

EP1100HSETTSL-44.4736M

Lead Free**COMPLIANT****EU RoHS**

2011/65

COMPLIANT**REACH****SVHC 144**

Jun 20, 2013

COMPLIANT

ITEM DESCRIPTION

Quartz Crystal Clock Oscillators XO (SPXO) HCMOS/TTL (CMOS) 5.0Vdc 8 Pin DIP Metal Thru-Hole 44.4736MHz ± 100 ppm - 40°C to +85°C

ELECTRICAL SPECIFICATIONS

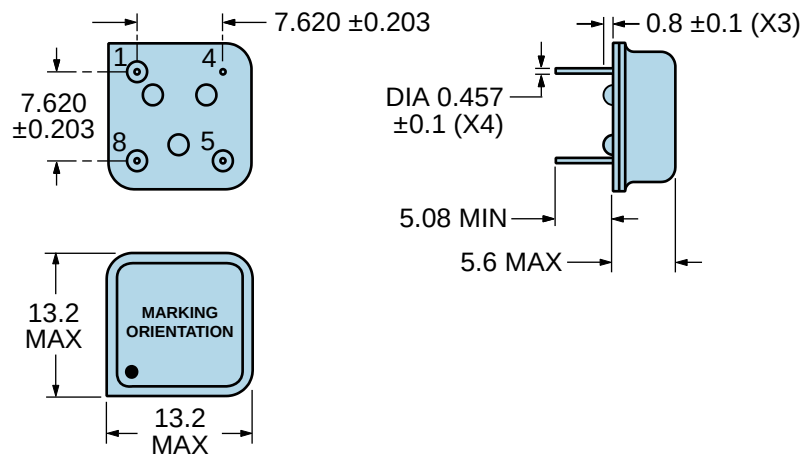
Nominal Frequency	44.4736MHz
Frequency Tolerance/Stability	± 100 ppm Maximum (Inclusive of all conditions: Calibration Tolerance at 25°C, Frequency Stability over the Operating Temperature Range, Supply Voltage Change, Output Load Change, First Year Aging at 25°C, Shock, and Vibration)
Aging at 25°C	± 5 ppm/year Maximum
Operating Temperature Range	-40°C to +85°C
Supply Voltage	5.0Vdc $\pm 10\%$
Input Current	45mA Maximum (Unloaded)
Output Voltage Logic High (Voh)	2.4Vdc Minimum (IOH=-16mA)
Output Voltage Logic Low (Vol)	0.4Vdc Maximum (IOL=+16mA)
Rise/Fall Time	4nSec Maximum (Measured at 0.8Vdc to 2.0Vdc)
Duty Cycle	50 $\pm 10\%$ (Measured at 1.4Vdc with TTL Load; Measured at 50% of waveform with HCMOS Load)
Load Drive Capability	5TTL Load Maximum
Output Logic Type	TTL
Pin 1 Connection	Tri-State (Disabled Output: High Impedance)
Pin 1 Input Voltage (Vih and Vil)	+2.0Vdc Minimum to enable output, +0.8Vdc Maximum to disable output, No Connect to enable output.
Disable Current	30mA Maximum (Pin 1 = Ground)
Standby Current	50 μ A Maximum (Pin 1 = Ground)
Peak to Peak Jitter (tPK)	100pSec Maximum, 50pSec Typical
RMS Period Jitter (tRMS)	13pSec Maximum, 8pSec Typical
Start Up Time	10mSec 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
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

EP1100HSETTSL-44.4736M

MECHANICAL DIMENSIONS (all dimensions in millimeters)

