 20, 2018)



ITEM DESCRIPTION

Oven Controlled Quartz Crystal Clock Oscillators OCXO HCMOS (CMOS) 5.0Vdc SC-Cut 5-Pin DIP 25.5mm X 25.5mm X 15.0mm Metal Thru-Hole 20.000MHz ± 500 ppb Maximum ± 100 ppb Maximum -20°C to +70°C

ELECTRICAL SPECIFICATIONS

Nominal Frequency	20.000MHz
Initial Tolerance	± 500 ppb Maximum (Measured at nominal Vdd and Vc)
Frequency Stability	± 100 ppb Maximum
Frequency Stability vs. Input Voltage	± 20 ppb Maximum (Vdd $\pm 5\%$)
Frequency Stability vs. Load	± 20 ppb Maximum (Vload $\pm 5\%$)
Frequency Stability vs. Aging (1 Day)	± 2.0 ppb Maximum
Frequency Stability vs. Aging (1 Year)	± 100 ppb Maximum
Frequency Stability vs. Aging (10 Years)	± 500 ppb Maximum
Operating Temperature Range	-20°C to +70°C
Supply Voltage	5.0Vdc $\pm 5\%$
Warm Up Time	3 Minutes Maximum (Referenced to ± 50 ppb of final frequency at 1 hour at 25°C)
Power Consumption	1.2Watts Maximum at Steady State at 25°C 3.6Watts Maximum during Warm Up
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 $\pm 5\%$ (Measured at 50% of waveform)
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Control Voltage	2.5Vdc ± 2.5 Vdc
Control Voltage Range	0.0Vdc to Vdd
Frequency Deviation	± 0.5 ppm Minimum (Referenced to Fo at Vc=2.5Vdc; Vdd=5.0Vdc)
Linearity	$\pm 10\%$ Maximum
Reference Voltage Output	4.5Vdc ± 0.3 Vdc (Pin 4)
Transfer Function	Positive Transfer Characteristic
Crystal Cut	SC-Cut
Input Impedance	10kOhms Typical
Phase Noise	-85dBc/Hz at 1Hz Offset -100dBc/Hz at 10Hz Offset -130dBc/Hz at 100Hz Offset -145dBc/Hz at 1kHz Offset -150dBc/Hz at 10kHz Offset (All Values are Typical)
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

EB71F72D10CV2-20.000M

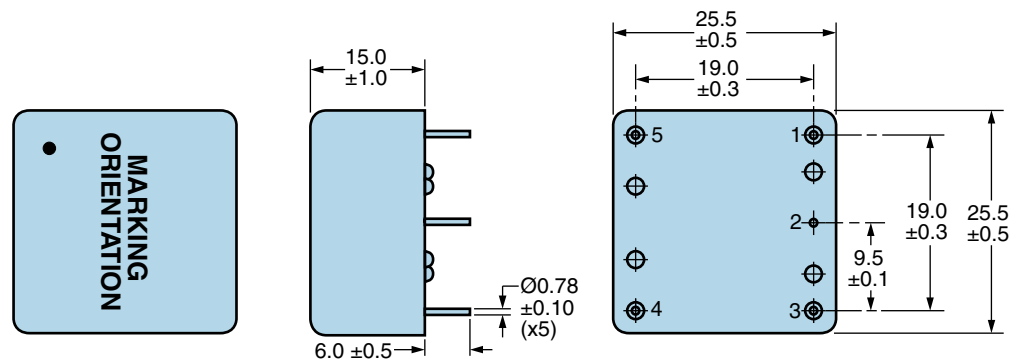
[Click part number to visit
Part Number Details page](#)

ENVIRONMENTAL & MECHANICAL SPECIFICATIONS CONTINUED	
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

EB71F72D10CV2-20.000M

[Click part number to visit Part Number Details page](#)

MECHANICAL DIMENSIONS (all dimensions in millimeters)

