REGULATORY COMPLIANCE

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

ITEM DESCRIPTION

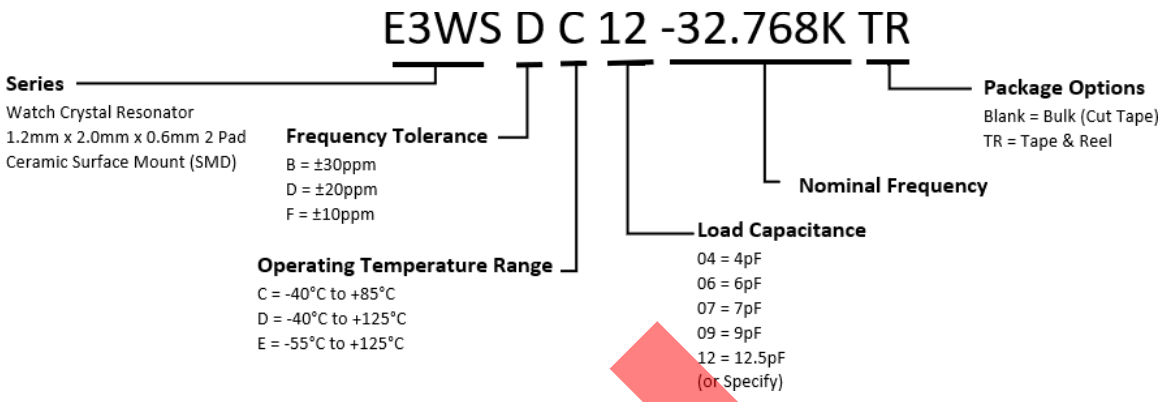
Watch Crystal Resonator 1.2mm x 2.0mm x 0.6mm 2 Pad Plastic Surface Mount (SMD) 32.768kHz

ELECTRICAL SPECIFICATIONS

Nominal Frequency	32.768kHz
Frequency Tolerance (at 25°C)	±20ppm (See Options)
Load Capacitance	12.5pF (See Options)
Operating Temperature Range	-40°C to +85°C (See Options)
Storage Temperature Range	-55°C to +125°C
Turnover Temperature	+25°C±5°C
Mode of Operation	Flexural Mode (Tuning Fork)
Frequency Stability	-0.03ppm/(Change in °C)^2 Typical, -0.04ppm/(Change in °C)^2 Maximum, Parabolic Curve
Equivalent Series Resistance	90,000 Ohms Maximum (-40°C to +85°C Option)
	110,000 Ohms Maximum (-40°C to +125°C Option)
Drive Level	0.5µWatt Maximum
Aging (at 25°C)	±2ppm/First Year Maximum
Quality Factor	9000 Minimum
Shunt Capacitance (Co)	0.9 pF ~ 1.2pF Typical
Insulation Resistance	500 Megaohms Minimum (Measured at 100Vdc ±15Vdc)

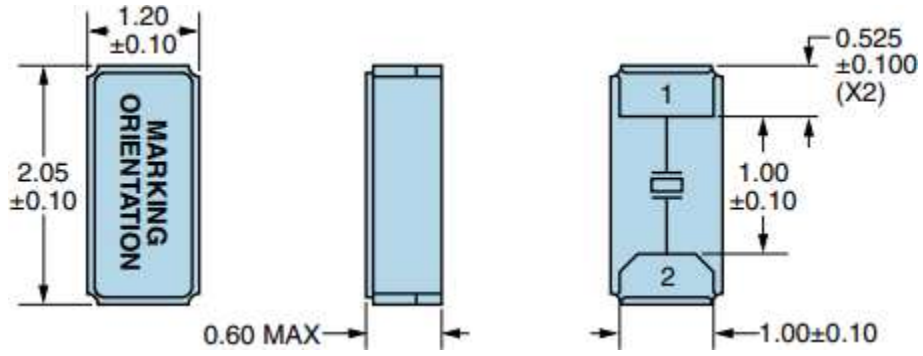
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PART NUMBERING GUIDE



