

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)

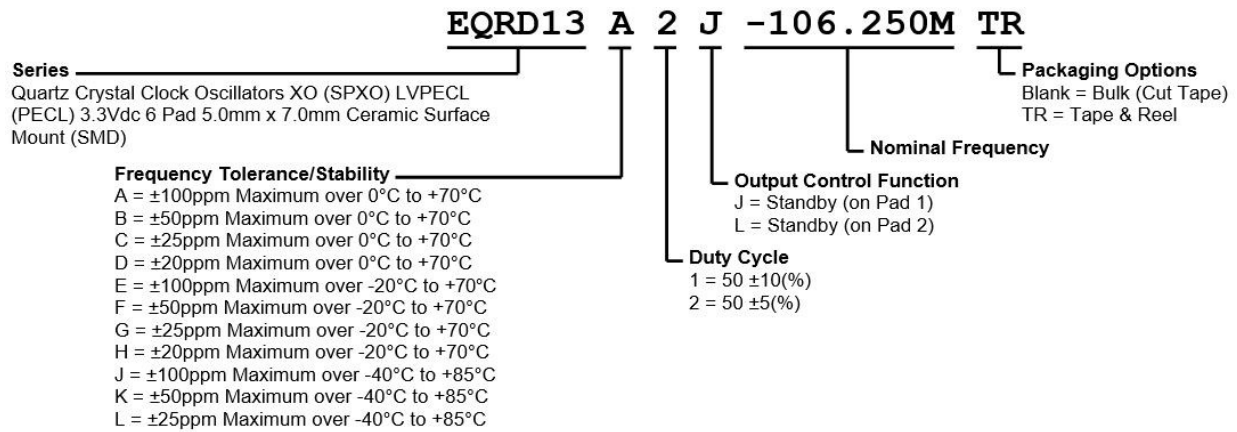
ELECTRICAL SPECIFICATIONS

| | |
|---|--|
| 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 |

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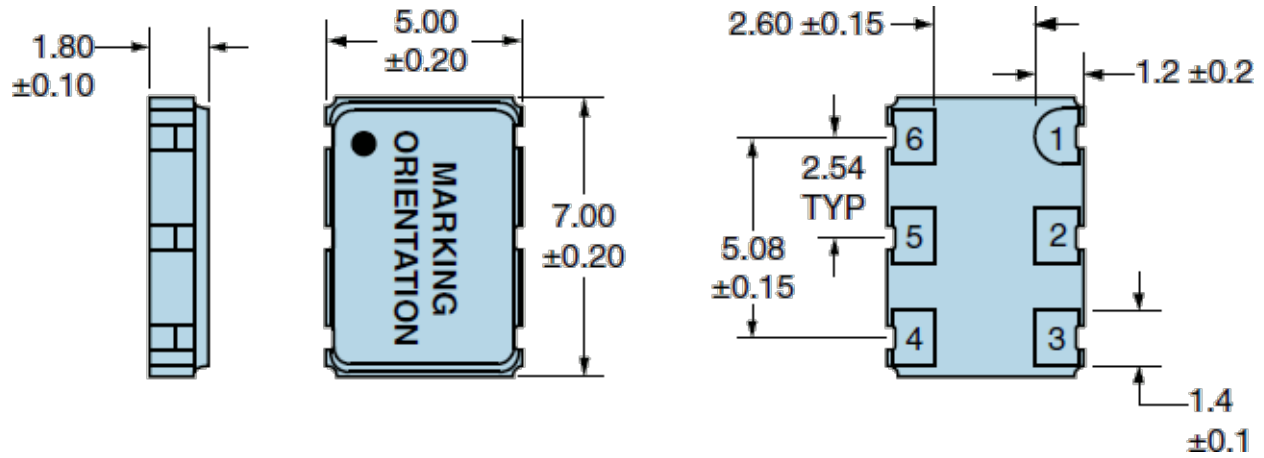
| | |
|--------------------------------------|--|
| RMS Phase Jitter | Fj=12kHz to 20MHz (Random) 600fSec Maximum over Nominal Frequency of 10MHz to 50MHz 450fSec Maximum over Nominal Frequency of 50.000001MHz to 99.999999MHz 200fSec Maximum over Nominal Frequency of 100MHz to 200MHz |
| Period Jitter (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

