

REGULATORY COMPLIANCE

 Lead Free COMPLIANT	 EU RoHS 2011/65 + 2015/863 COMPLIANT	 China RoHS COMPLIANT	 REACH SVHC COMPLIANT	 DRC CONFLICT FREE
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ITEM DESCRIPTION

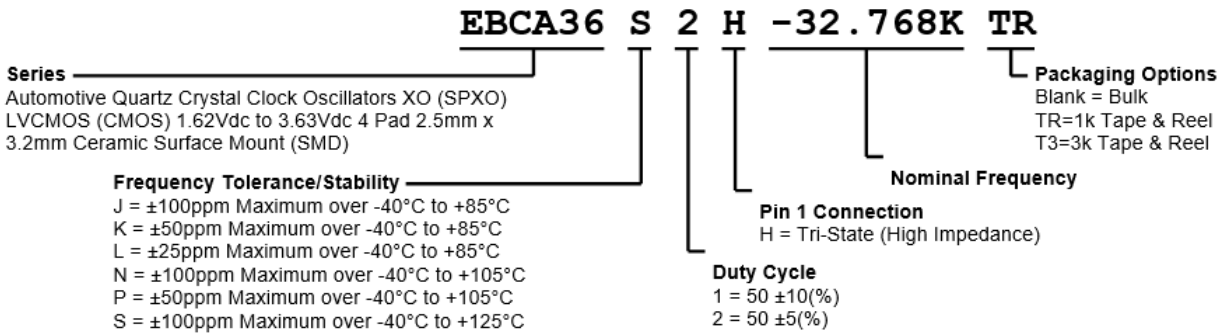
Automotive Grade Quartz Crystal Clock Oscillators XO (SPXO) LVCMOS (CMOS) 1.62Vdc to 3.63Vdc 4 Pad 2.5mm x 3.2mm Ceramic Surface Mount (SMD)

ELECTRICAL SPECIFICATIONS

Nominal Frequency	32.768kHz
Frequency Tolerance/Stability	Inclusive of all conditions: Calibration Tolerance (at 25°C), Frequency Stability over the Operating Temperature Range, Supply Voltage Change (±5%), Output Load Change (±5%), and First Year Aging at 25°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 ±100ppm Maximum over -40°C to +105°C ±50ppm Maximum over -40°C to +105°C ±100ppm Maximum over -40°C to +125°C
Aging at 25°C	±3ppm/year Maximum
Supply Voltage	1.62Vdc to 3.63Vdc
Input Current	Unloaded, Vdd = 3.3Vdc 50µA Typical, 100µA Maximum
Output Voltage Logic High (V_{OH})	I _{OH} = -1mA 90% of Vdd Minimum
Output Voltage Logic Low (V_{OL})	I _{OL} = +1mA 10% of Vdd Maximum
Rise/Fall Time	Measured at 10% to 90% of Waveform 15nSec Maximum
Duty Cycle	Measured at 50% of Waveform 50 ±10(%) 50 ±5(%)
Load Drive Capability	15pF Maximum
Output Logic Type	CMOS
Pin 1 Connection	Tri-State (High Impedance)
Output Control Input Voltage Logic High (V_{IH})	70% of Vdd Minimum or No Connect to Enable Output
Output Control Input Voltage Logic Low (V_{IL})	30% of Vdd Maximum to Disable Output (High Impedance)
Standby Current	Disable Output: High Impedance 1µA Typical, 3µA Maximum
Start Up Time	2mSec Maximum
Storage Temperature Range	-55°C to +125°C

