

REGULATORY COMPLIANCE



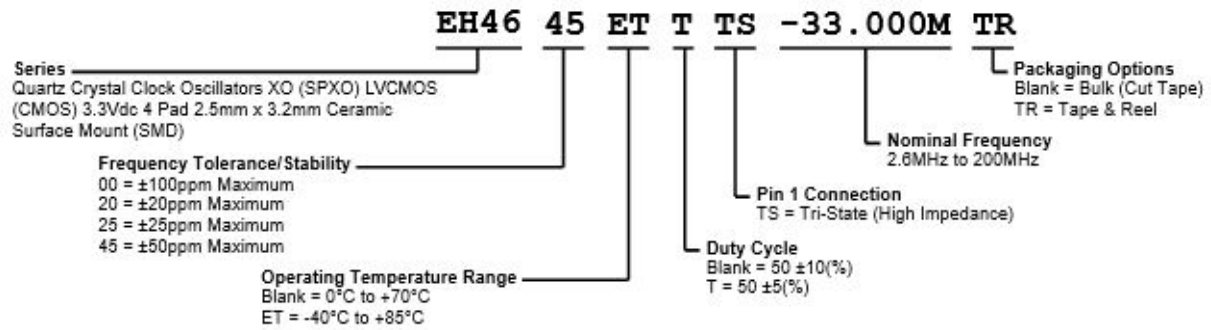
ITEM DESCRIPTION

Quartz Crystal Clock Oscillators XO (SPXO) LVCMOS (CMOS) 3.3Vdc 4 Pad 2.5mm x 3.2mm Ceramic Surface Mount (SMD)

