

EB51W4D50V-12.800M

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

REGULATORY COMPLIANCE (Data Sheet downloaded on Dec 2, 2017)



ITEM DESCRIPTION

Temperature Compensated Quartz Crystal Clock Oscillators TCXO TC(VC)XO HCMOS/TTL (CMOS) 5.0Vdc 4 Pad 11.7mm x 21.3mm x 4.5mm Metal (PCB) Surface Mount (SMD) 12.800MHz ± 5.0 ppm Maximum -30°C to +75°C

ELECTRICAL SPECIFICATIONS

Nominal Frequency	12.800MHz
Frequency Stability	± 5.0 ppm Maximum (Inclusive of Operating Temperature Range)
Frequency Stability vs. Input Voltage	± 0.3 ppm Maximum ($\pm 5\%$)
Frequency Stability vs. Load	± 0.2 ppm Maximum (± 2 pF)
Aging at 25°C	± 1 ppm/Year Maximum
Operating Temperature Range	-30°C to +75°C
Supply Voltage	5.0Vdc $\pm 5\%$
Input Current	20mA Maximum
Output Voltage Logic High (Voh)	2.4Vdc Minimum w/TTL Load, Vdd-0.5Vdc Minimum w/HCMOS Load
Output Voltage Logic Low (Vol)	0.4Vdc Maximum w/TTL Load, 0.5Vdc Maximum w/HCMOS Load
Rise/Fall Time	10nSec Maximum (Measured at 0.4Vdc to 2.4Vdc w/TTL Load, 20% to 80% of waveform w/HCMOS Load)
Duty Cycle	50 ± 10 (%) (Measured at 1.4Vdc w/TTL Load, at 50% of waveform w/HCMOS Load)
Load Drive Capability	10TTL Load or 15pF HCMOS Load Maximum
Output Logic Type	CMOS
Control Voltage	2.5Vdc ± 2.0 Vdc
Frequency Deviation	± 7 ppm Minimum, ± 20 ppm Maximum (Referenced to Fo at Vc=2.5Vdc; Vdd=5.0Vdc)
Transfer Function	Positive Transfer Characteristic
Internal Trim	± 3 ppm Minimum (Top of Can)
Modulation Bandwidth	10kHz Minimum (Measured at -3dB with a Control Voltage of 2.5Vdc)
Input Impedance	10kOhms Typical
Phase Noise	-70dBc at 10Hz Offset, -100dBc at 100Hz Offset, -130dBc at 1kHz Offset, -140dBc at 10kHz Offset, -145dBc at 100kHz Offset (Typical Values)
Storage Temperature Range	-40°C to +85°C

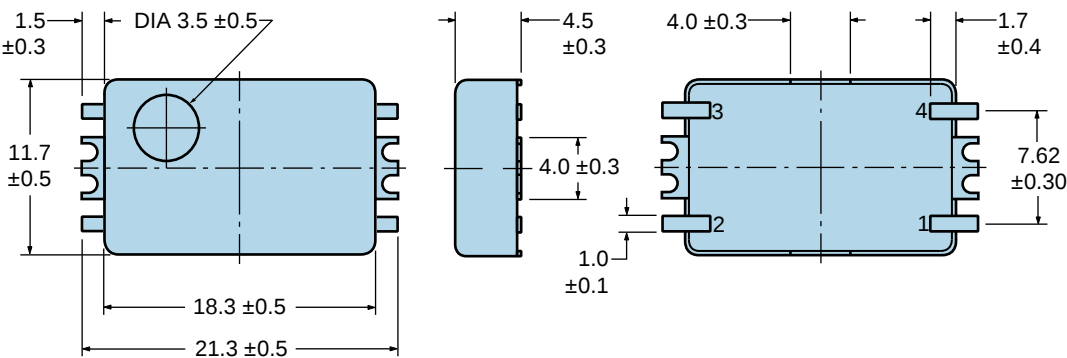
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

Fine Leak Test	MIL-STD-883, Method 1014 Condition A (Internal Crystal Only)
Gross Leak Test	MIL-STD-883, Method 1014 Condition C (Internal Crystal Only)
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

