

REGULATORY COMPLIANCE



ITEM DESCRIPTION

Quartz Crystal Clock Oscillators XO (SPXO) LVPECL (PECL) 3.3Vdc 6 Pad 5.0mm x 7.0mm Ceramic Surface Mount (SMD)

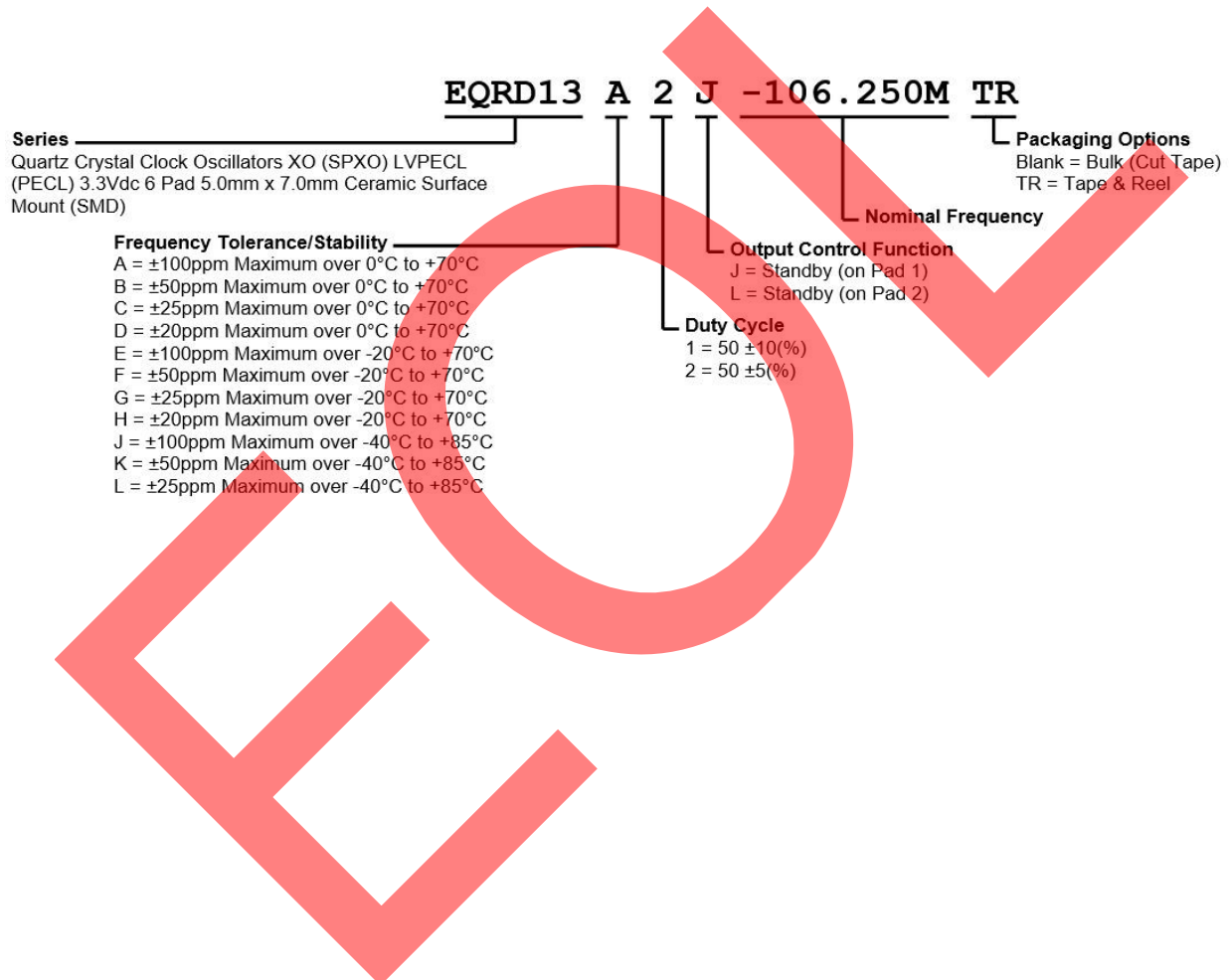
ELECTRICAL SPECIFICATIONS

Nominal Frequency	10MHz to 200MHz
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 ±100ppm Maximum over 0°C to +70°C ±50ppm Maximum over 0°C to +70°C ±25ppm Maximum over 0°C to +70°C ±20ppm Maximum over 0°C to +70°C ±100ppm Maximum over -20°C to +70°C ±50ppm Maximum over -20°C to +70°C ±25ppm Maximum over -20°C to +70°C ±20ppm Maximum over -20°C to +70°C ±100ppm Maximum over -40°C to +85°C ±50ppm Maximum over -40°C to +85°C ±25ppm Maximum over -40°C to +85°C
Aging at 25°C	±3ppm Maximum First Year
Supply Voltage	3.3Vdc ±5%
Input Current	50mA Maximum
Output Voltage Logic High (V _{OH})	Vdd-1.025Vdc Minimum, 2.35Vdc Typical, Vdd-0.88Vdc Maximum
Output Voltage Logic Low (V _{OL})	Vdd-1.81Vdc Minimum, 1.60Vdc Typical, Vdd-1.62Vdc Maximum
Rise/Fall Time	Measured at 20% to 80% of Waveform 400pSec Maximum
Duty Cycle	Measured at 50% of Waveform 50 ±10(%) 50 ±5(%)
Load Drive Capability	50 Ohms into Vdd-2.0Vdc
Output Logic Type	LVPECL