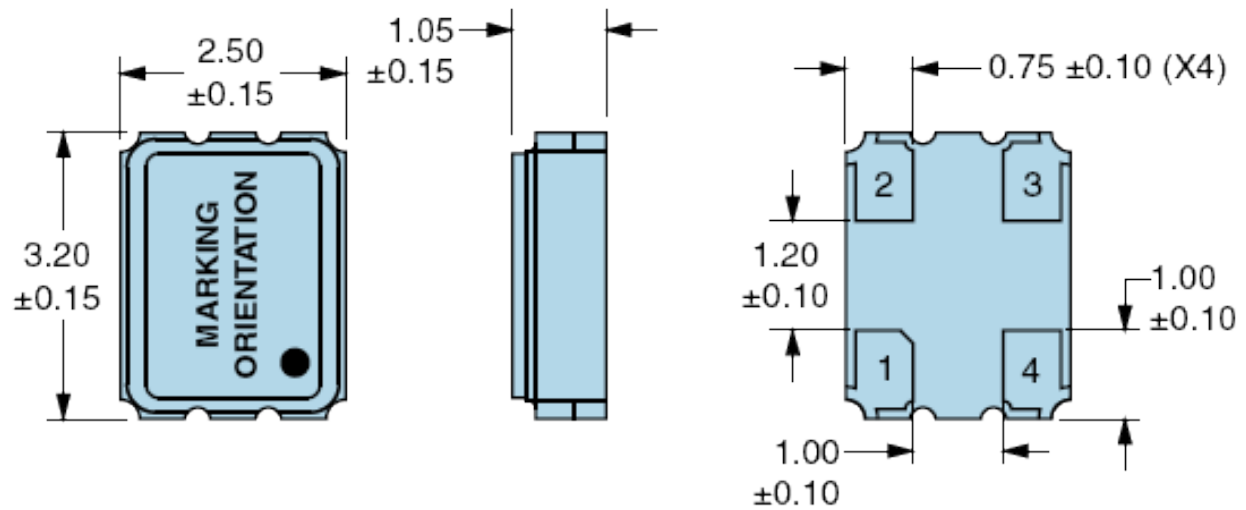
ELECTRICAL SPECIFICATIONS

Nominal Frequency	2.6MHz 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°, 260°C Reflow, Shock, and Vibration ±100ppm Maximum ±20ppm Maximum ±25ppm Maximum ±50ppm Maximum
Aging at 25°C	±5ppm/year Maximum
Operating Temperature Range	0°C to +70°C -40°C to +85°C
Supply Voltage	3.3Vdc ±5%
Input Current	No Load 10mA Maximum over Nominal Frequency of 2.6MHz to 25MHz 12mA Maximum over Nominal Frequency of 25.000001MHz to 50MHz 13mA Maximum over Nominal Frequency of 50.000001MHz to 166MHz 16mA Maximum over Nominal Frequency of 166.000001MHz to 200MHz
Output Voltage Logic High (V _{OH})	I _{OH} = -8mA 90% of V _{DD} Minimum
Output Voltage Logic Low (V _{OL})	I _{OL} = +8mA 10% of V _{DD} Maximum
Rise/Fall Time	Measured at 20% to 80% of waveform 6nSec Maximum over Nominal Frequency of 2.6MHz to 50MHz 4nSec Maximum over Nominal Frequency of 50.000001MHz to 75MHz 2nSec Maximum over Nominal Frequency of 75.000001MHz to 200MHz
Duty Cycle	Measured at 50% of waveform 50 ±10(%) 50 ±5(%)
Load Drive Capability	30pF Maximum over Nominal Frequency of 2.6MHz to 50MHz 15pF Maximum over Nominal Frequency of 50.000001MHz to 200MHz
Output Logic Type	CMOS
Pin 1 Connection	Tri-State (High Impedance)
Tri-State Input Voltage (V _{IH} and V _{IL})	90% of V _{DD} Minimum or No Connect to Enable Output, 10% of V _{DD} Maximum to Disable Output (High Impedance).
Standby Current	10µA Maximum (Pin 1 = Ground)
RMS Phase Jitter	F _j = 12kHz to 20MHz 20pSec Typical, 30pSec Maximum
Period Jitter (RMS)	10pSec Typical
Period Jitter (pk-pk)	60pSec Typical, 100pSec Maximum
Start Up Time	10mSec Maximum
Storage Temperature Range	-55°C to +125°C