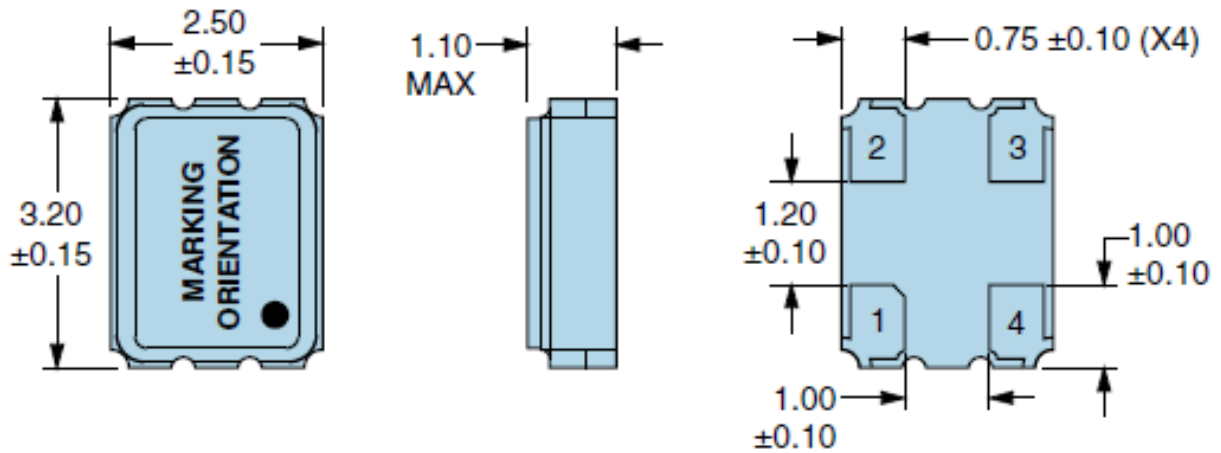
EBCA36 Series

PART NUMBERING GUIDE



EBCA36 Series

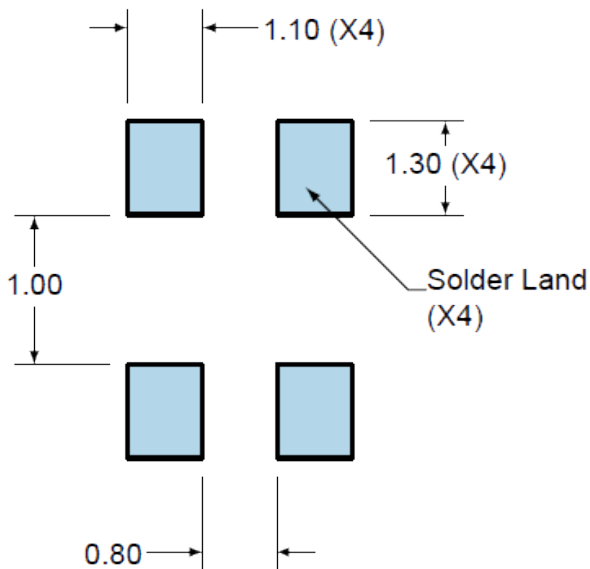
MECHANICAL DIMENSIONS



Seam Sealed

Terminal Plating Thickness: Gold (0.3 to 1.0µm) over Nickel (1.27 to 8.89µm).