Phase Noise	All Values are Typical -50dBc/Hz at 10Hz Offset -82dBc/Hz at 100Hz Offset -116dBc/Hz at 1kHz Offset -138dBc/Hz at 10kHz Offset -144dBc/Hz at 100kHz Offset -149dBc/Hz at 1MHz Offset -155dBc/Hz at 10MHz Offset -155dBc/Hz at 20MHz Offset
Output Control Function	Standby (on Pad 1) Standby (on Pad 2)
Output Control Input Voltage Logic High (V _{Ih})	70% of Vdd Minimum or No Connect to Enable Output and Complementary Output
Output Control Input Voltage Logic Low (V _{Il})	30% of Vdd Maximum to Disable Output and Complementary Output (High Impedance)
Standby Output Enable Time	10mSec Maximum
Standby Output Disable Time	200nSec Maximum
Standby Current	Without Load 10µA Maximum

EQRD13 Series

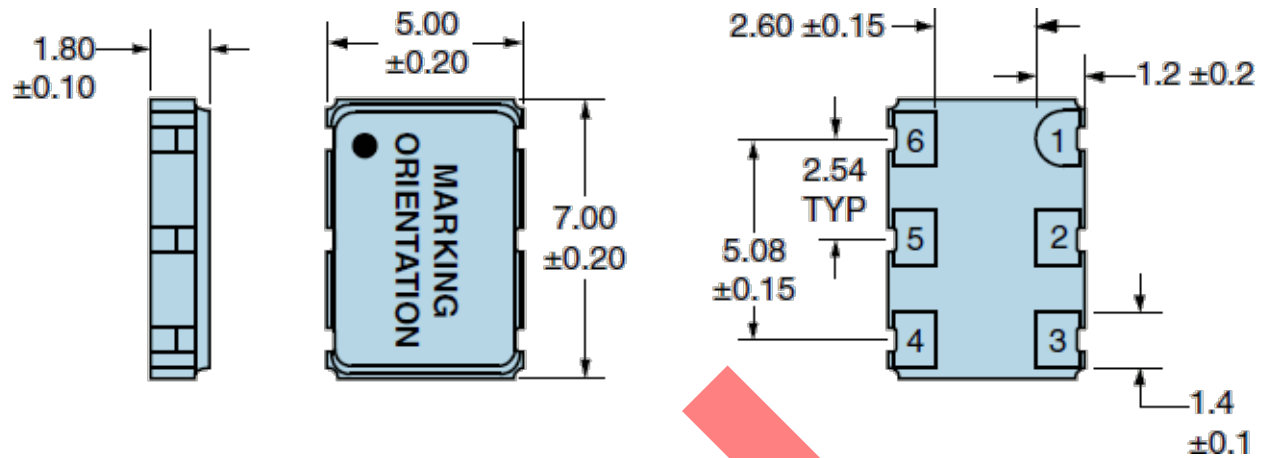
RMS Phase Jitter	Fj=12kHz to 20MHz (Random) 600fSec Maximum over Nominal Frequency of 10MHz to 50MHz 450fSec Maximum over Nominal Frequency of 50.000001MHz to 99.999999MHz 200fSec Maximum over Nominal Frequency of 100MHz to 200MHz
Period Jitter (Deterministic)	0.2pSec Typical
Period Jitter (Random)	1.0pSec Typical
Period Jitter (One Sigma)	1.5pSec Typical
Period Jitter (tp-p)	40pSec Maximum
Start Up Time	10mSec Maximum
Storage Temperature Range	-55°C to +125°C

