EB72F51 Series

- Oven Controlled Crystal Oscillator (OCXO)
- AT-Cut
- HCMOS output
- 3.3V supply voltage
- 14 pin DIP package
- External control voltage option available
- Stability to ±200ppb
- Custom lead length, gull wing options available





ELECTRICAL SPECIFICATIONS

Storage Temperature Range Supply Voltage (VDD) Frequency Tolerance / Stability vs. Initial Tolerance at Nominal VDD and VC, at 25 vs. Temperature Stability vs. Vdd VDD ±5% vs. Load Vload ±5% vs. Aging (1 Day) after 72 Hours of Operation of Operation of Operation after 72 Hours of Operation after 72 Hours of Operation of O	±200ppb, ±280ppb, or ±500ppb Maximum ±50ppb Maximum ±50ppb Maximum ±30ppb Maximum ±500ppb Maximum ±500ppb Maximum AT-Cut cy at 1 Hour at 25°C 3 Minutes Maximum
Supply Voltage (VDD) Frequency Tolerance / Stability vs. Initial Tolerance vs. Temperature Stability vs. Vdd vs. Vdd vs. Load vs. Aging (1 Day) vs. Aging (1 Pear) vs. Aging (10 Years) Crystal Cut Warm Up Time Power Consumption at Steady State, at 25°C During Warm Up, at 25°C Output Voltage Logic High (VOH) Output Voltage Logic Low (VOL) Rise Time / Fall Time Measured at 20% to 80% of Waveford Load Drive Capability Frequency Deviation Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at Nominal VDD and VC, at 25 of Nominal VDD and VDD and VDD and VDDD and VDDDD and VDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD	3.3V _{DC} ±5% 2C ±1.0ppm or ±500ppb Maximum
Frequency Tolerance / Stability vs. Initial Tolerance at Nominal V _{DD} and V _C , at 25 vs. Temperature Stability at Nominal V _{DD} and V _C vs. Vdd V _{DD} ±5% vs. Load Vload ±5% vs. Aging (1 Day) after 72 Hours of Operation vs. Aging (1 Year) after 72 Hours of Operation vs. Aging (10 Years) after 72 Hours of Operation vs. Aging (10 Years) after 72 Hours of Operation Crystal Cut Warm Up Time to ±500ppb of Final Frequen Power Consumption at Steady State, at 25°C During Warm Up, at 25°C Output Voltage Logic High (V _{OH}) I _{OH} = -4mA Output Voltage Logic Low (V _{OL}) I _{OL} = +4mA Rise Time / Fall Time Measured at 20% to 80% of Wavefor Duty Cycle Measured at 50% of Wavefor Load Drive Capability Frequency Deviation Referenced to F _O at V _C = 1.65 Control Voltage Range Control Voltage Range Control Voltage (V _C) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	±1.0ppm or ±500ppb Maximum ±200ppb, ±280ppb, or ±500ppb Maximum ±50ppb Maximum ±50ppb Maximum ±30ppb Maximum ±500ppb Maximum ±500ppb Maximum AT-Cut cy at 1 Hour at 25°C 3 Minutes Maximum
vs. Initial Tolerance at Nominal V _{DD} and V _C , at 25 vs. Temperature Stability at Nominal V _{DD} and V _C vs. Vdd Vs. Load Vload ±5% vs. Aging (1 Day) after 72 Hours of Operation vs. Aging (1 Year) after 72 Hours of Operation vs. Aging (10 Years) after 72 Hours of Operation of Crystal Cut Warm Up Time to ±500ppb of Final Frequen at Steady State, at 25°C During Warm Up, at 25°C During W	±200ppb, ±280ppb, or ±500ppb Maximum ±50ppb Maximum ±50ppb Maximum ±30ppb Maximum ±500ppb Maximum ±500ppb Maximum AT-Cut cy at 1 Hour at 25°C 3 Minutes Maximum
vs. Temperature Stability vs. Vdd vs. Load vs. Aging (1 Day) vs. Aging (1 Day) vs. Aging (1 Year) vs. Aging (10 Years) Crystal Cut Warm Up Time Power Consumption Output Voltage Logic High (VoH) Rise Time / Fall Time Duty Cycle Load Drive Capability Frequency Deviation Linearity Input Impedance Typical Phase Noise (at 12.800MHz) Tologo after 72 Hours of Operation Operation after 72 Hours of Operation after 72 Hours of Operation After 72 Hours of Operation After 72 Hours of Operation Frequency Operation After 72 Hours of Operat	±200ppb, ±280ppb, or ±500ppb Maximum ±50ppb Maximum ±50ppb Maximum ±30ppb Maximum ±500ppb Maximum ±500ppb Maximum AT-Cut cy at 1 Hour at 25°C 3 Minutes Maximum
vs. Vdd $V_{DD} \pm 5\%$ vs. Load $V_{DD} \pm 5\%$ vs. Aging (1 Day) after 72 Hours of Operation after 72 Hours of Operation operation after 72 Hours of Operation operatio	±50ppb Maximum ±50ppb Maximum ±30ppb Maximum ±500ppb Maximum ±500ppb Maximum AT-Cut cy at 1 Hour at 25°C 3 Minutes Maximum
vs. Load vs. Aging (1 Day) vs. Aging (1 Pear) vs. Aging (1 Year) vs. Aging (10 Years) Crystal Cut Warm Up Time Power Consumption Output Voltage Logic High (VoH) Output Voltage Logic Low (VoL) Rise Time / Fall Time Duty Cycle Load Drive Capability Frequency Deviation Control Voltage Range Control Voltage (Vc) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) after 72 Hours of Operation after 72 Hours of Operation After 72 Hours of Operation after 72 Hours of Operation After 72 Hours of Operation After 72 Hours of Operation To ## 72 Hours of Operation After 72 Hours of Operation To ## 40 # 500 ppb of Final Frequen At 25°C During Warm Up, at 25°C Measured at 20% to 80% of Wavefor Measured at 20% to 80% of Wavefor After 72 Hours of Operation	±50ppb Maximum ±30ppb Maximum ±500ppb Maximum ±3.0ppm Maximum AT-Cut cy at 1 Hour at 25°C 3 Minutes Maximum
vs. Aging (1 Day) vs. Aging (1 Year) vs. Aging (1 Year) vs. Aging (10 Years) after 72 Hours of Operation vs. Aging (10 Years) after 72 Hours of Operation of Operation after 72 Hours of Operation after 72 Hours of Operation of Operation of Operation after 72 Hours of Operation of Operation of Operation after 72 Hours of Operation of Operation of Operation of Operation after 72 Hours of Operation of Operation of Operation after 72 Hours of Operation of Opera	±30ppb Maximum ±500ppb Maximum ±3.0ppm Maximum AT-Cut cy at 1 Hour at 25°C 3 Minutes Maximum