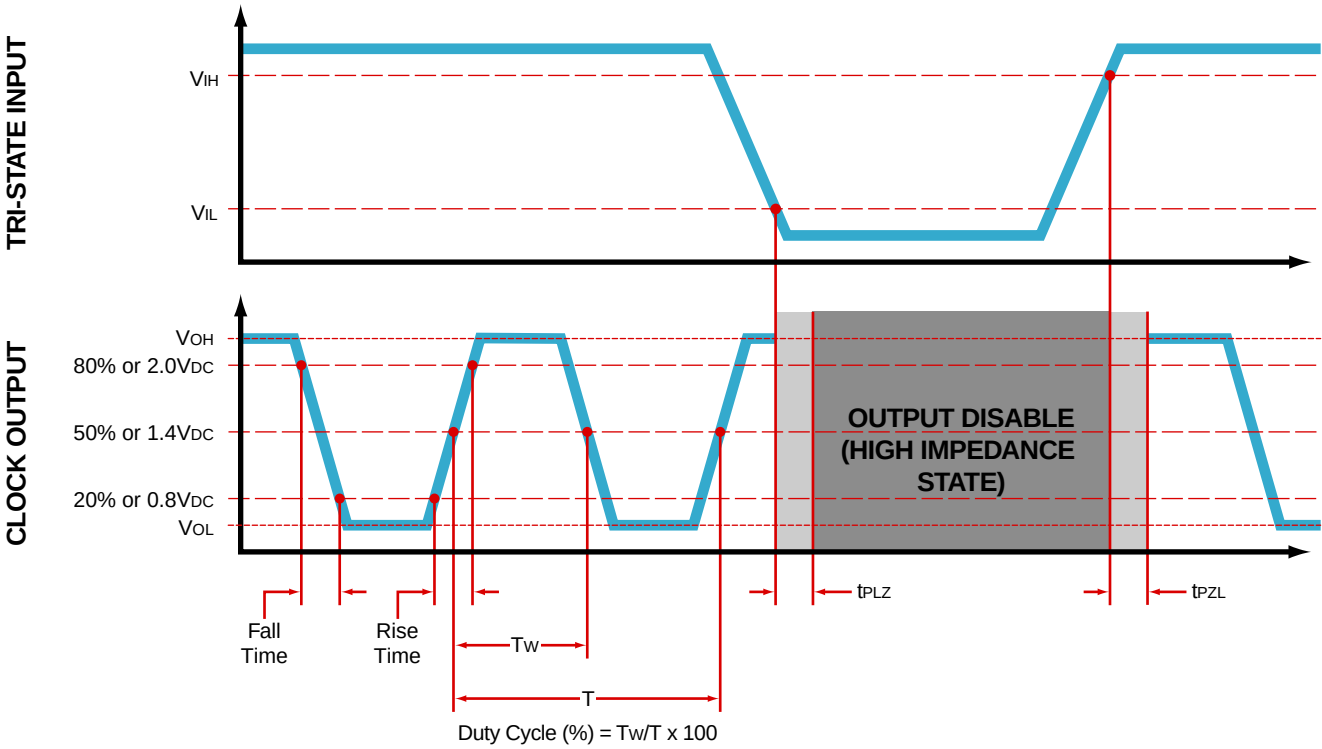


PIN	CONNECTION
1	Tri-State (High Impedance)
4	Case/Ground
5	Output
8	Supply Voltage

LINE	MARKING
1	ECLIPTEK
2	EP11TS EP11=Product Series
3	44.473M
4	XXYYZZ XX=Ecliptek Manufacturing Code Y=Last Digit of the Year ZZ=Week of the Year

EP1100HSETTSL-44.4736M

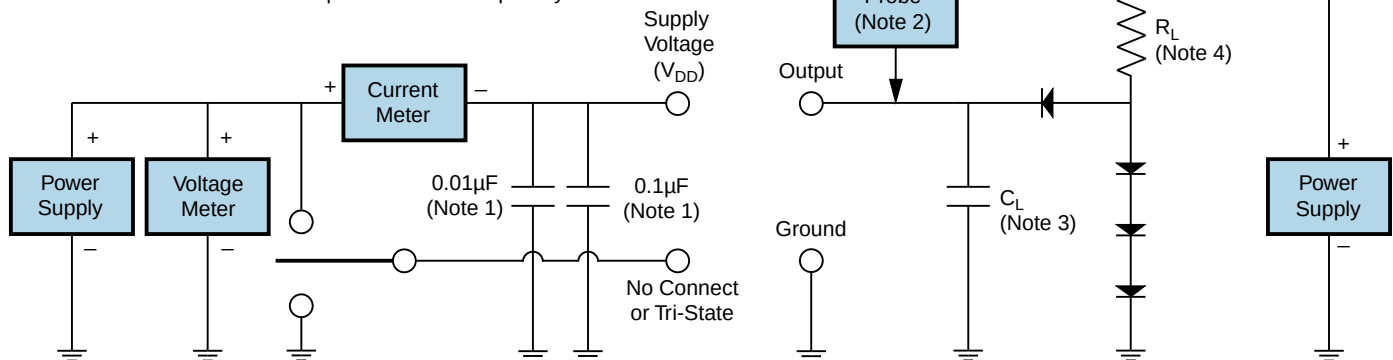
OUTPUT WAVEFORM & TIMING DIAGRAM



Test Circuit for TTL Output

Output Load Drive Capability	R _L Value (Ohms)	C _L Value (pF)
10TTL	390	15
5TTL	780	15
2TTL	1100	6
10LSTTL	2000	15
1TTL	2200	3

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.