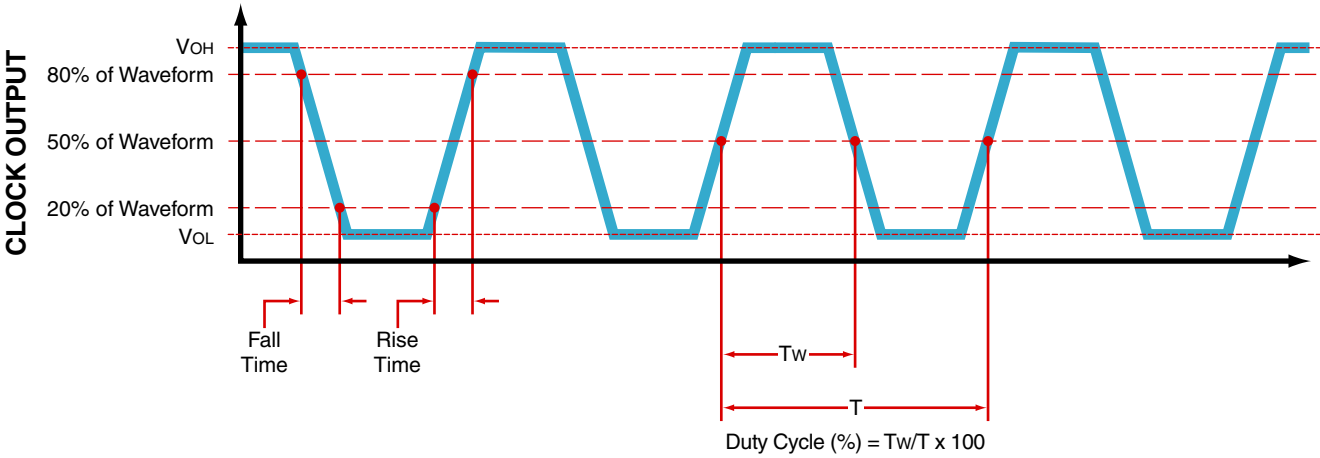


PIN	CONNECTION
1	Output
2	Case/Ground
3	Voltage Control
4	Reference Voltage Output
5	Supply Voltage

LINE	MARKING
1	ECLIPTEK
2	20.000M
3	XXXXX XXXXX=Ecliptek Manufacturing Identifier



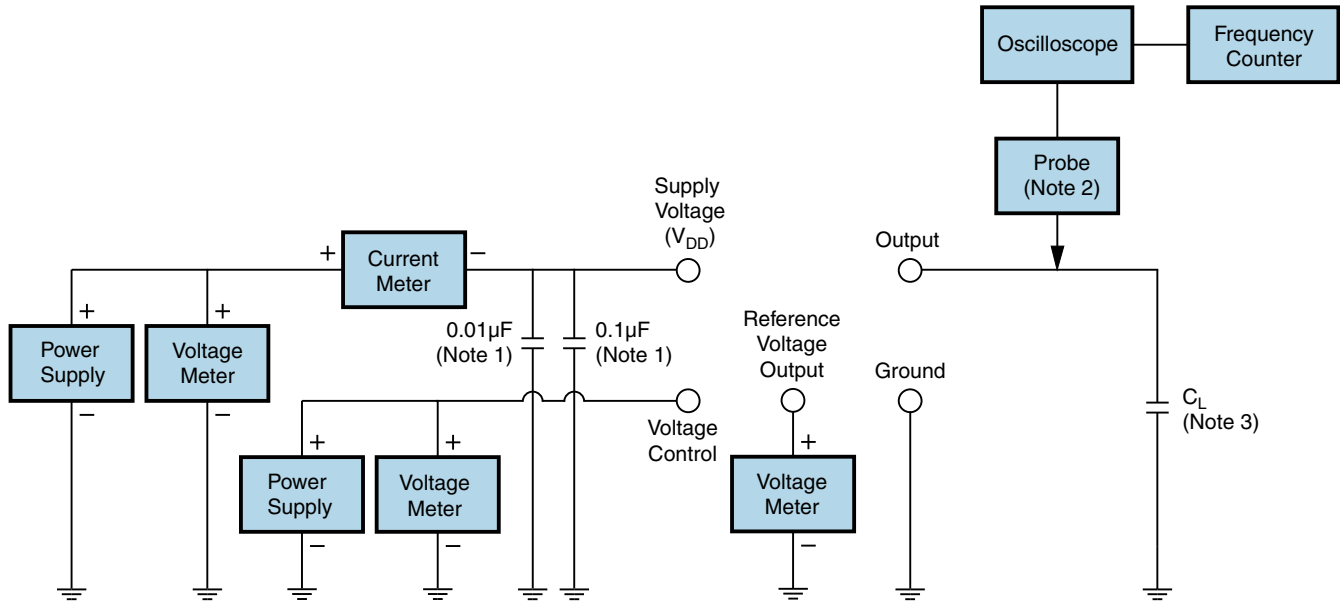
OUTPUT WAVEFORM



EB71F72D10CV2-20.000M

[Click part number to visit Part Number Details page](#)

Test Circuit for Voltage Control Option



Note 1: An external $0.01\mu\text{F}$ ceramic bypass capacitor in parallel with a $0.1\mu\text{F}$ high frequency ceramic bypass capacitor close (less than 2mm) to the package ground and supply voltage pin is required.

