

## REGULATORY COMPLIANCE

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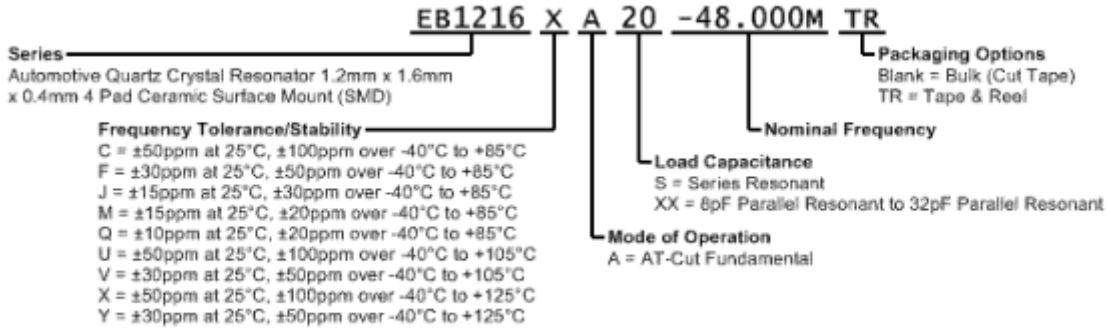
## ITEM DESCRIPTION

Automotive Grade Quartz Crystal Resonator 1.2mm x 1.6mm x 0.4mm 4 Pad Ceramic Surface Mount (SMD)

## ELECTRICAL SPECIFICATIONS

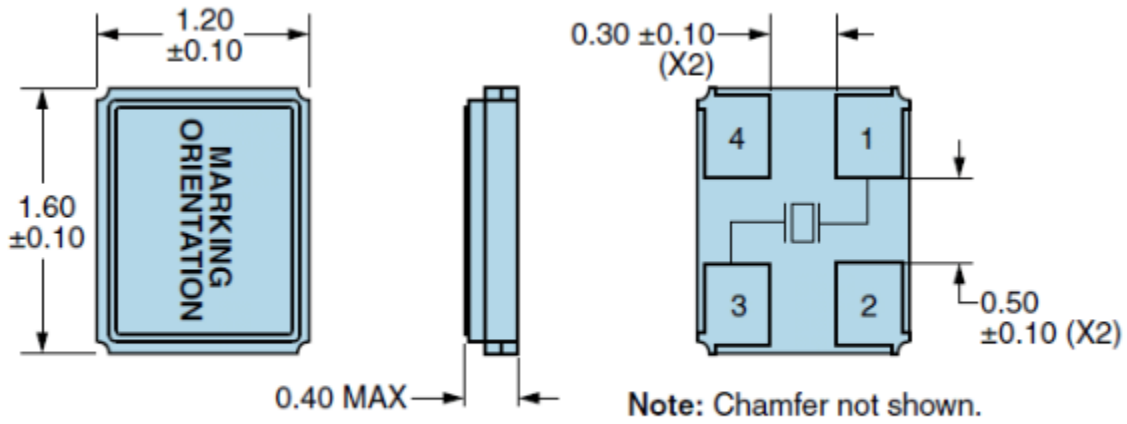
<b>Nominal Frequency</b>	24MHz to 50MHz
<b>Frequency Tolerance/Stability</b>	±50ppm at 25°C, ±100ppm over -40°C to +85°C ±50ppm at 25°C, ±100ppm over -40°C to +105°C ±50ppm at 25°C, ±100ppm over -40°C to +125°C ±30ppm at 25°C, ±50ppm over -40°C to +85°C ±30ppm at 25°C, ±50ppm over -40°C to +105°C ±30ppm at 25°C, ±50ppm over -40°C to +125°C ±15ppm at 25°C, ±30ppm over -40°C to +85°C ±15ppm at 25°C, ±20ppm over -40°C to +85°C ±10ppm at 25°C, ±20ppm over -40°C to +85°C
<b>Aging at 25°C</b>	±3ppm/year Maximum
<b>Load Capacitance</b>	Series Resonant 8pF Parallel Resonant to 32pF Parallel Resonant
<b>Shunt Capacitance</b>	5pF Maximum
<b>Equivalent Series Resistance</b>	150 Ohms Maximum over Nominal Frequency of 24MHz to 39.999999MHz 100 Ohms Maximum over Nominal Frequency of 40MHz to 50MHz
<b>Mode of Operation</b>	AT-Cut Fundamental
<b>Drive Level</b>	100µWatts Maximum
<b>Spurious Response</b>	Measured from Fo to Fo +5000ppm -3dB Minimum
<b>Storage Temperature Range</b>	-50°C to +150°C
<b>Insulation Resistance</b>	Measured at 100Vdc 500 Megaohms Minimum

**PART NUMBERING GUIDE**



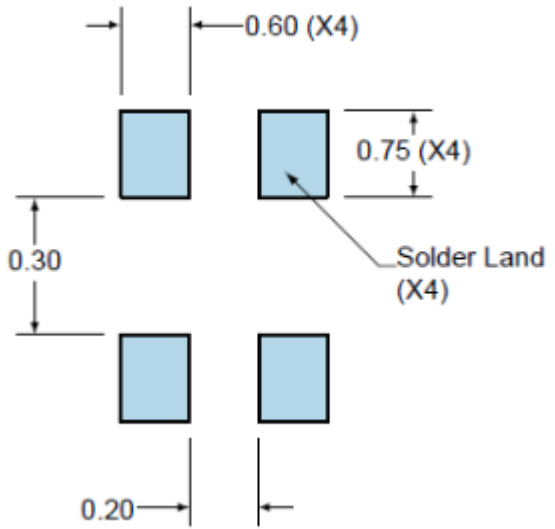
# EB1216 Series

## MECHANICAL DIMENSIONS



Seam Sealed  
 Terminal Plating Thickness: Gold (0.3 to 1.0µm) over Nickel (2.00 to 8.89µm).