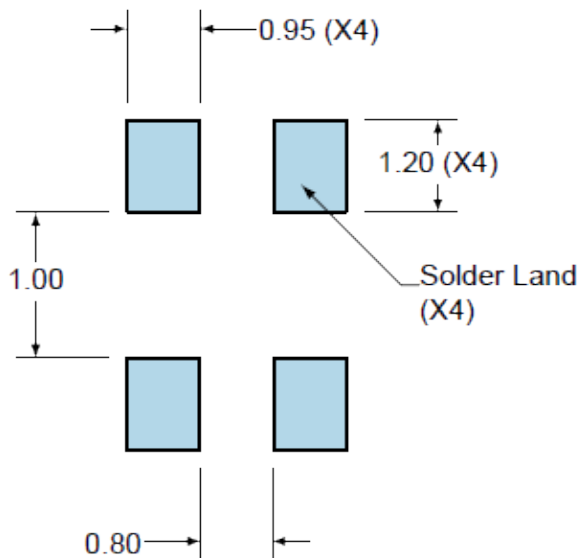
PART NUMBERING GUIDE



MECHANICAL DIMENSIONS



SUGGESTED SOLDER PAD LAYOUT

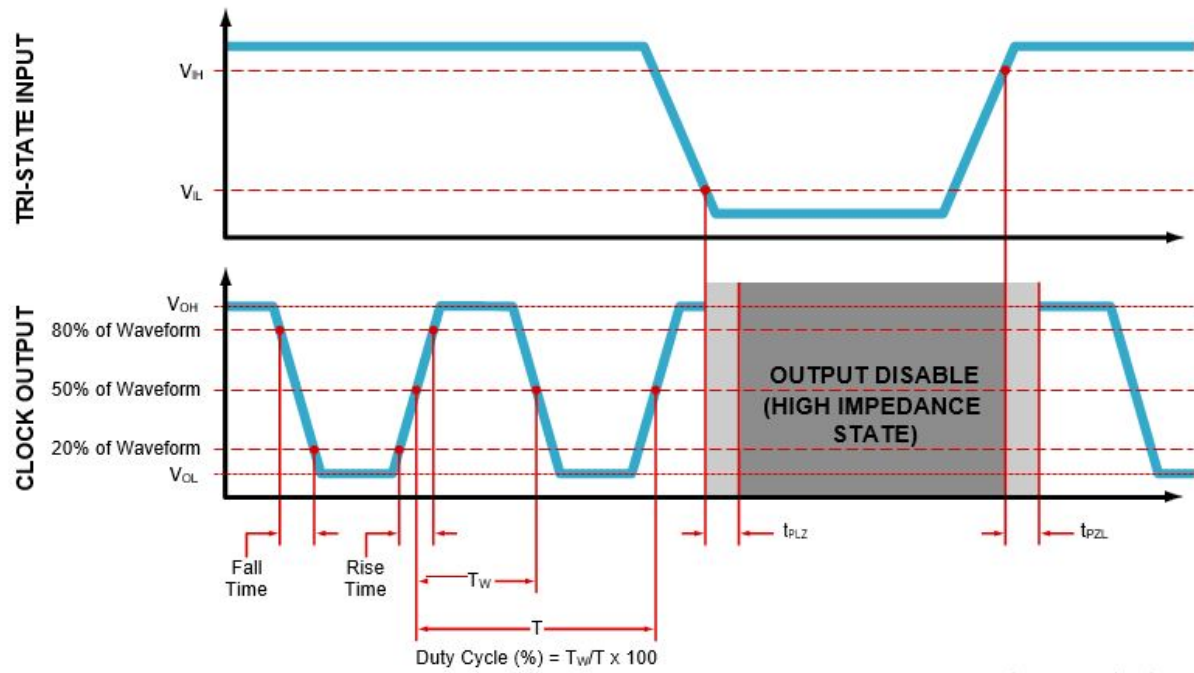


PIN	CONNECTION
1	Tri-State
2	Case Ground
3	Output
4	Supply Voltage