vs. Aging (1 Year) after 72 Hours of Operation vs. Aging (10 Years) after 72 Hours of Operation $Crystal\ Cut$ Warm Up Time to $\pm 500ppb$ of Final Frequen at Steady State, at $25^{\circ}C$ During Warm Up, at $25^{\circ}C$ Output Voltage Logic High (V _{OH}) $I_{OH} = -4mA$ Output Voltage Logic Low (V _{OL}) $I_{OL} = +4mA$ Rise Time / Fall Time Measured at 20% to 80% of $I_{OL} = 100$ Duty Cycle Measured at $I_{OL} = 100$ Load Drive Capability Frequency Deviation Referenced to $I_{OL} = 100$ Control Voltage Range Control Voltage (V _C) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at $I_{OL} = 100$	±500ppb Maximum ±3.0ppm Maximum AT-Cut cy at 1 Hour at 25°C 3 Minutes Maximum
vs. Aging (10 Years) Crystal Cut Warm Up Time Power Consumption at Steady State, at 25 °C During Warm Up, at 25 °C Output Voltage Logic High (V_{OH}) Output Voltage Logic Low (V_{OL}) Rise Time / Fall Time Measured at 20% to 80% of Wavefor Load Drive Capability Frequency Deviation Control Voltage Range Control Voltage (V_{CL}) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 10Hz Offset	±3.0ppm Maximum AT-Cut cy at 1 Hour at 25°C 3 Minutes Maximum
Crystal Cut Warm Up Time Power Consumption at Steady State, at 25°C During Warm Up, at 25°C Output Voltage Logic High (V_{OH}) $I_{OH} = -4mA$ Output Voltage Logic Low (V_{OL}) Rise Time / Fall Time Measured at 20% to 80% of Wavefor Duty Cycle Measured at 50% of Wavefor Load Drive Capability Frequency Deviation Referenced to F_O at $V_C = 1.65$ Control Voltage Range Control Voltage (V_C) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	AT-Cut cy at 1 Hour at 25°C 3 Minutes Maximum
Warm Up Time Power Consumption at Steady State, at 25°C During Warm Up, at 25°C Output Voltage Logic High (VoH) Output Voltage Logic Low (VoL) Rise Time / Fall Time Measured at 20% to 80% of Wavefor Duty Cycle Measured at 50% of Wavefor Load Drive Capability Frequency Deviation Referenced to Fo at Vc = 1.65 Control Voltage Range Control Voltage (Vc) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	cy at 1 Hour at 25°C 3 Minutes Maximum
Power Consumptionat Steady State, at 25 °CDuring Warm Up, at 25 °COutput Voltage Logic High (V_{OH}) $I_{OH} = -4mA$ Output Voltage Logic Low (V_{OL}) $I_{OL} = +4mA$ Rise Time / Fall TimeMeasured at 20% to 80% of WaveforDuty CycleMeasured at 50% of WaveforLoad Drive CapabilityReferenced to F_{O} at $V_{C} = 1.65$ Control Voltage RangeControl Voltage RangeControl Voltage (V_{C})Transfer FunctionLinearityInput ImpedanceTypical Phase Noise (at 12.800MHz)at 10Hz Offset at 100Hz Offset	•
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Output Voltage Logic High (V_{OH}) $I_{OH} = -4mA$ Output Voltage Logic Low (V_{OL}) $I_{OL} = +4mA$ Rise Time / Fall Time Measured at 20% to 80% of Duty Cycle Measured at 50% of Wavefor Load Drive Capability Frequency Deviation Referenced to F_O at $V_C = 1.65$ Control Voltage Range Control Voltage (V_C) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	1.6 Watts Maximum
Output Voltage Logic Low (V_{0L}) $I_{0L} = +4mA$ Rise Time / Fall Time Measured at 20% to 80% of V_{0L} Duty Cycle Measured at 50% of Wavefor Load Drive Capability Frequency Deviation Referenced to V_{0L} Control Voltage Range Control Voltage V_{0L} Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	2.5 Watts Maximum
Rise Time / Fall Time Measured at 20% to 80% of Duty Cycle Measured at 50% of Wavefor Load Drive Capability Frequency Deviation Referenced to F ₀ at V _C = 1.65 Control Voltage Range Control Voltage (V _C) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	2.6V _{DC} Minimum
Duty Cycle Load Drive Capability Frequency Deviation Control Voltage Range Control Voltage (V _c) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	0.4V _{DC} Maximum
Load Drive Capability Frequency Deviation Referenced to F ₀ at V _c = 1.65 Control Voltage Range Control Voltage (V _c) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	Vaveform 6nSec Maximum
Frequency Deviation Referenced to F_0 at $V_C = 1.65$ Control Voltage Range Control Voltage (V_C) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	m 50 ±5(%)
Control Voltage Range Control Voltage (Vc) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	15pF HCMOS Load
Control Voltage (V _c) Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	V_{DC} ; V_{DD} =3.3 V_{DC} over OTR ±5ppm Minimum
Transfer Function Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	$0.0V_{DC}$ to V_{DD}
Linearity Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	$1.65V_{DC} \pm 1.65V_{DC}$
Input Impedance Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	1.03 v DC ±1.03 v DC
Typical Phase Noise (at 12.800MHz) at 10Hz Offset at 100Hz Offset	Positive Transfer Characteristic
at 100Hz Offset	00 00
	Positive Transfer Characteristic
1 210 000	Positive Transfer Characteristic ±10% Maximum
at 1kHz Offset	Positive Transfer Characteristic ±10% Maximum 10k0hms Typical
at 10kHz Offset	Positive Transfer Characteristic ±10% Maximum 10k0hms Typical -95dBc/Hz
MANUFACTURER CATEGORY SERIES CCLIPTEK CORP. OSCILLATOR EB72F51	Positive Transfer Characteristic ±10% Maximum 10k0hms Typical -95dBc/Hz -120dBc/Hz