EB51W4D50V-12.800M

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

MECHANICAL DIMENSIONS (all dimensions in millimeters)

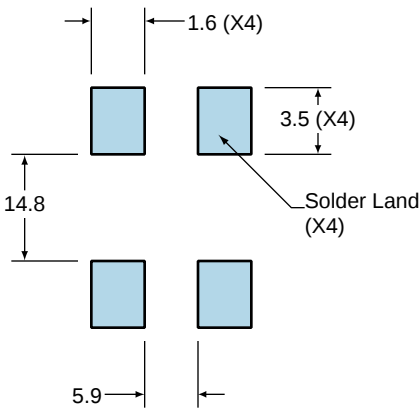


PIN	CONNECTION
1	Voltage Control
2	Ground
3	Output
4	Supply Voltage

LINE	MARKING
1	ECLIPTEK
2	12.800M M=MHz
3	XXYYZZ XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year

Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are ±0.1

EB51W4D50V-12.800M

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

OUTPUT WAVEFORM



EB51W4D50V-12.800M [Click part number to visit Part Number Details page](#)

Test Circuit for TTL Output

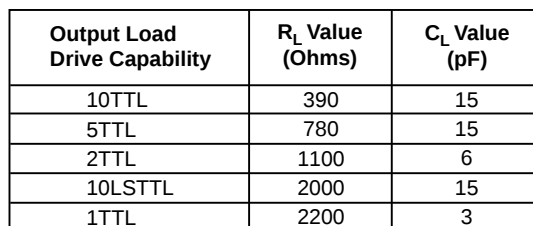
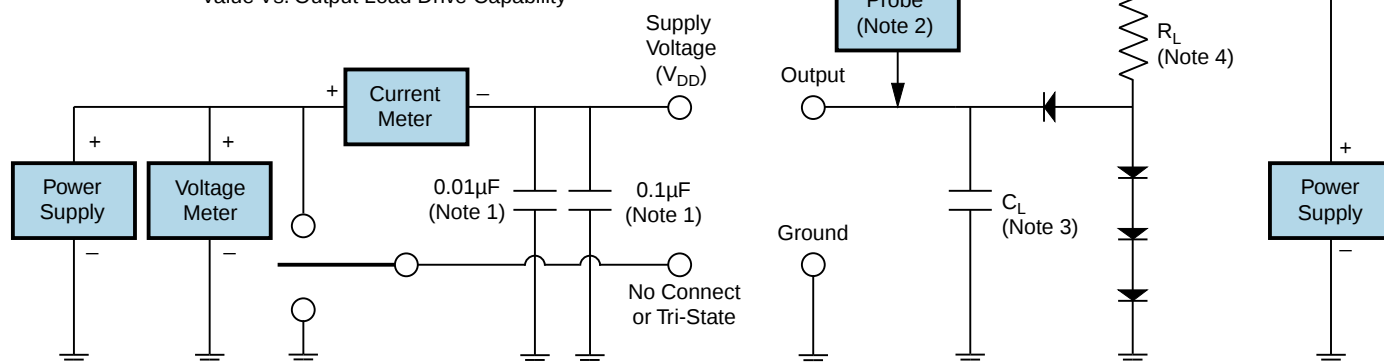


Table 1: R_L Resistance Value and C_L Capacitance Value Vs. Output Load Drive Capability



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.

Note 4: Resistance value R_L is shown in Table 1. See applicable specification sheet for 'Load Drive Capability'.

Note 5: All diodes are MMBD7000, MMBD914, or equivalent.

EB51W4D50V-12.800M

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

Test Circuit for CMOS Output



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_{DD} pin is required.

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

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

EB51W4D50V-12.800M

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

Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 240°C

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)	60 - 120 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)	240°C Maximum
Target Peak Temperature (TP Target)	240°C Maximum 2 Times / 230°C Maximum 1 Time
Time within 5°C of actual peak (tp)	10 Seconds Maximum 2 Times / 80 Seconds Maximum 1 Time
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.