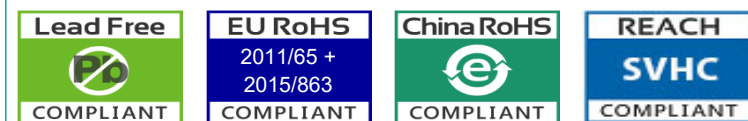


REGULATORY COMPLIANCE



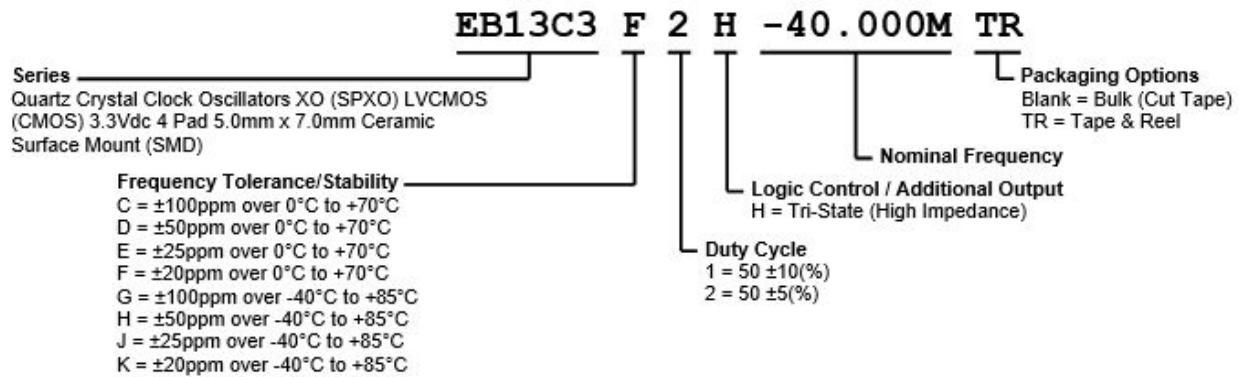
ITEM DESCRIPTION

Quartz Crystal Clock Oscillators XO (SPXO) LVCMOS (CMOS) 3.3Vdc 4 Pad 5.0mm x 7.0mm Ceramic Surface Mount (SMD)

ELECTRICAL SPECIFICATIONS

Nominal Frequency	6.144MHz to 40MHz
Frequency Tolerance/Stability	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 $\pm 100\text{ppm}$ over 0°C to +70°C $\pm 50\text{ppm}$ over 0°C to +70°C $\pm 25\text{ppm}$ over 0°C to +70°C $\pm 20\text{ppm}$ over 0°C to +70°C $\pm 100\text{ppm}$ over -40°C to +85°C $\pm 50\text{ppm}$ over -40°C to +85°C $\pm 25\text{ppm}$ over -40°C to +85°C $\pm 20\text{ppm}$ over -40°C to +85°C
Aging at 25°C	$\pm 5\text{ppm/year}$ Maximum
Supply Voltage	3.3Vdc $\pm 10\%$
Input Current	2mA Maximum over Nominal Frequency of 6.144MHz to 10MHz 3mA Maximum over Nominal Frequency of 10.000001MHz to 20MHz 5mA Maximum over Nominal Frequency of 20.000001MHz to 36MHz 6mA Maximum over Nominal Frequency of 36.000001MHz to 40MHz
Output Voltage Logic High (V_{OH})	$I_{OH} = -4\text{mA}$ 90% of Vdd Minimum
Output Voltage Logic Low (V_{OL})	$I_{OL} = +4\text{mA}$ 10% of Vdd Maximum
Rise/Fall Time	Measured at 20% to 80% of waveform 6nSec Maximum over Nominal Frequency of 6.144MHz to 25MHz 4nSec Maximum over Nominal Frequency of 25.000001MHz to 40MHz
Duty Cycle	Measured at 50% of Waveform 50 $\pm 10\%$ 50 $\pm 5\%$
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Logic Control / Additional Output	Tri-State (High Impedance)
Output Control Input Voltage Logic High (V_{IH})	90% of Vdd Minimum or No Connect to Enable Output
Output Control Input Voltage Logic Low (V_{IL})	10% of Vdd Maximum to Disable Output (High Impedance)
Standby Current	Disabled Output: High Impedance 10 μA Maximum
RMS Phase Jitter	$F_j = 12\text{kHz}$ to 20MHz 1pSec Maximum
Period Jitter (Deterministic)	0.2pSec Typical, 3pSec Maximum
Period Jitter (Random)	2pSec Typical, 5pSec Maximum
Period Jitter (RMS)	3pSec Typical, 7pSec Maximum
Period Jitter (pk-pk)	40pSec Typical, 100pSec Maximum
Start Up Time	10mSec Maximum
Storage Temperature Range	-55°C to +125°C