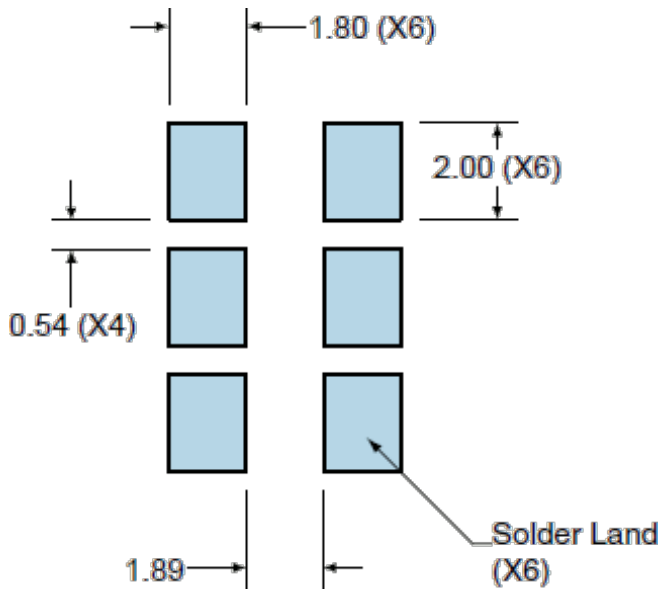


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MECHANICAL DIMENSIONS



SUGGESTED SOLDER PAD LAYOUT



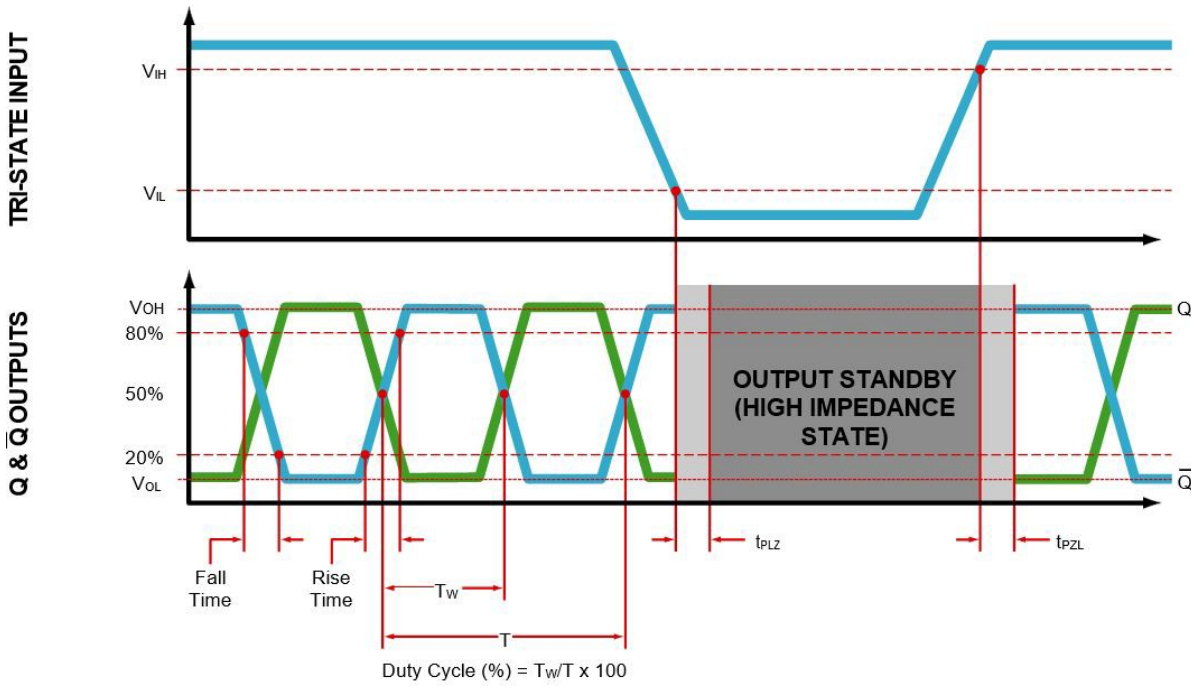
| PIN | CONNECTION |
|-----|-----------------------|
| 1 | No Connect Or Standby |
| 2 | No Connect Or Standby |
| 3 | Case Ground |
| 4 | Output |
| 5 | Complementary Output |
| 6 | Supply Voltage |