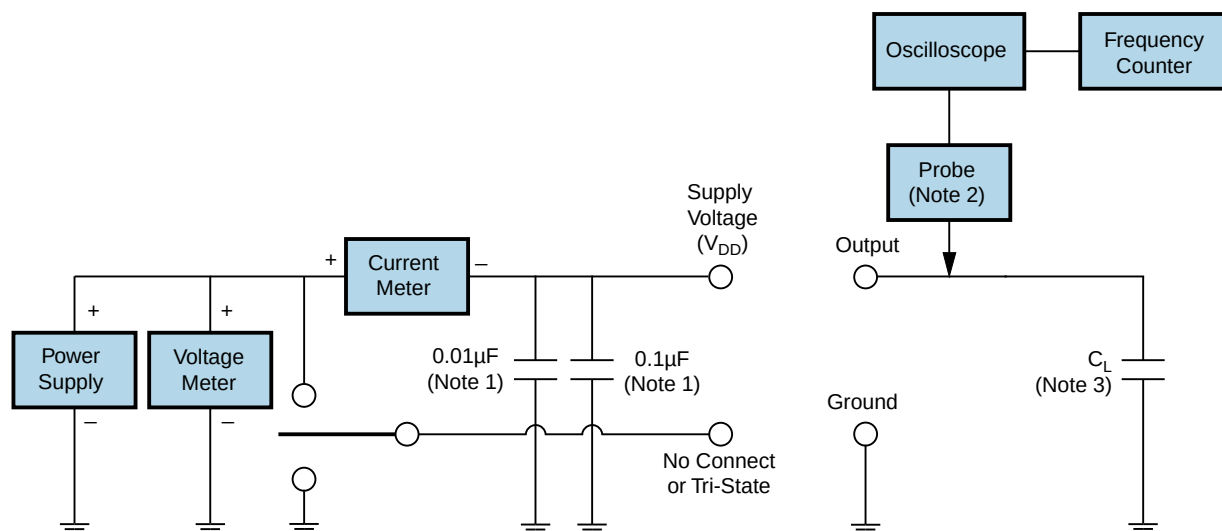
Note 3: Capacitance value C_L includes sum of all probe and fixture capacitance.

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.

EP1100HSETTSL-44.4736M

Test Circuit for CMOS Output



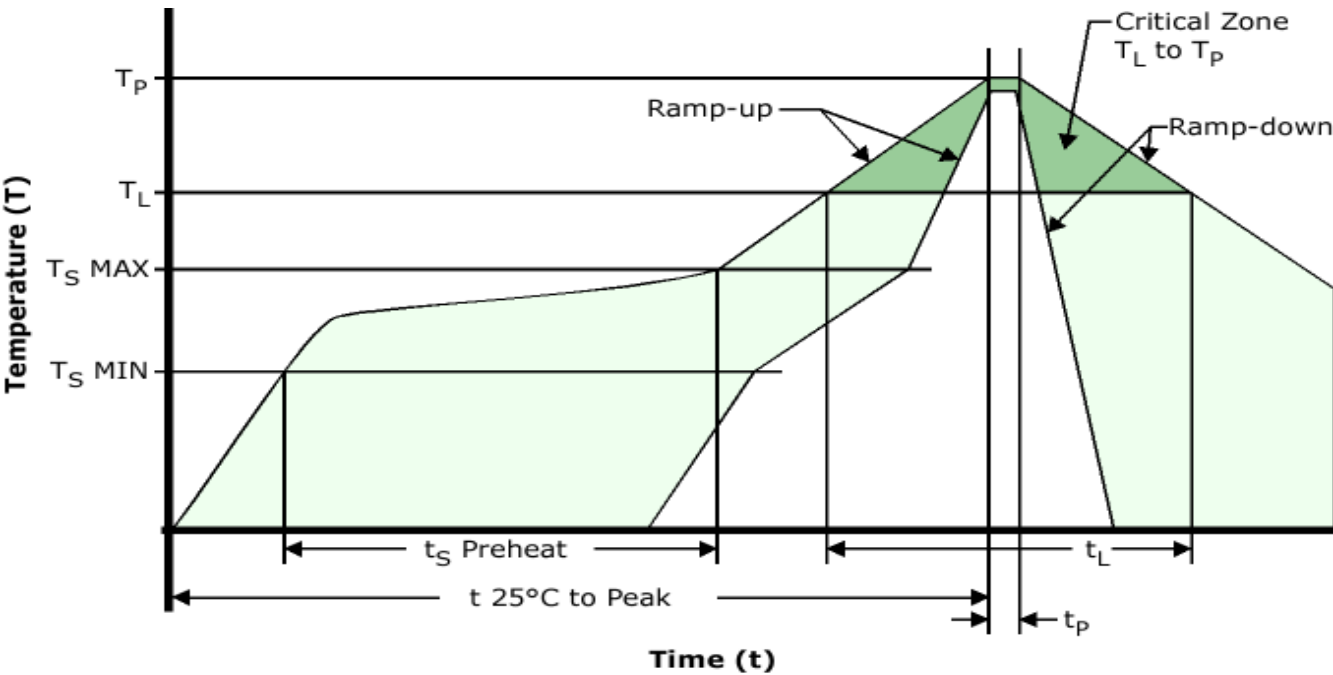
Note 1: An external 0.1 μ F low frequency tantalum bypass capacitor in parallel with a 0.01 μ F high frequency ceramic bypass capacitor close to the package ground and V_{DD} pin is required.