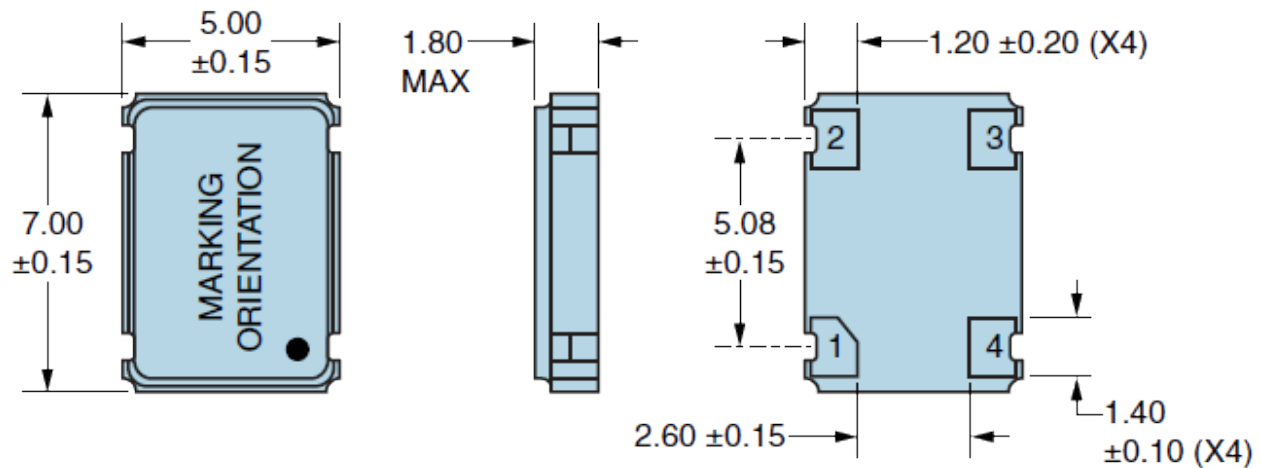
PART NUMBERING GUIDE



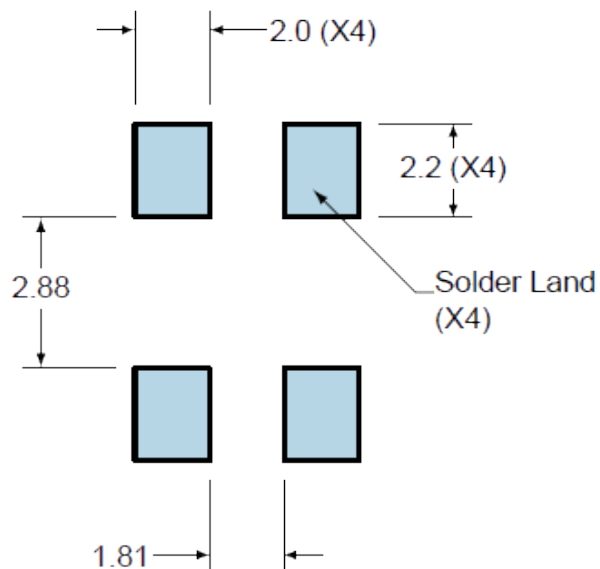
ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

ESD Susceptibility	MIL-STD-883, Method 3015, Class 1, HBM: 1500V
Fine Leak Test	MIL-STD-883, Method 1014, Condition A
Flammability	UL94-V0
Gross Leak Test	MIL-STD-883, Method 1014, Condition C
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Moisture Resistance	MIL-STD-883, Method 1004
Moisture Sensitivity	J-STD-020, MSL 1
Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition K
Resistance to Solvents	MIL-STD-202, Method 215
Solderability	MIL-STD-883, Method 2003
Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A