All Tolerances are ± 0.1

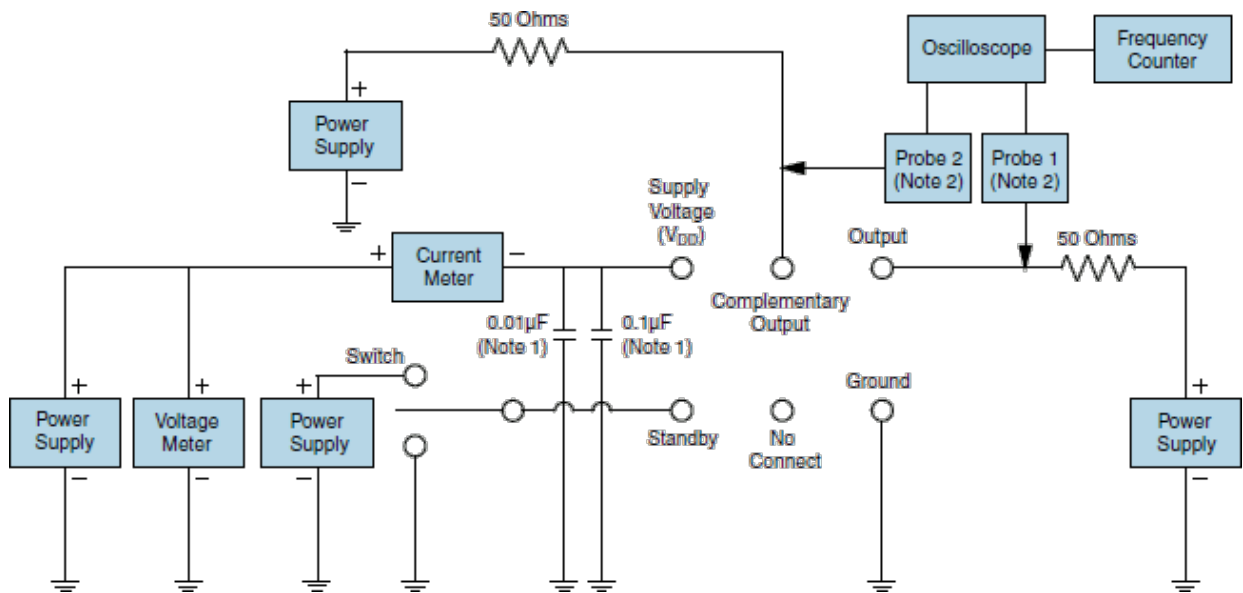
All Dimensions in Millimeters

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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.