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

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

EP1100HSETTSL-44.4736M

Recommended Solder Reflow Methods

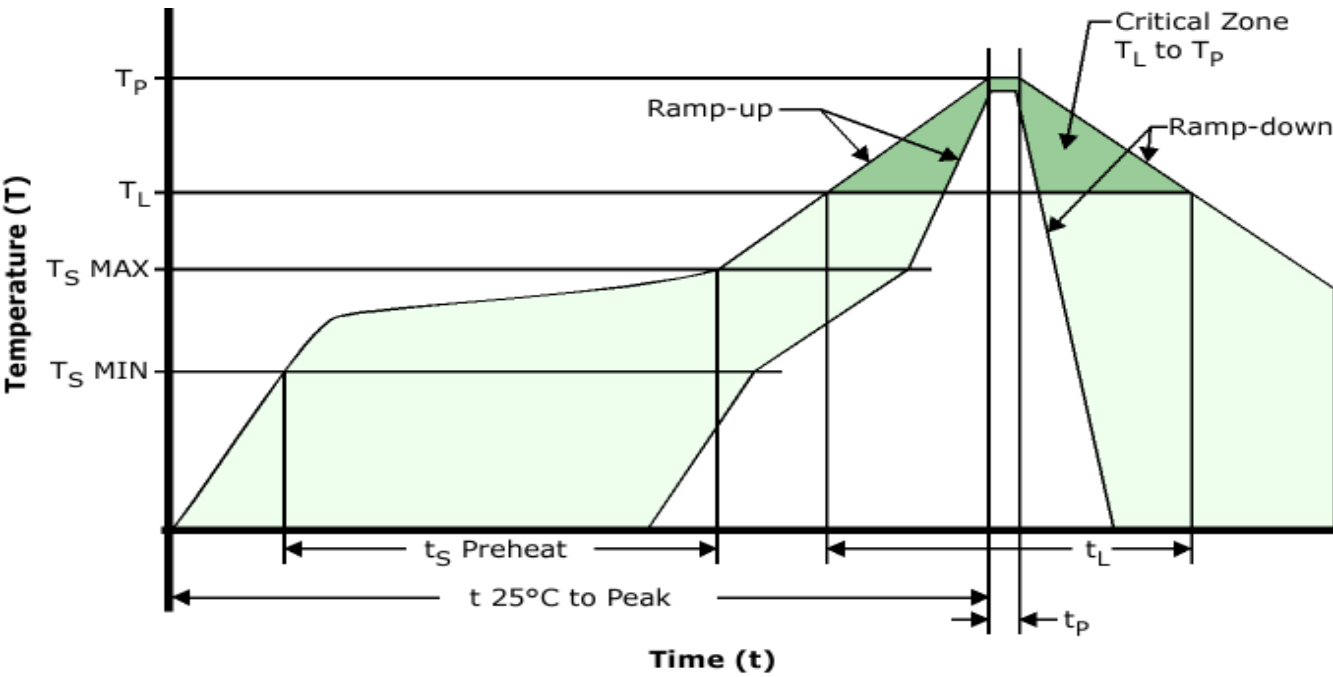


High Temperature Solder Bath (Wave Solder)