PART NUMBERING GUIDE

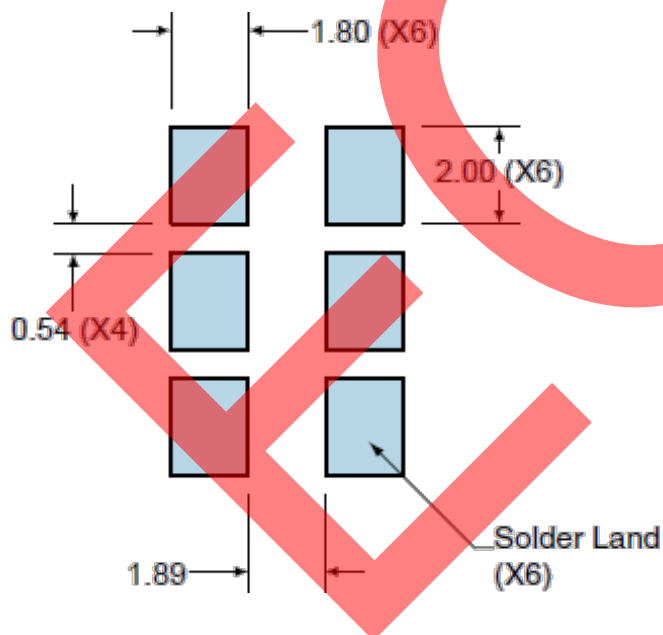


EQRD13 Series

MECHANICAL DIMENSIONS



SUGGESTED SOLDER PAD LAYOUT



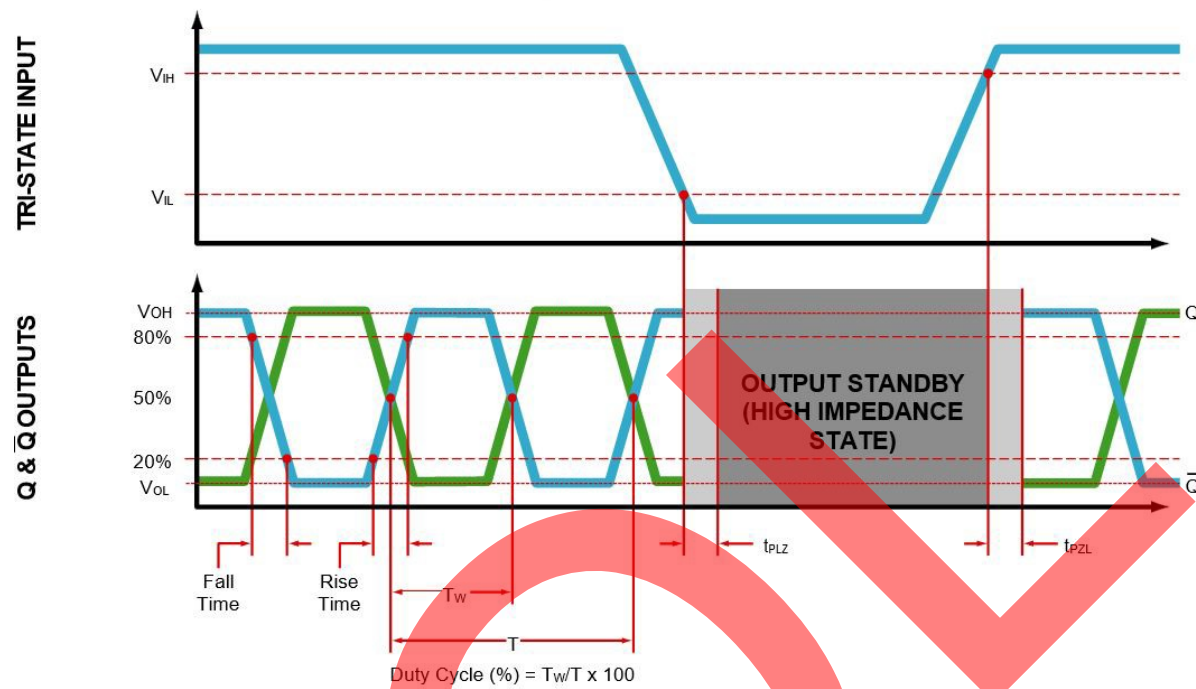
PIN	CONNECTION
1	No Connect Or Standby
2	No Connect Or Standby
3	Case Ground
4	Output
5	Complementary Output
6	Supply Voltage