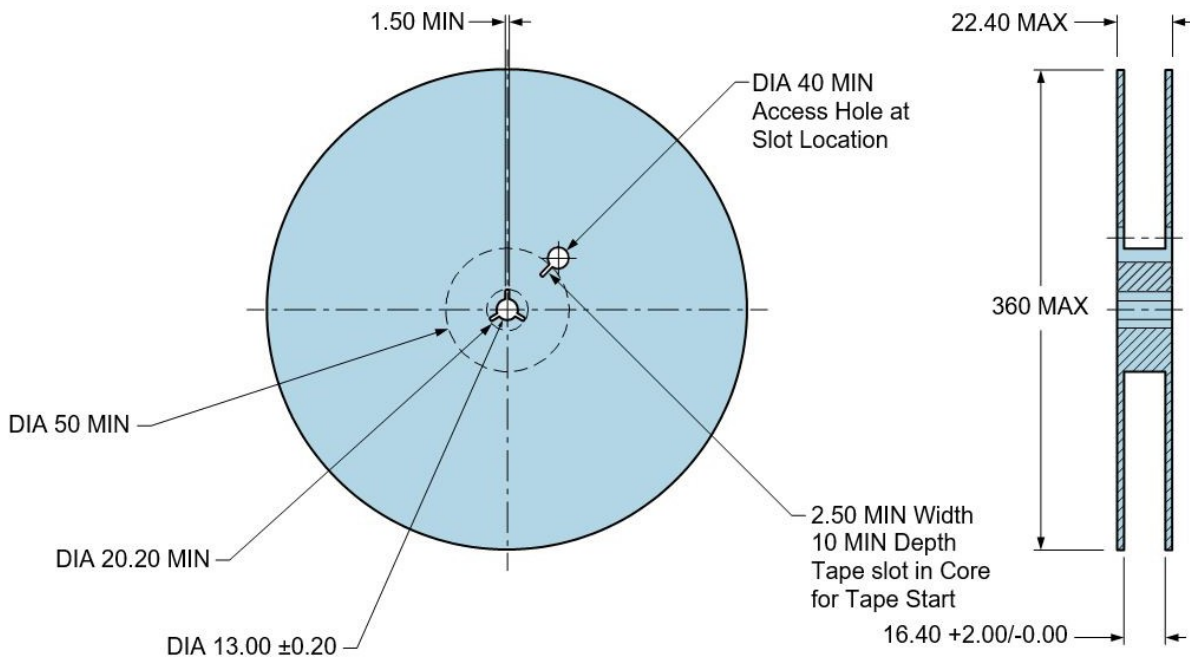
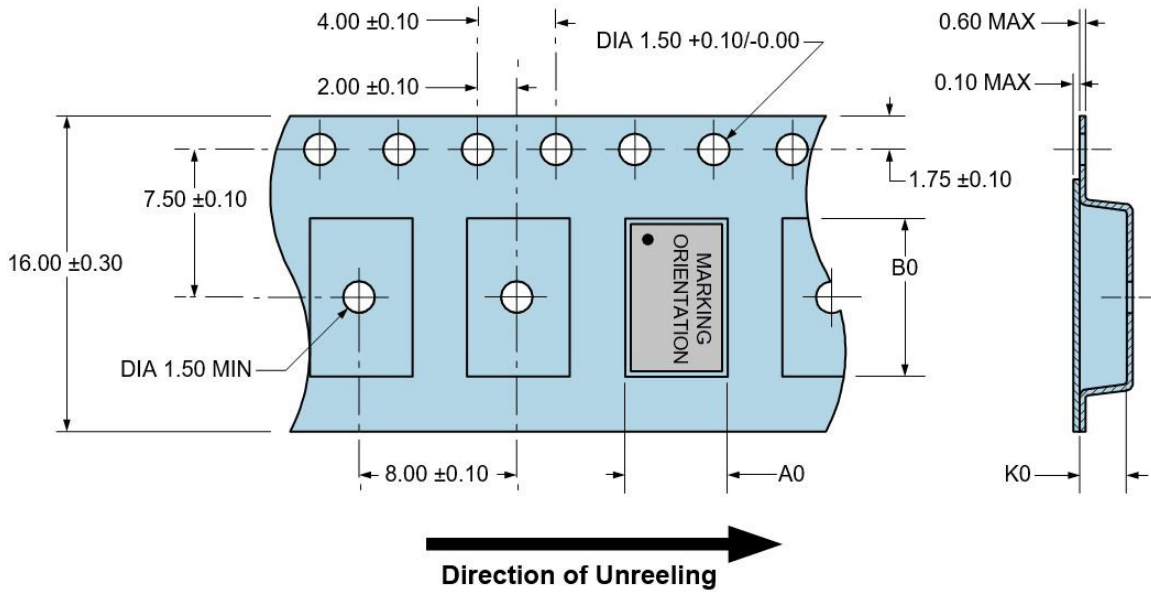
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TAPE & REEL DIMENSIONS