T _S MAX to T _L (Ramp-up Rate)	3°C/Second Maximum
Preheat	
- Temperature Minimum (T _S MIN)	150°C
- Temperature Typical (T _S TYP)	175°C
- Temperature Maximum (T _S MAX)	200°C
- Time (t _s MIN)	60 - 180 Seconds
Ramp-up Rate (T _L to T _P)	3°C/Second Maximum
Time Maintained Above:	
- Temperature (T _L)	217°C
- Time (t _L)	60 - 150 Seconds
Peak Temperature (T _P)	260°C Maximum for 10 Seconds Maximum
Target Peak Temperature (T _P Target)	250°C +0/-5°C
Time within 5°C of actual peak (t _P)	20 - 40 Seconds
Ramp-down Rate	6°C/Second Maximum
Time 25°C to Peak Temperature (t)	8 Minutes Maximum
Moisture Sensitivity Level	Level 1

EP1100HSETTSL-44.4736M

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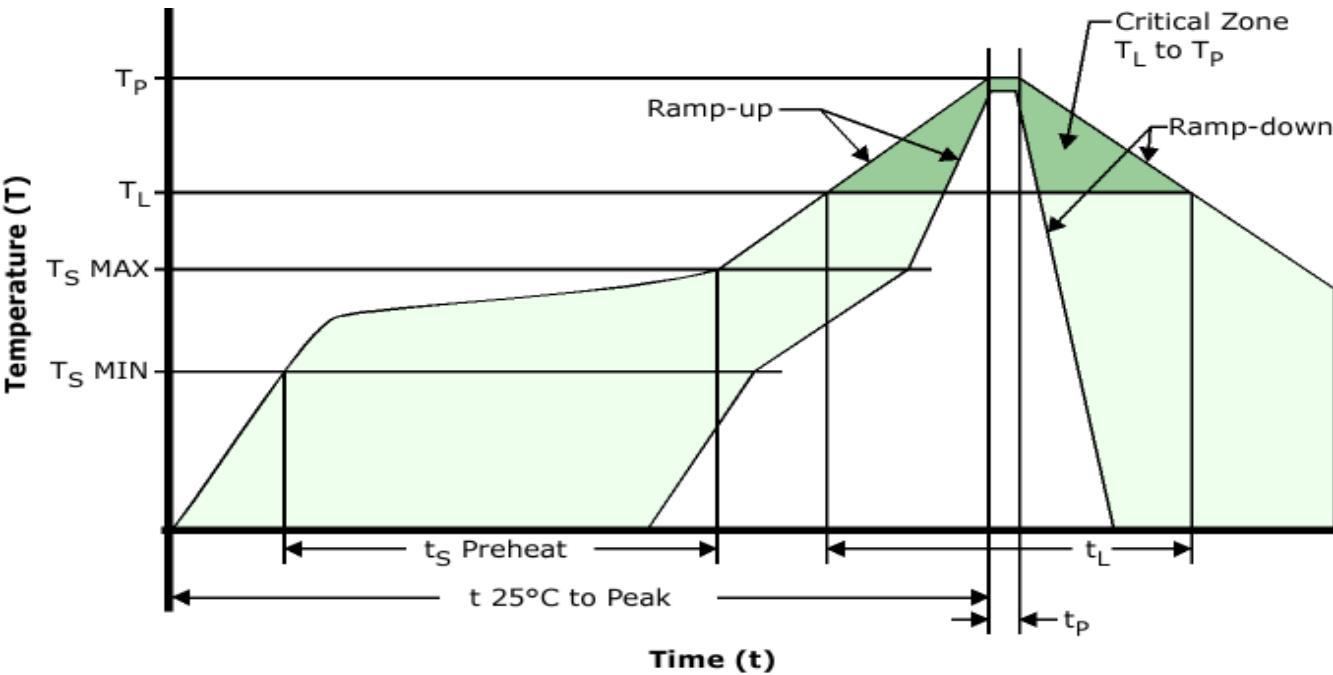


Low Temperature Infrared/Convection 185°C

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

EP1100HSETTSL-44.4736M

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

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.