All Tolerances are ± 0.1

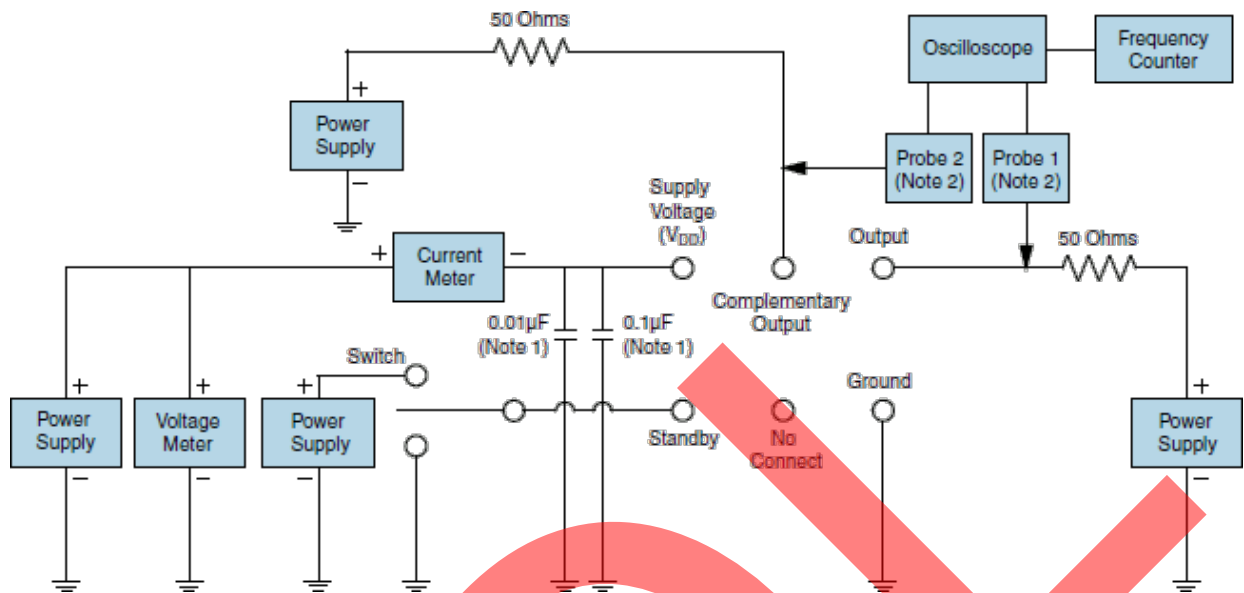
All Dimensions in Millimeters

EQRD13 Series

OUTPUT WAVEFORM & TIMING DIAGRAM



TEST CIRCUIT FOR STANDBY (PAD 1) AND COMPLIMENTARY OUTPUT



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

Note 2: A low capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), and high bandwidth (>500MHz) passive Probe is recommended.

Note 3: Test circuit PCB traces need to be designed for a characteristic line impedance of 50 ohms.