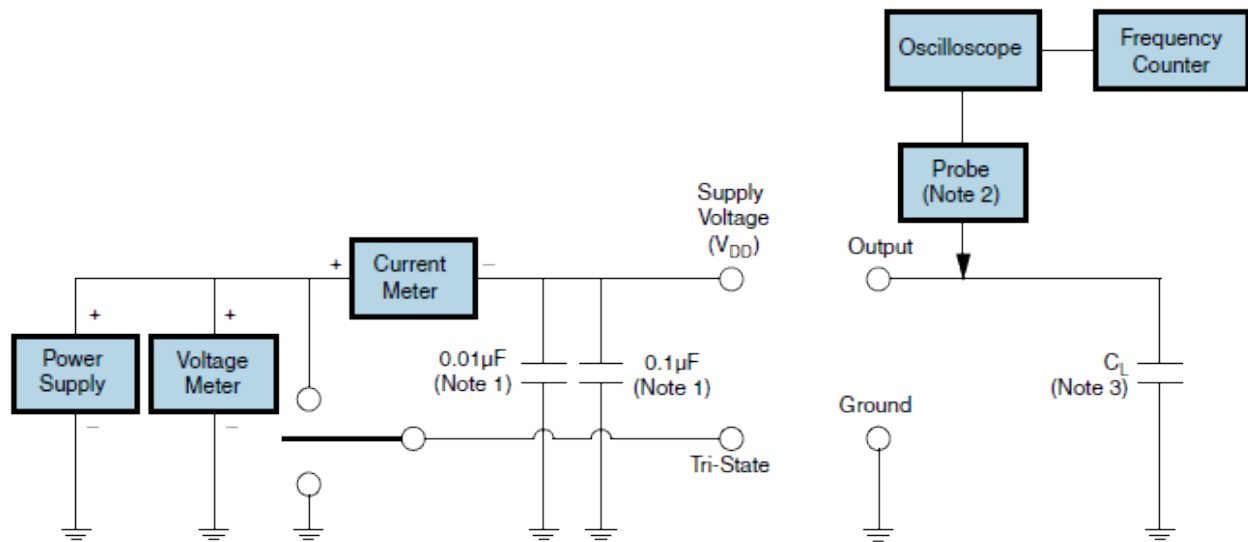
All Tolerances are ± 0.1

All Dimensions in Millimeters

OUTPUT WAVEFORM & TIMING DIAGRAM



TEST CIRCUIT FOR CMOS OUTPUT

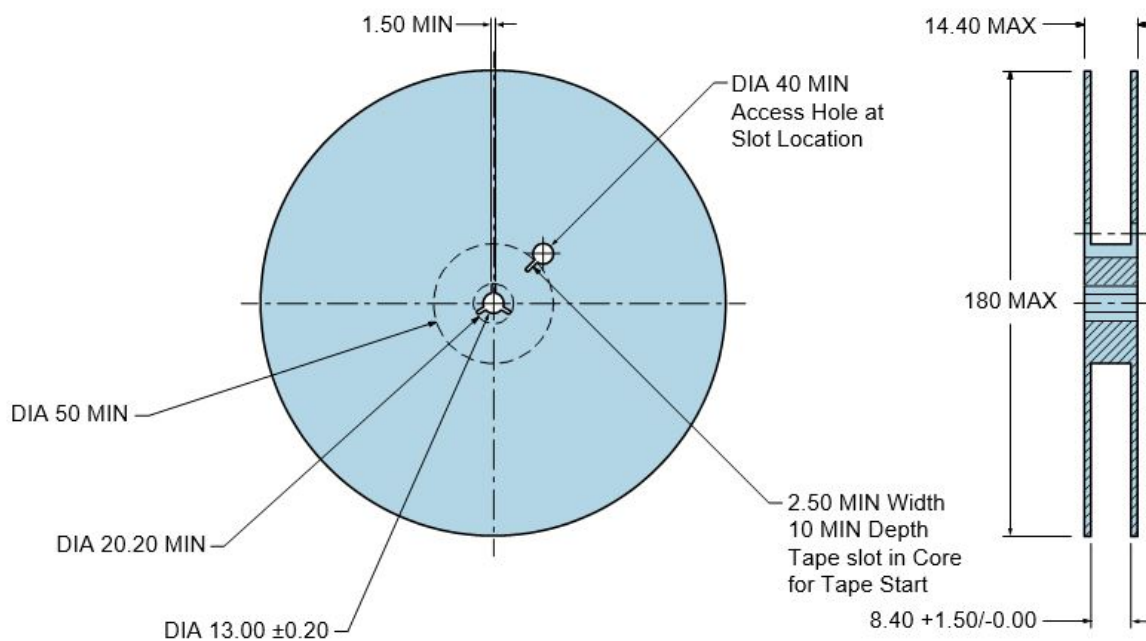
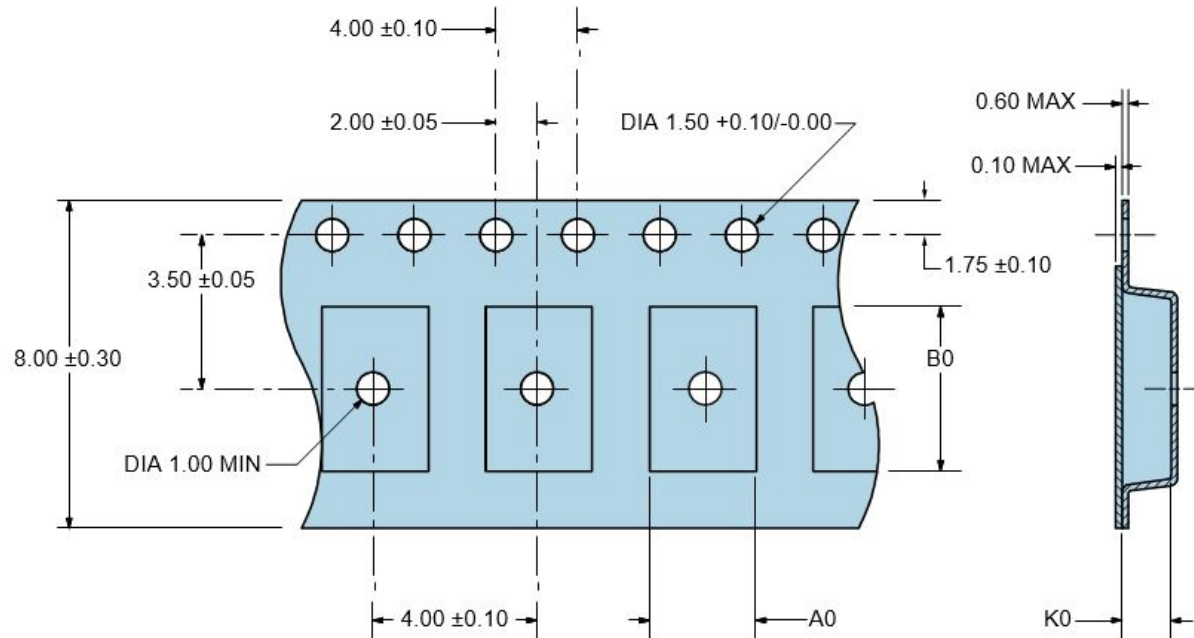