MECHANICAL DIMENSIONS



SUGGESTED SOLDER PAD LAYOUT

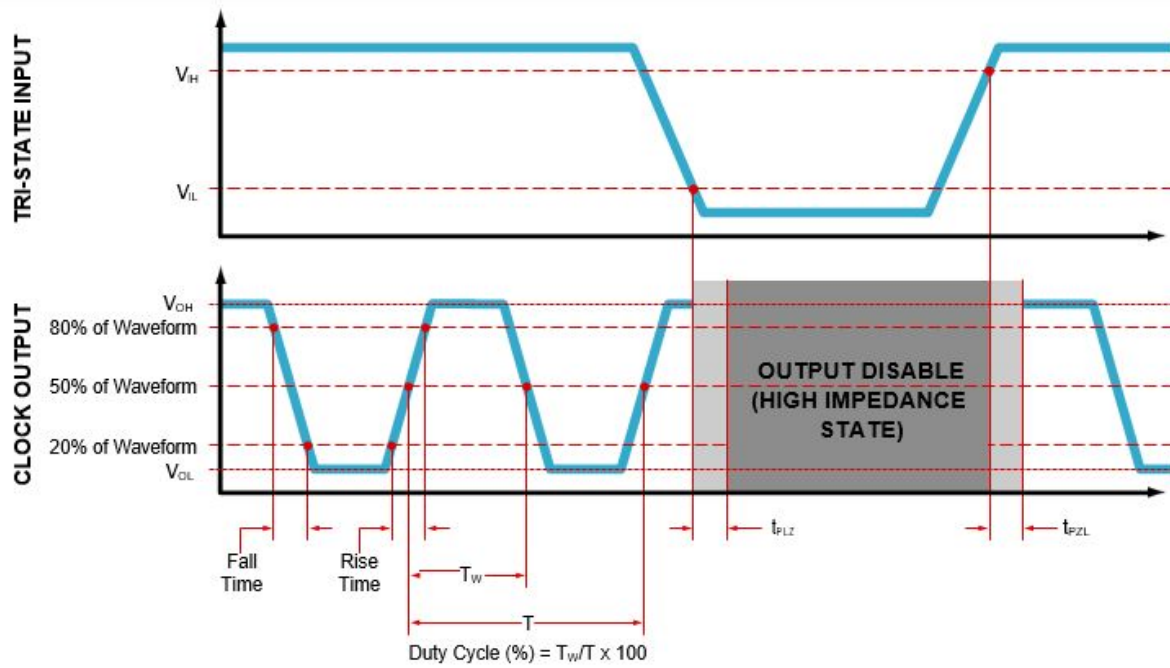


PIN	CONNECTION
1	Tri-State
2	Case/Ground
3	Output
4	Supply Voltage

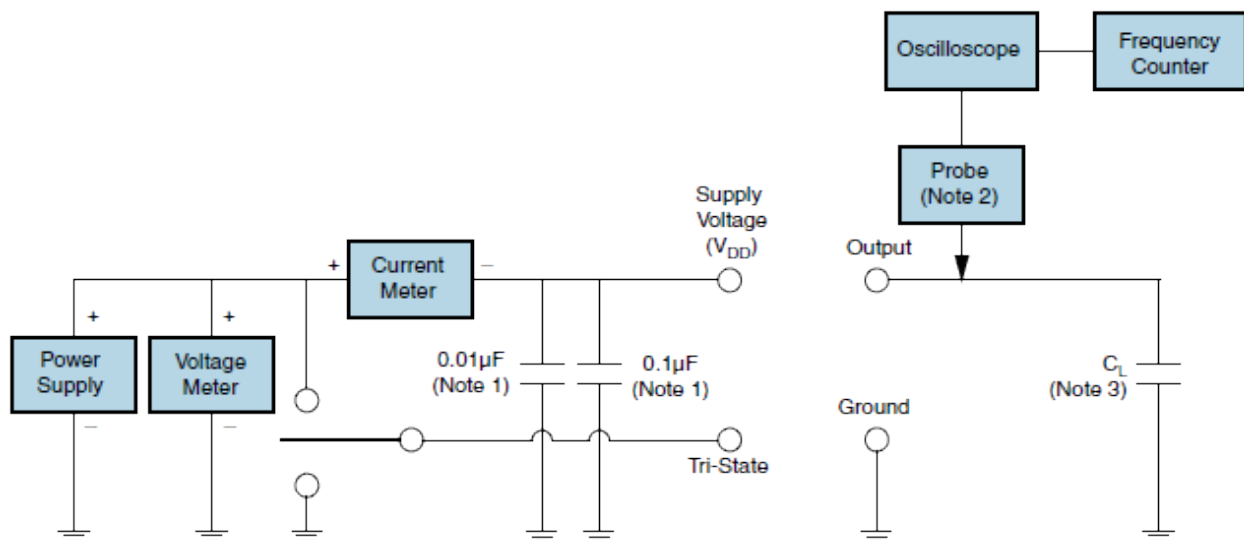
All Tolerances are ± 0.1

All Dimensions in Millimeters

OUTPUT WAVEFORM & TIMING DIAGRAM



TEST CIRCUIT FOR CMOS OUTPUT

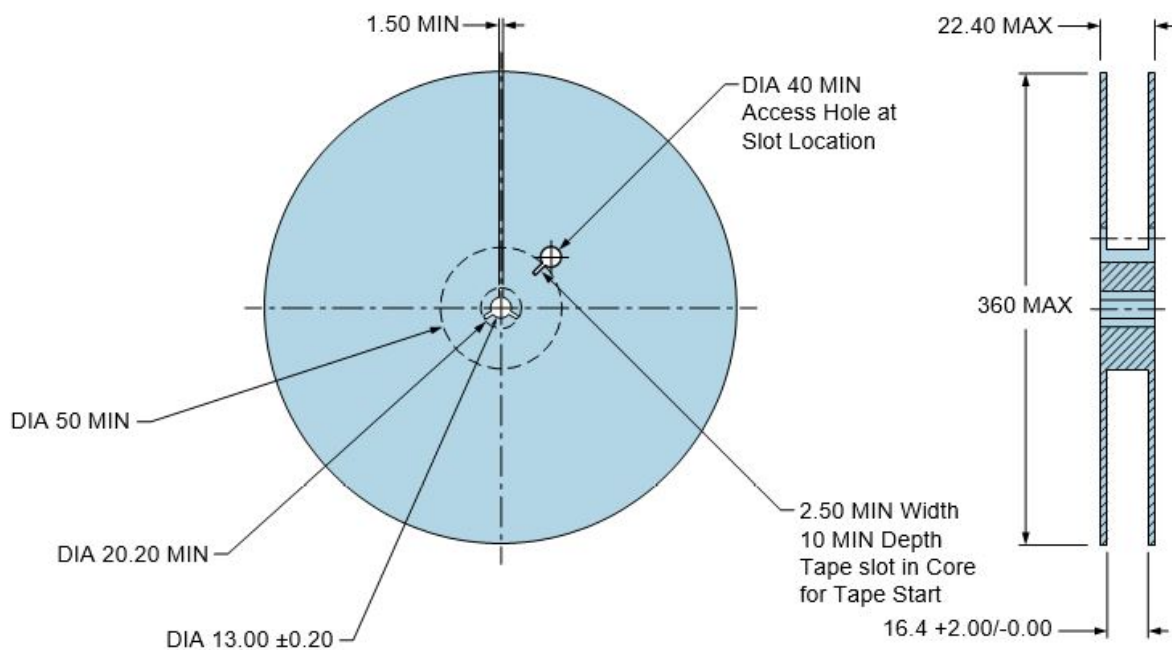