www.DataSheet4U.com

PART NUMBERING GUIDE

EB72F51 C 10 B V 2 - 20.000M - CL125



AVAILABLE OPTIONS

Blank=None (Standard) CLXXX=Custom Lead Length G=Full Size Gull Wing

FREQUENCY

DUTY CYCLE

2=50% ±5%

VOLTAGE CONTROL OPTION

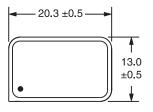
N=None (No Connect on Pin 1) V=Voltage Control on Pin 1

TABLE 1: PART NUMBERING CODES							
Range			Frequency Stability X Denotes Availability				
ature			±200ppb	±280ppb	±500ppb		
mper		Code	20	28	50		
Operating Temperature Range	0°C to +50°C	Α	Х	Х	Х		
	0°C to +70°C	В		Х	Х		
obe	-20°C to +70°C	С			Х		

MECHANICAL DIMENSIONS

1 Letter Code Per Table 1

ALL DIMENSIONS IN MILLIMETERS

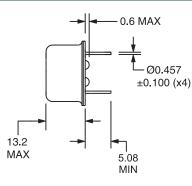


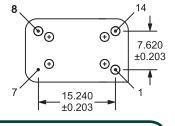
Pin 1: No Connect or Voltage Control

Pin 7: Case Ground

Pin 8: Output

Pin 14: Supply Voltage





MARKING SPECIFICATIONS

Line 1: ECLIPTEK

Line 2: XX.XXX M

Frequency in MHz (5 Digits Maximum + Decimal)

Line 3: XX Y ZZ Week of Year Last Digit of Year

Ecliptek Manufacturing Identifier

Note: Pin 1 shall be designated with a dot

ENVIRONMENTAL/MECHANICAL SPECIFICATIONS Characteristic **Specification**

Gross Leak Test MIL-STD-883, Method 1014, Condition C MIL-STD-202, Method 213, Condition C MIL-STD-883, Method 2007, Condition A Mechanical Shock Vibration Lead Integrity

MIL-STD-883, Method 2004 MIL-STD-883, Method 2002 MIL-STD-883, Method 1010 MIL-STD-883, Method 210 MIL-STD-883, Method 215 Solderability Temperature Cycling Resistance to Soldering Heat Resistance to Solvents