SUGGESTED SOLDER PAD LAYOUT

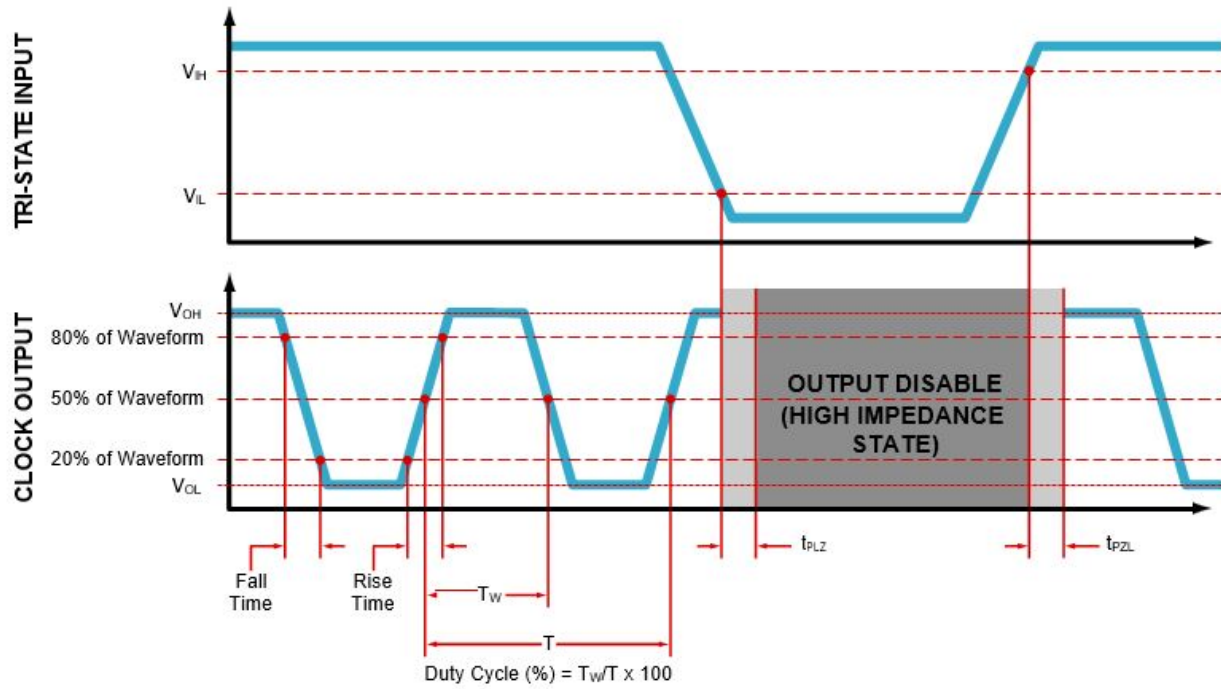


PIN	CONNECTION
1	Tri-State
2	Case/Ground
3	Output
4	Supply Voltage

All Tolerances are ±0.1

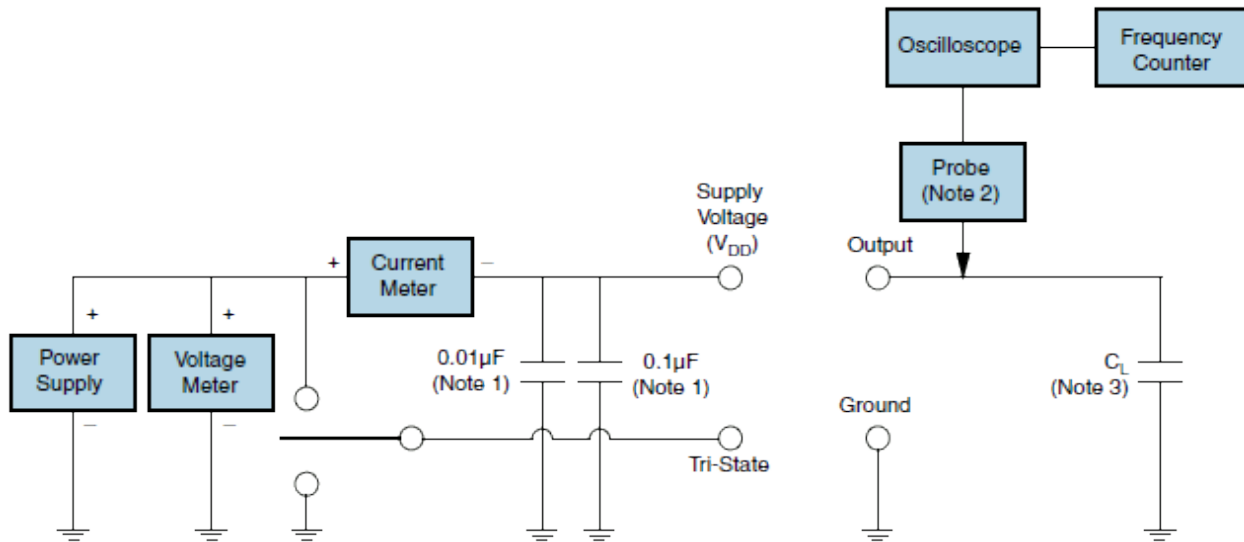
All Dimensions in Millimeters

OUTPUT WAVEFORM & TIMING DIAGRAM



EBCA36 Series

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 input 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.