Note 1: An external $0.01\mu\text{F}$ ceramic bypass capacitor in parallel with a $0.1\mu\text{F}$ high frequency ceramic bypass capacitor close (less than 2mm) to the package ground and supply voltage pin is required.

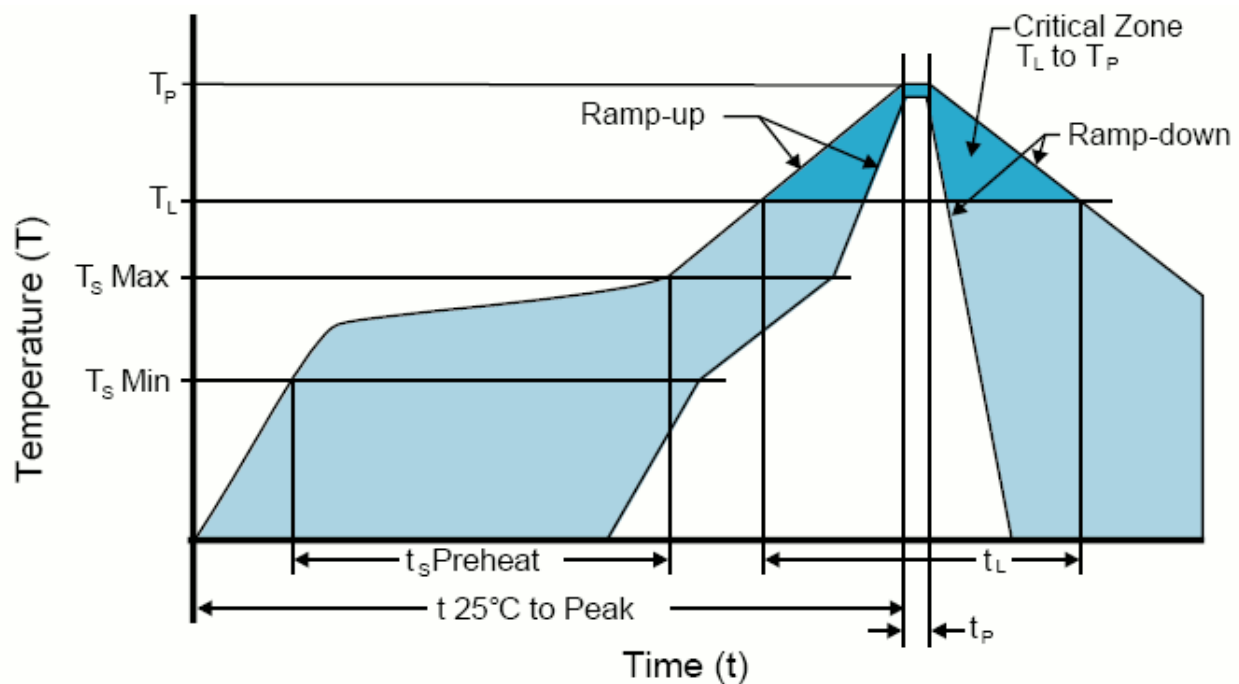
Note 2: A low capacitance ($<12\text{pF}$), 10X attenuation factor, high impedance ($>10\text{Mohms}$), and high bandwidth ($>300\text{MHz}$) passive Probe is recommended.