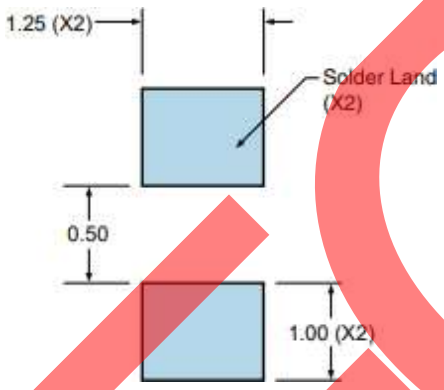
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MECHANICAL DIMENSIONS



Note: Due to material availability, the outline and finish color of the component may vary. This variation in no way affects the electrical performance of the product.

SUGGESTED SOLDER PAD LAYOUT



PIN	CONNECTION
1	Crystal
2	Crystal

All Tolerances are ±0.1

All Dimensions in Millimeters

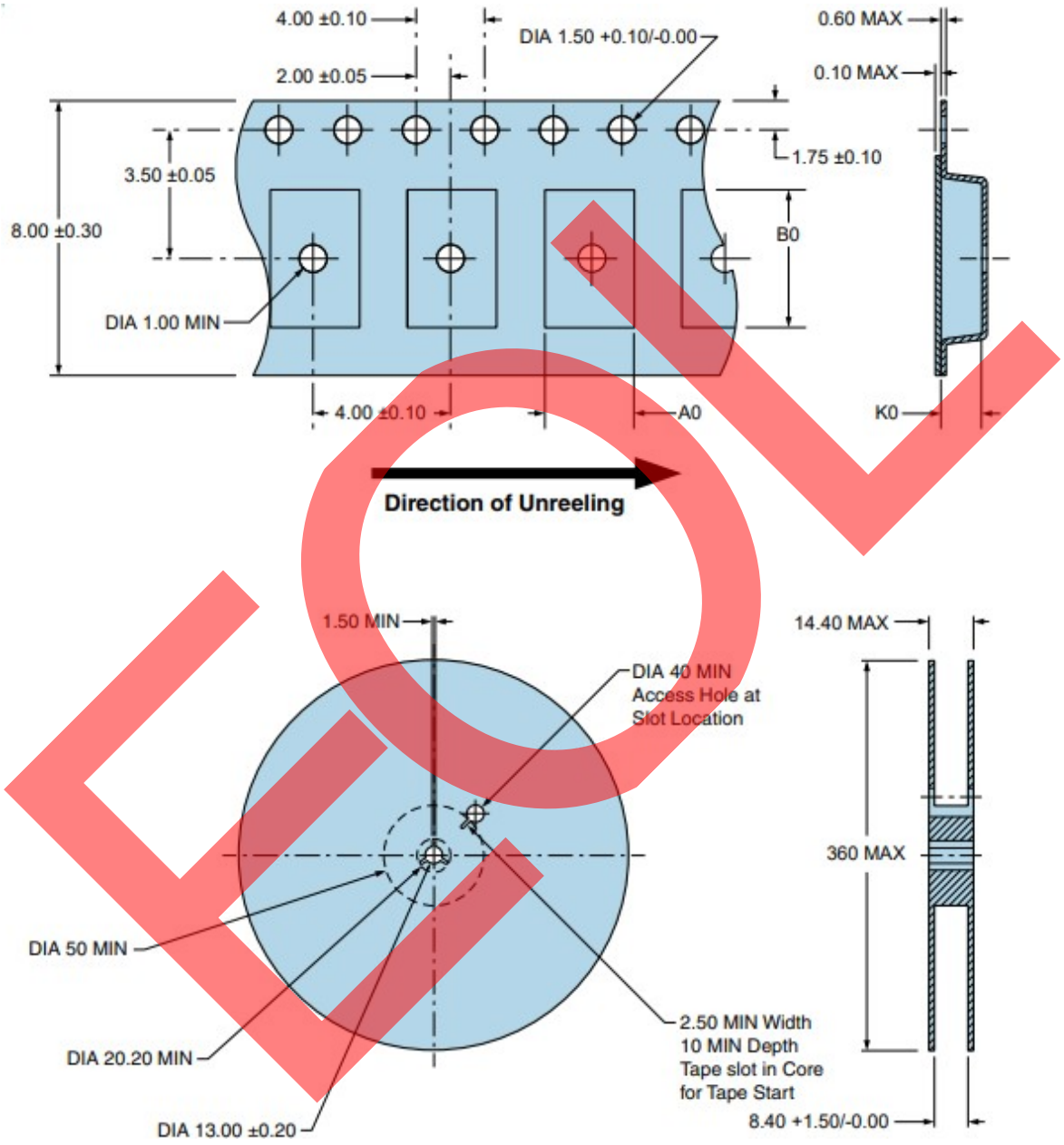
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TAPE & REEL DIMENSIONS