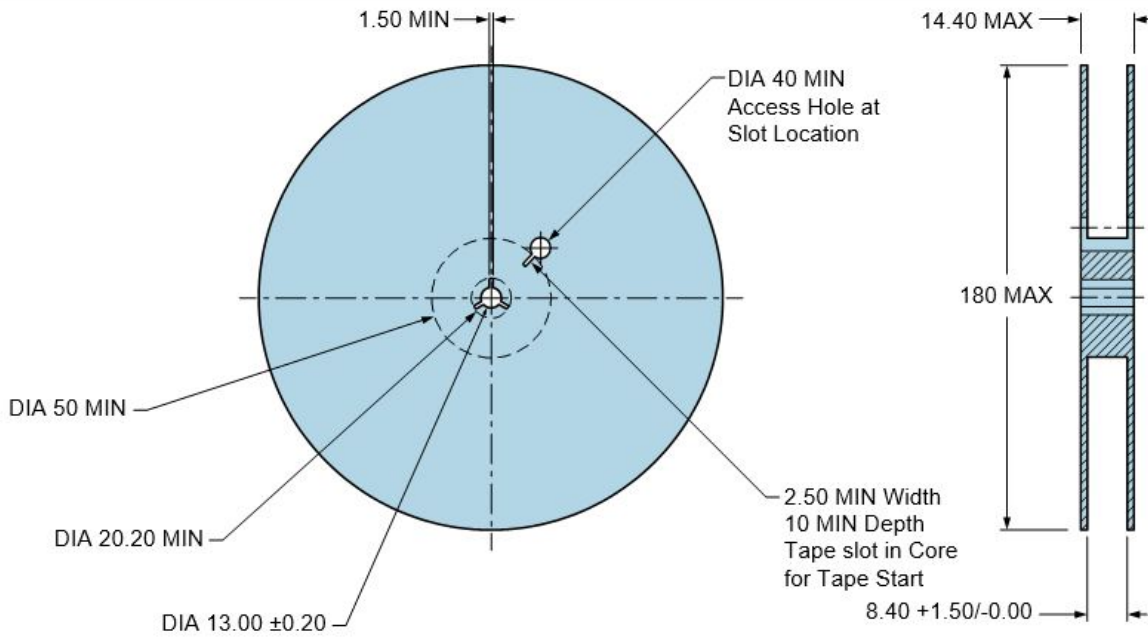
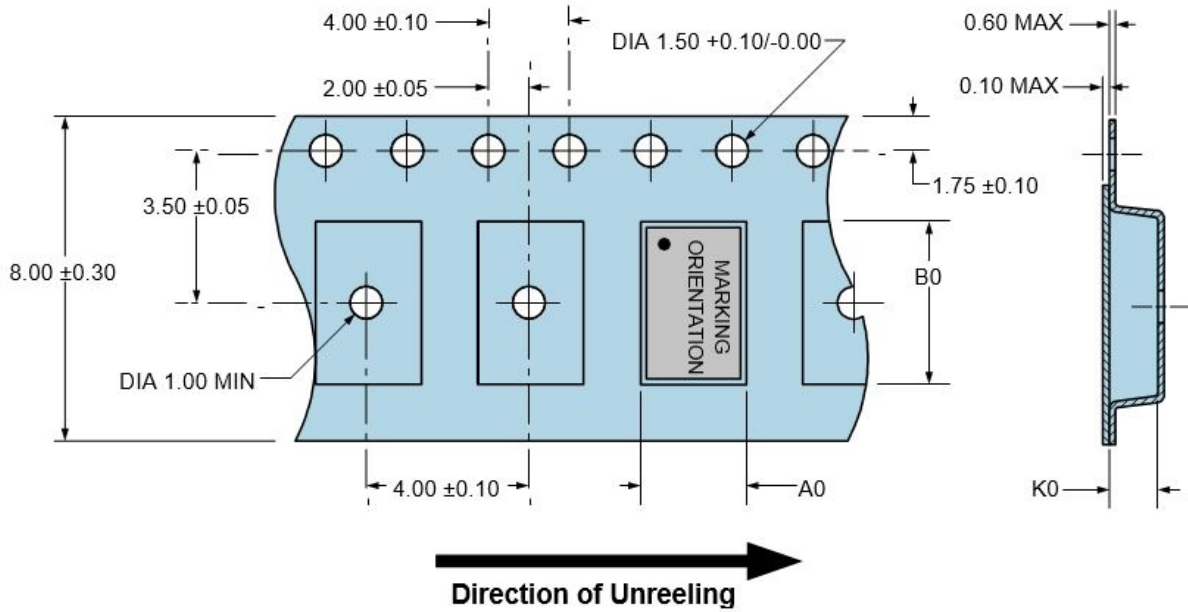
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TAPE & REEL DIMENSIONS