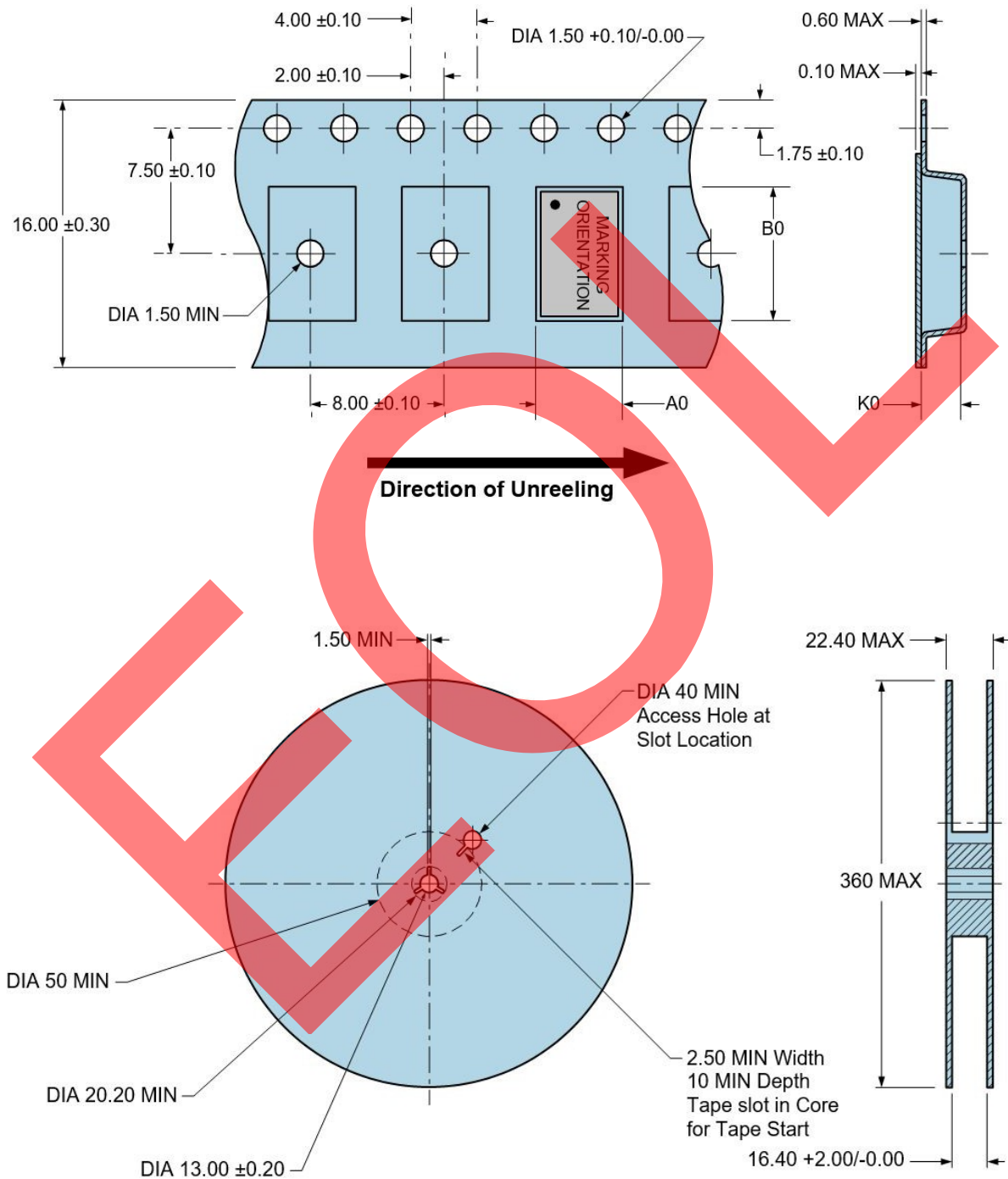
EQRD13 Series

TAPE & REEL DIMENSIONS

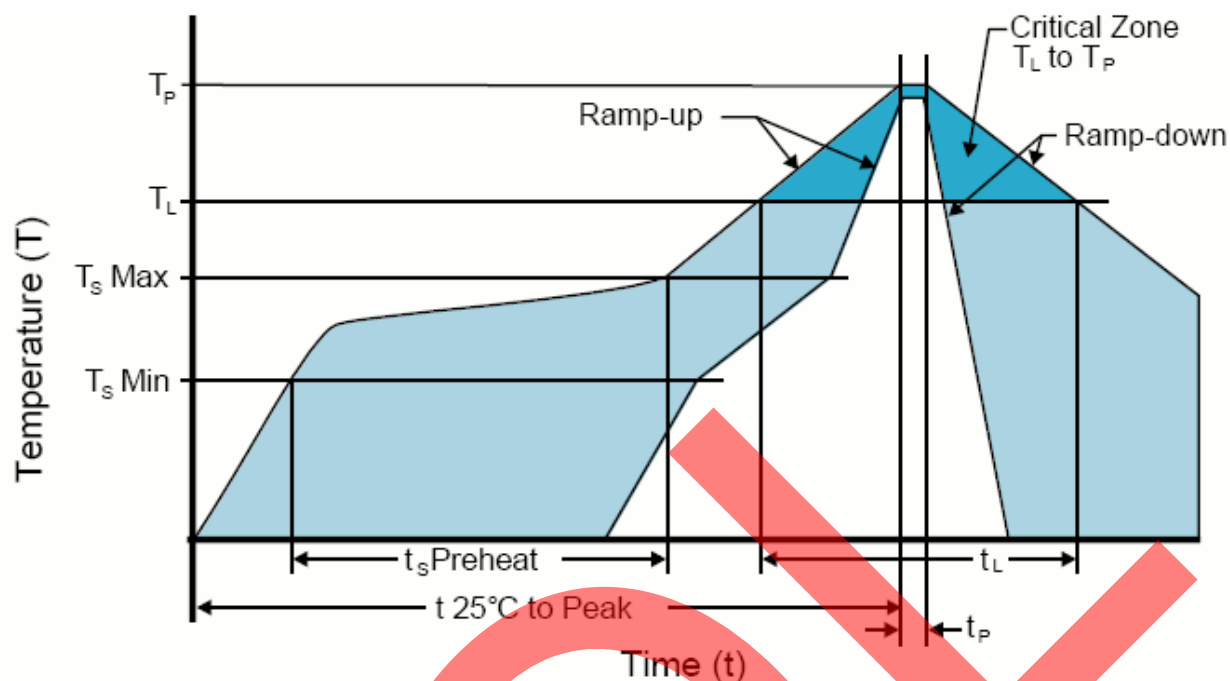
Quantity per Reel: 1,000 Units

All Dimensions in Millimeters

Compliant to EIA-481



RECOMMENDED SOLDER REFLOW METHOD



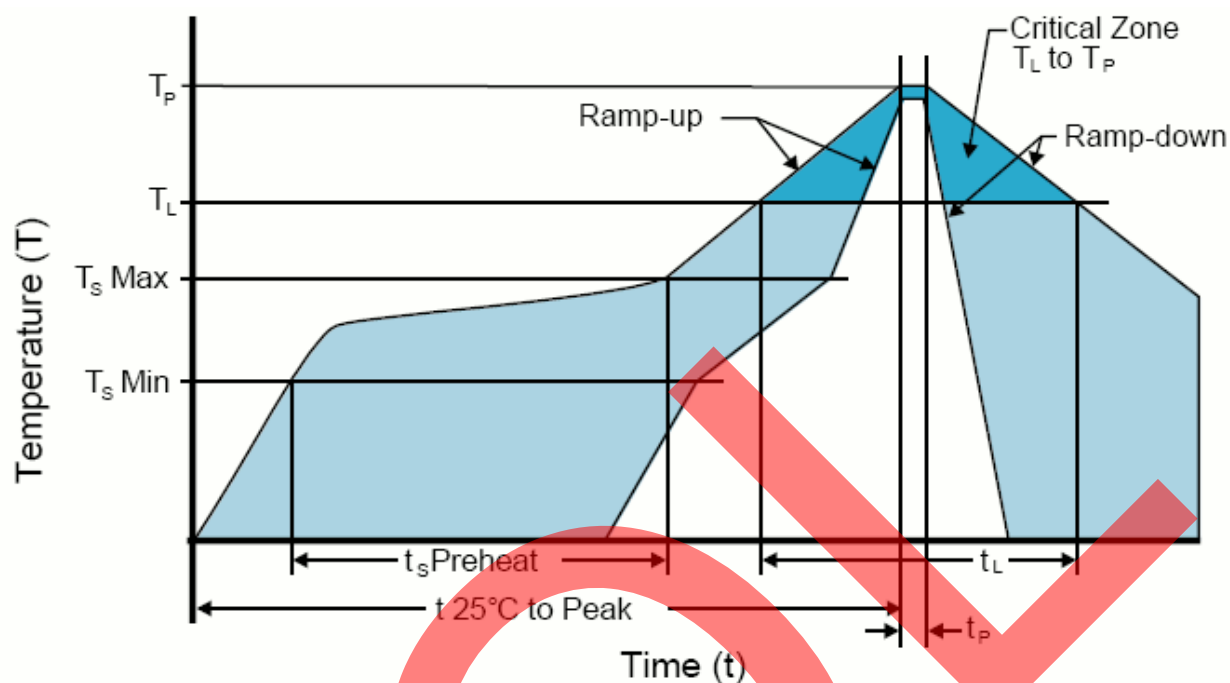
HIGH TEMPERATURE INFRARED/CONVECTION

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 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
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

$T_S \text{ MAX to } T_L$ (Ramp-up Rate)	5°C/Second Maximum
Preheat	
- Temperature Minimum ($T_S \text{ MIN}$)	N/A
- Temperature Typical ($T_S \text{ TYP}$)	150°C
- Temperature Maximum ($T_S \text{ MAX}$)	N/A
- Time ($t_s \text{ MIN}$)	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)	240°C Maximum
Target Peak Temperature ($T_P \text{ Target}$)	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.)