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

Compliant to EIA-481



RECOMMENDED SOLDER REFLOW METHOD



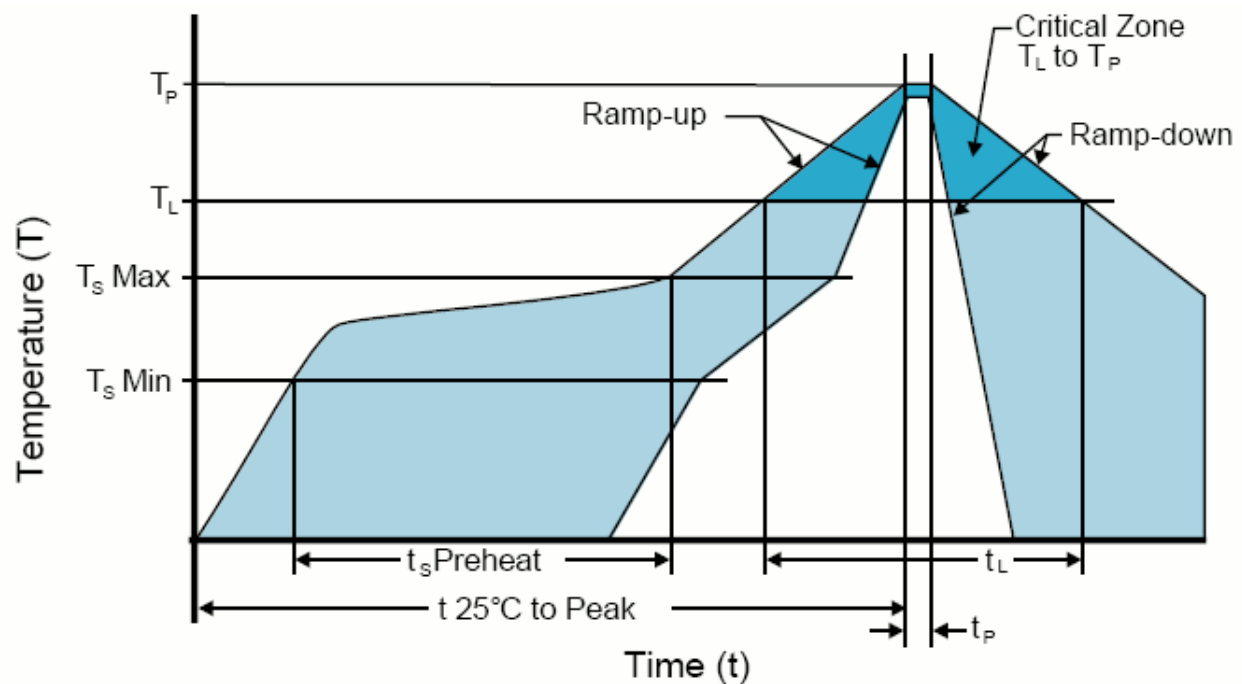
HIGH TEMPERATURE INFRARED/CONVECTION

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

$T_S \text{ MAX to } T_L$ (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)	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.)

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