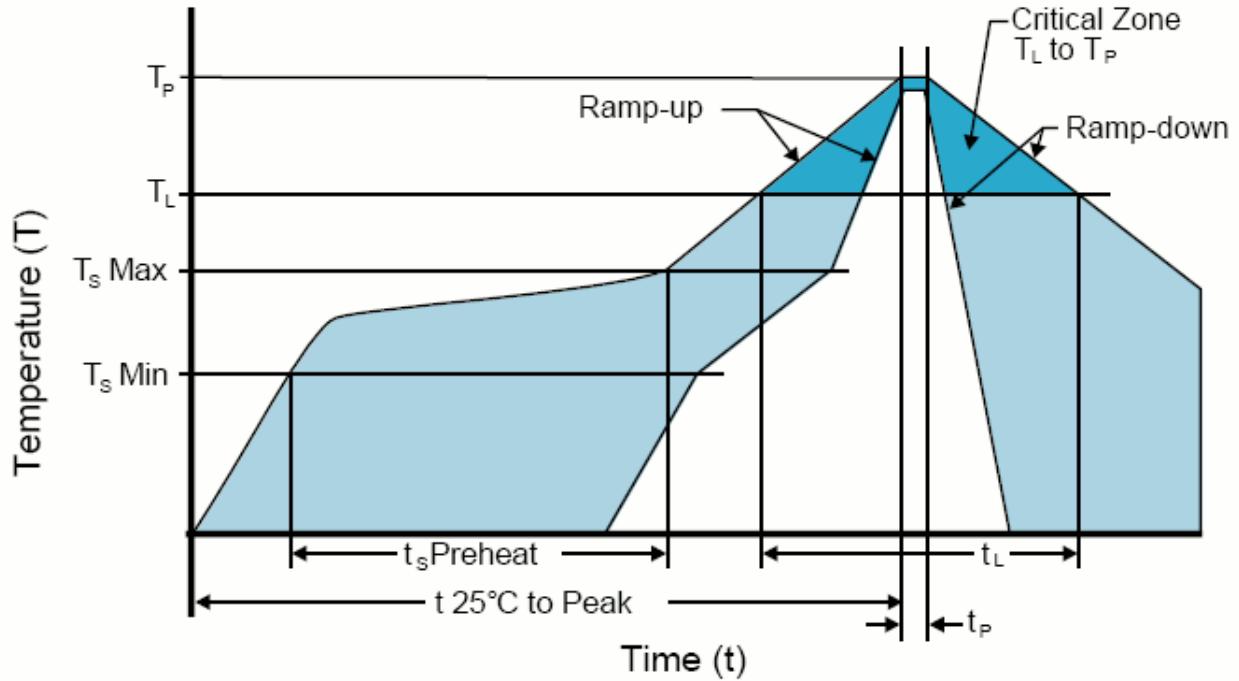
Quantity per Reel: TR=1000 Units or T3=3000 Units

All Dimensions in Millimeters

Compliant to EIA-481



RECOMMENDED SOLDER REFLOW METHOD



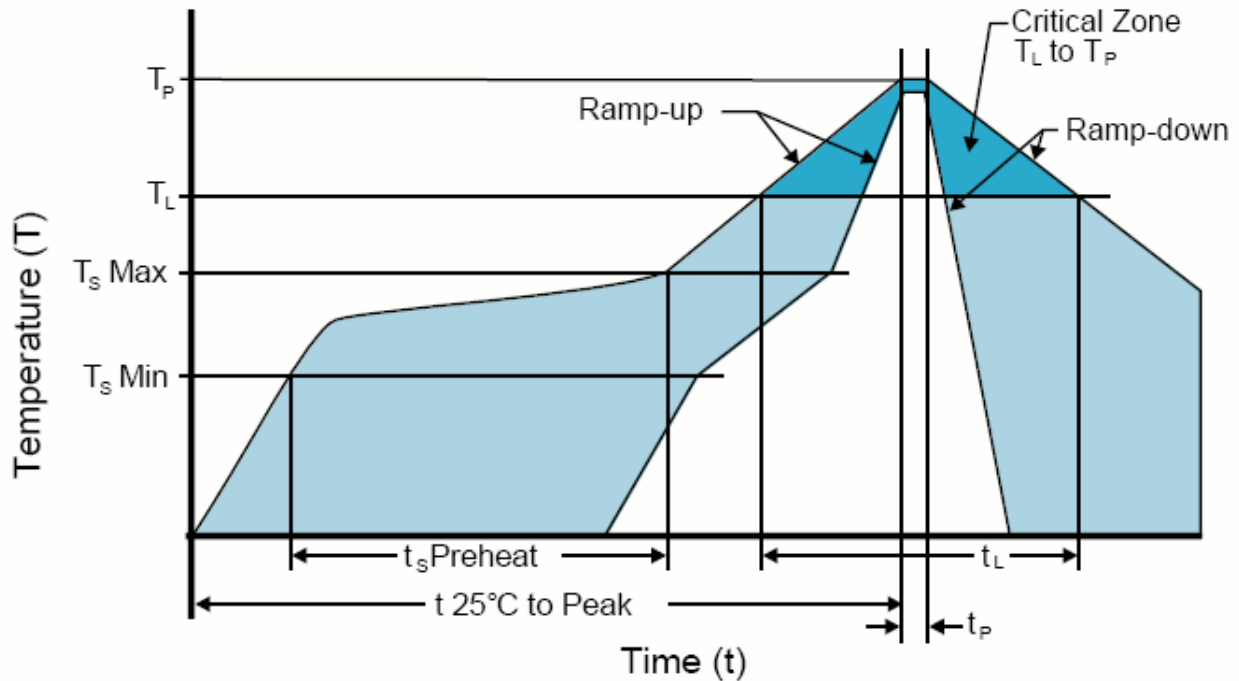
HIGH TEMPERATURE INFRARED/CONVECTION

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)	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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