Note 1: An external 0.01µF ceramic bypass capacitor in parallel with a 0.1µF high frequency ceramic bypass capacitor close to (Less than 2mm) the package ground and supply voltage pin is required.

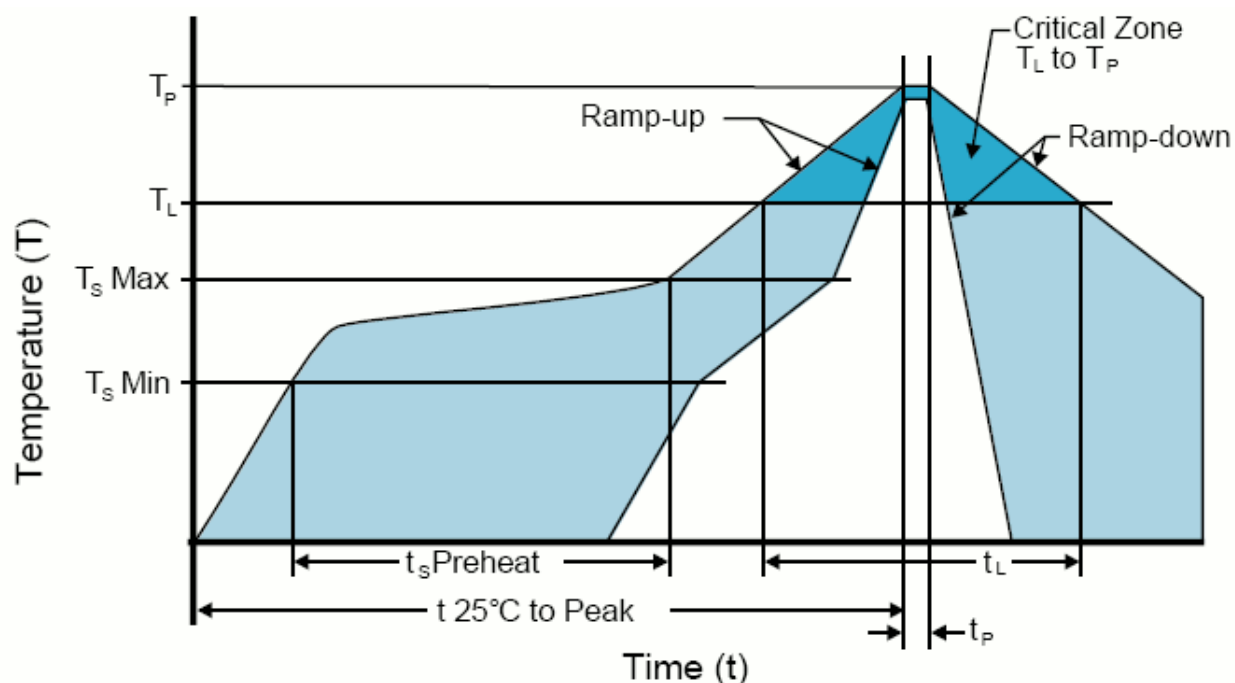
Note 2: A low capacitance (<12pF), 10X Attenuation Factor, High Impedance (>10Mohms), and High bandwidth (>300MHz) Passive probe is recommended.