Quantity per Reel: 3000 Units

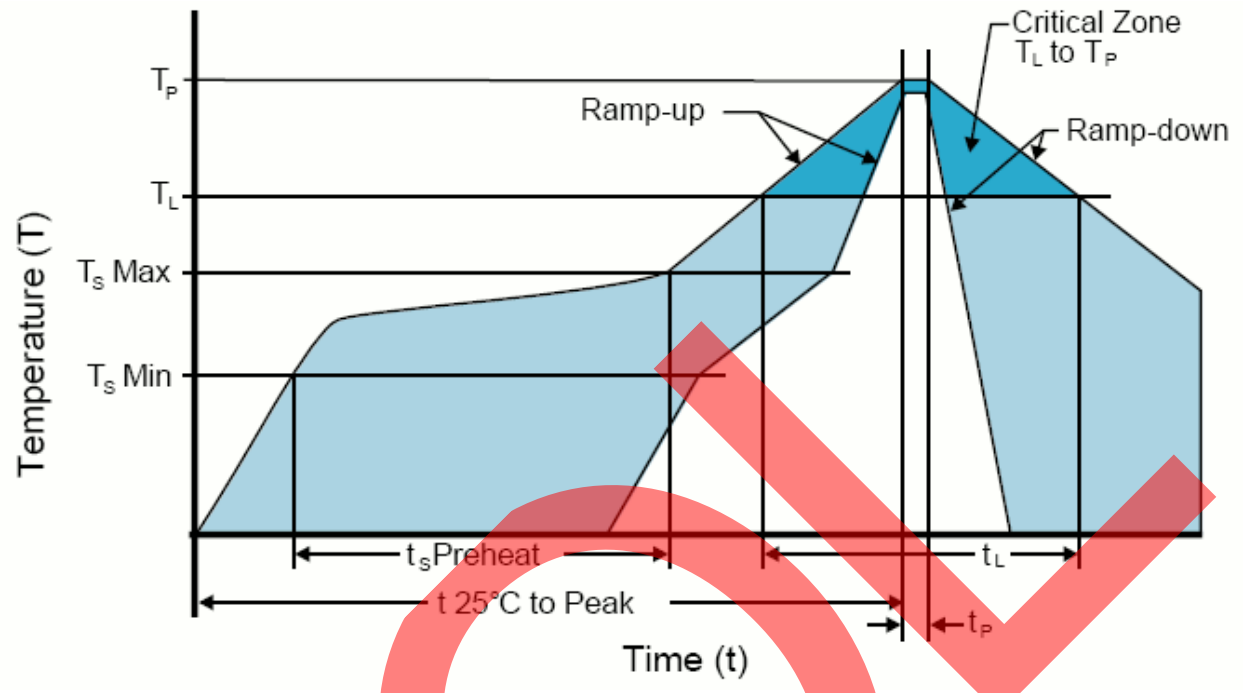
All Dimensions in Millimeters

Compliant to EIA-481



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RECOMMENDED SOLDER REFLOW METHODS