Quantity per Reel: 1,000 Units

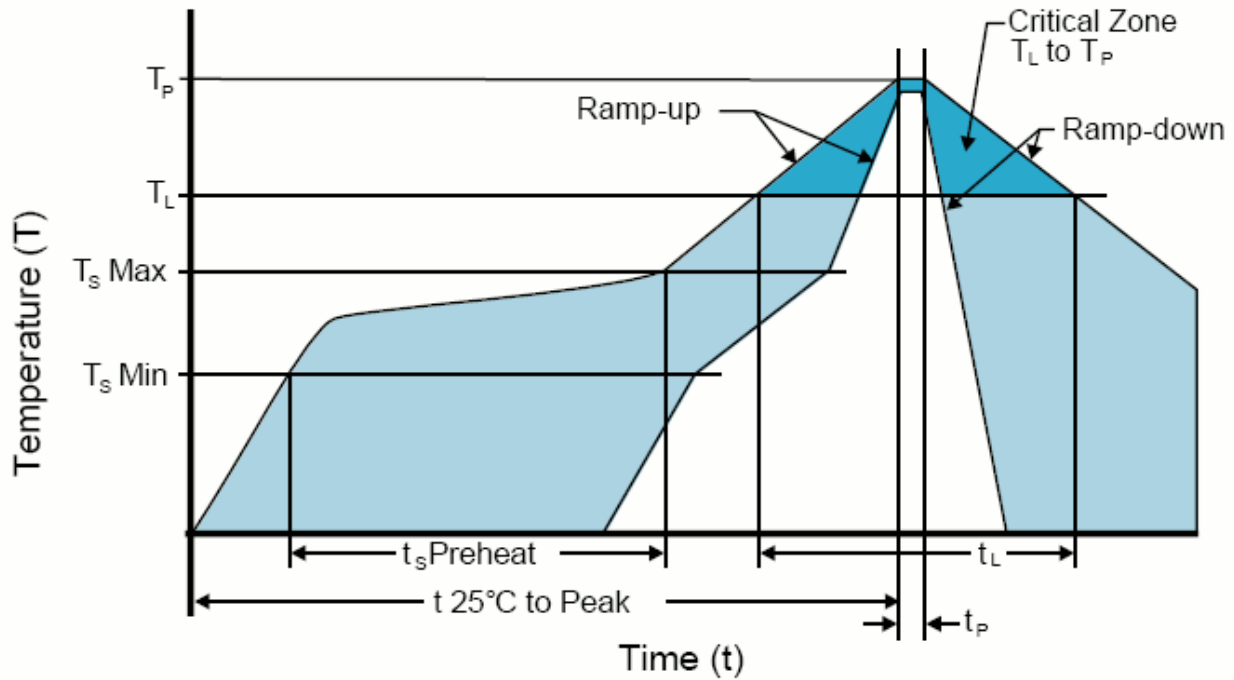
All Dimensions in Millimeters

Compliant to EIA-481



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RECOMMENDED SOLDER REFLOW METHOD



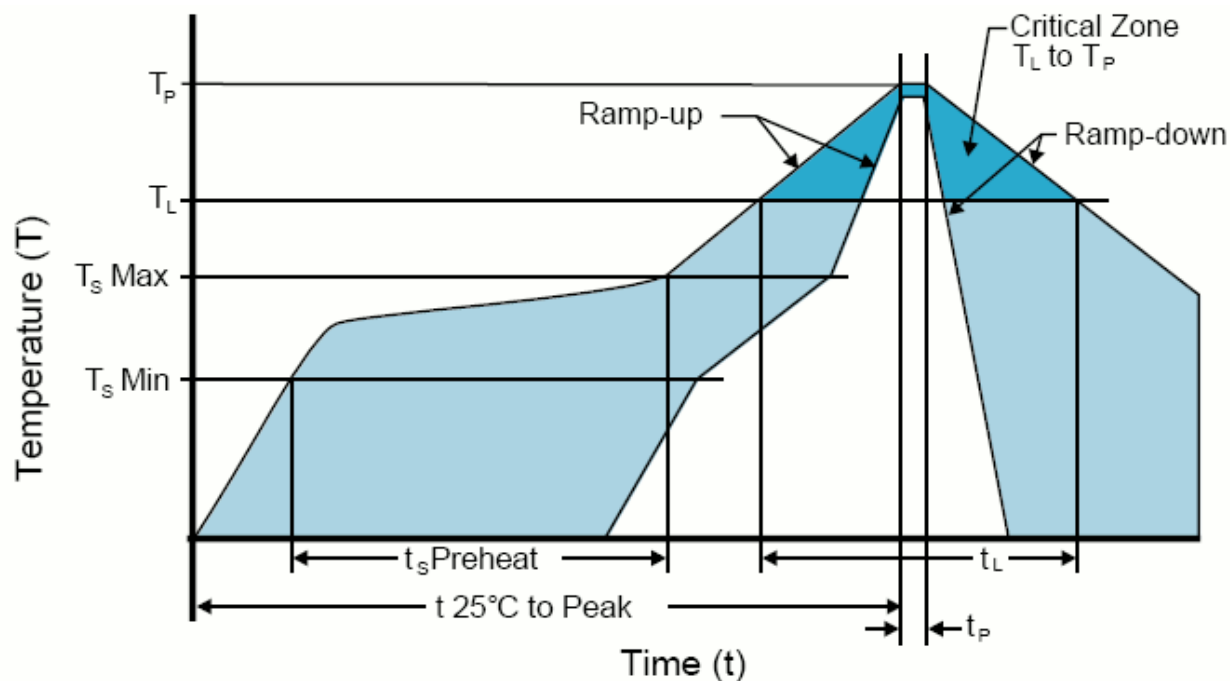
HIGH TEMPERATURE INFRARED/CONVECTION

| | |
|--|---|
| $T_S \text{ MAX}$ to T_L (Ramp-up Rate) | 3°C/Second Maximum |
| Preheat | |
| - Temperature Minimum ($T_S \text{ MIN}$) | 150°C |
| - Temperature Typical ($T_S \text{ TYP}$) | 175°C |
| - Temperature Maximum ($T_S \text{ MAX}$) | 200°C |
| - Time ($t_s \text{ MIN}$) | 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 ($T_P \text{ Target}$) | 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 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 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.)