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

Compliant to EIA-481



RECOMMENDED SOLDER REFLOW METHOD



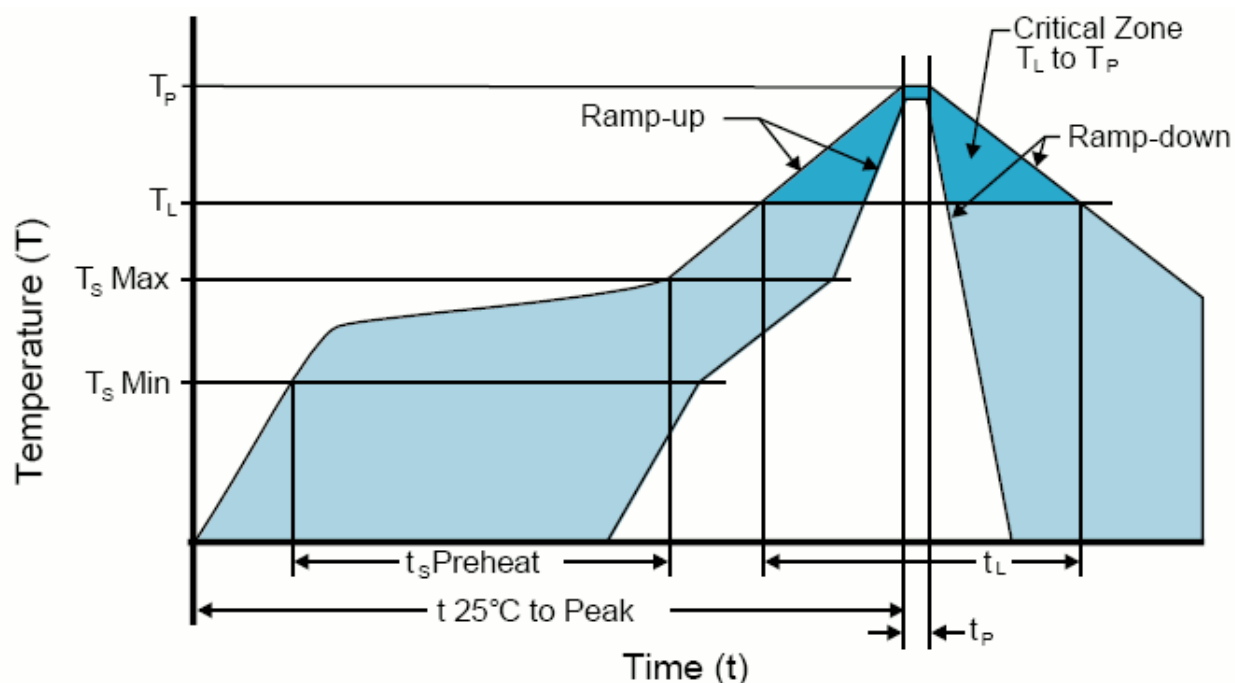
HIGH TEMPERATURE INFRARED/CONVECTION

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)	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
Additional Notes	Temperatures shown are applied to body of device.

High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum. (Temperatures shown are applied to body of device.)

RECOMMENDED SOLDER REFLOW METHOD



LOW TEMPERATURE INFRARED/CONVECTION

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)	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)	240°C Maximum
Target Peak Temperature (T _P Target)	240°C Maximum 2 Times / 230°C Maximum 1 Time
Time within 5°C of actual peak (t _P)	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
Additional Notes	Temperatures shown are applied to body of device.

Low Temperature Manual Soldering

185°C Maximum for 10 Seconds Maximum, 2 times Maximum. (Temperatures shown are applied to body of device.)

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