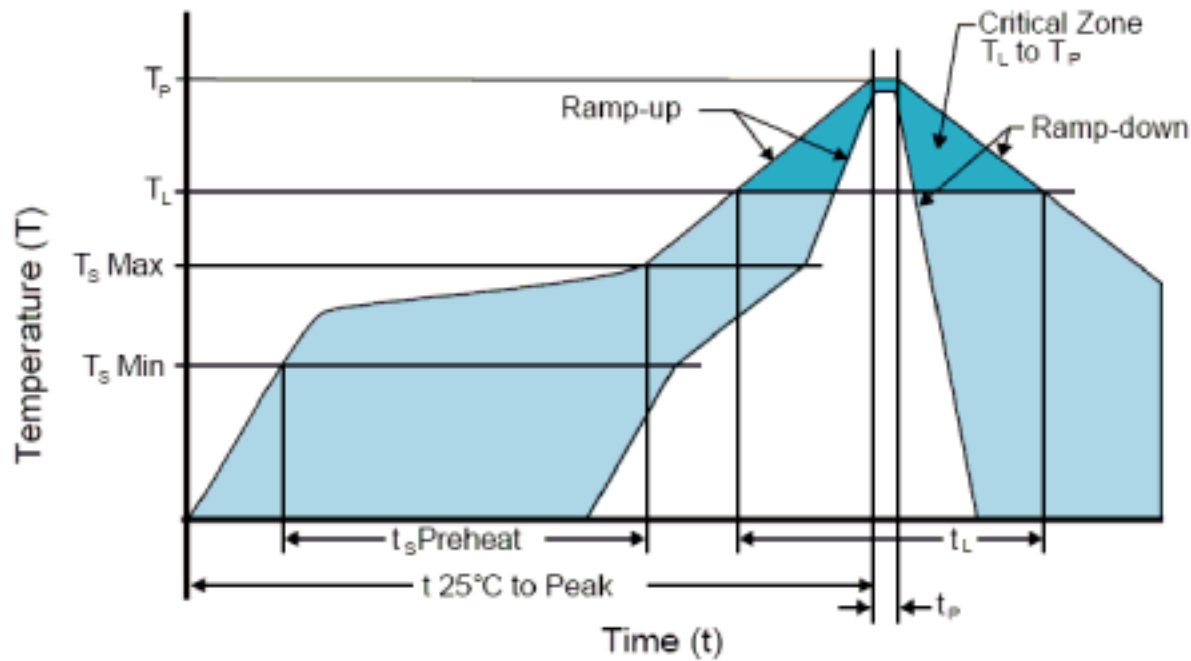
Note 2: A low input capacitance ($<12\text{pF}$), 10X attenuation factor, high impedance ($>10\text{Mohms}$), and high bandwidth ($>300\text{MHz}$) passive probe is recommended.

Note 3: Capacitance value C_L includes sum of all probe and fixture capacitance.

EB71F72D10CV2-20.000M

[Click part number to visit Part Number Details page](#)

Recommended Solder Reflow Methods



Low Temperature Solder Bath (Wave Solder)

TS MAX to TL (Ramp-up Rate)	5°C/Second Maximum
Preheat	
- Temperature Minimum (TS MIN)	N/A
- Temperature Typical (TS TYP)	150°C
- Temperature Maximum (TS MAX)	N/A
- Time (ts MIN)	30 - 60 Seconds
Ramp-up Rate (TL to TP)	5°C/Second Maximum
Time Maintained Above:	
- Temperature (TL)	150°C
- Time (tL)	200 Seconds Maximum
Peak Temperature (TP)	245°C Maximum
Target Peak Temperature (TP Target)	245°C Maximum 1 Time / 235°C Maximum 2 Times
Time within 5°C of actual peak (tP)	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.

Low Temperature Manual Soldering

185°C Maximum for 10 Seconds Maximum, 2 times Maximum. (Temperatures listed are applied to device leads only.)

High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum. (Temperatures listed are applied to device leads only.)