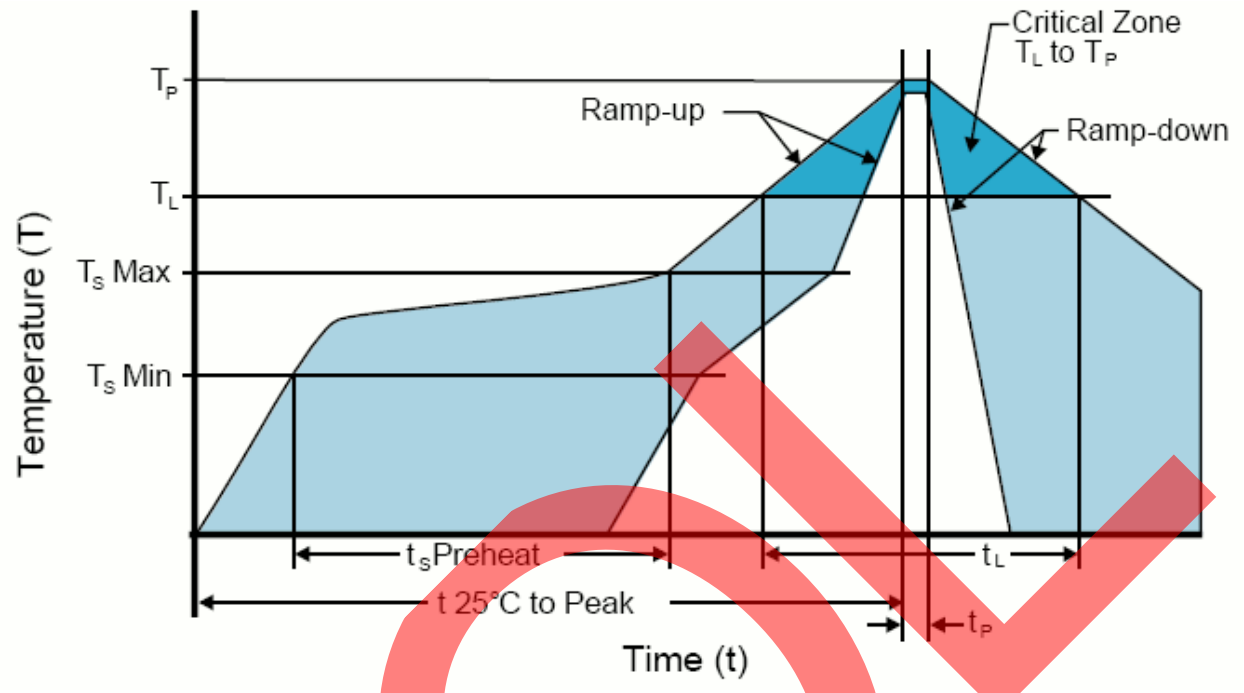
LOW TEMPERATURE INFRARED/CONVECTION 240°C	
T_S MAX to T_L (Ramp-up Rate)	5°C/Second Maximum
Preheat **- Temperature Minimum (T_S MIN)** **- Temperature Typical (T_S TYP)** **- Temperature Maximum(T_S MAX)** **- Time (t_S)**	 N/A 150°C N/A 60 - 120 Seconds
Ramp-up Rate (T_L to T_P)	5°C/Second Maximum
Time Maintained Above: **- Temperature (T_L)** **- Time (t_L)**	 150°C 200 Seconds Maximum
Peak Temperature (T_P)	245°C Maximum
Target Peak Temperature (T_P Target)	245°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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RECOMMENDED SOLDER REFLOW METHOD



LOW TEMPERATURE INFRARED/CONVECTION 245°C	
T_S MAX to T_L (Ramp-up Rate)	5°C/Second Maximum
Preheat **- Temperature Minimum (T_s MIN)** **- Temperature Typical (T_s TYP)** **- Temperature Maximum(T_s MAX)** **- Time (t_s)**	 N/A 150°C N/A 30 - 60 Seconds
Ramp-up Rate (T_L to T_P)	5°C/Second Maximum
Time Maintained Above: **- Temperature (T_L)** **- Time (t_L)**	 150°C 200 Seconds Maximum
Peak Temperature (T_P)	245°C Maximum
Target Peak Temperature (T_P Target)	245°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.)

High Temperature Manual Soldering

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

EOL