## SUGGESTED SOLDER PAD LAYOUT



PIN	CONNECTION
1	Crystal
2	Cover/Ground
3	Crystal
4	No Connect

All Tolerances are ±0.1

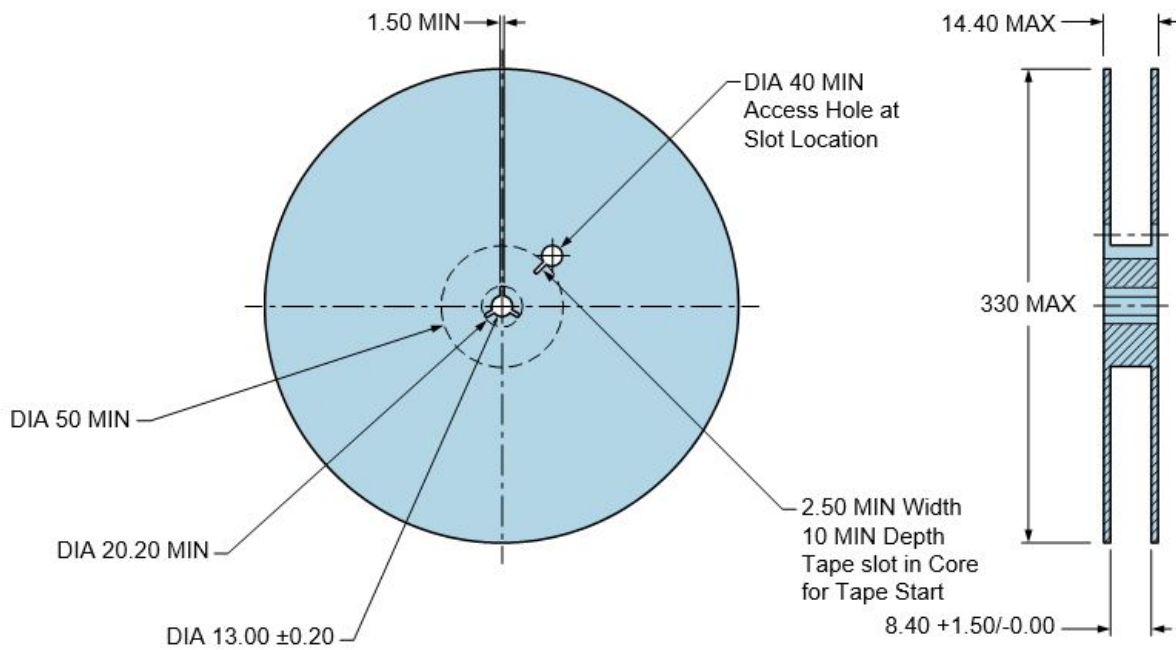
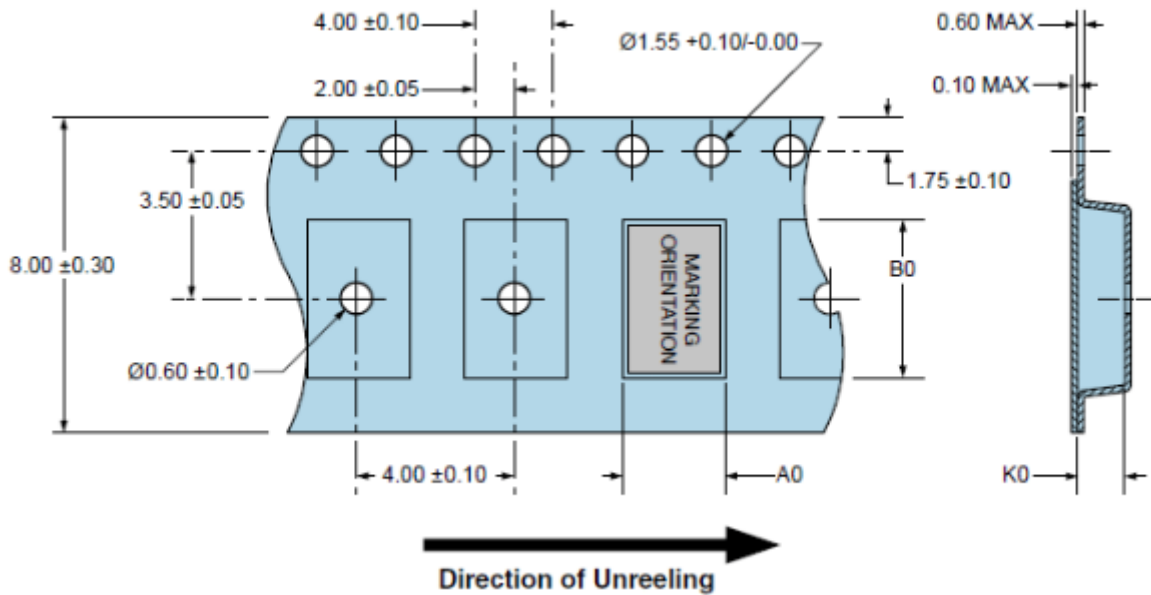
All Dimensions in Millimeters

**TAPE & REEL DIMENSIONS**

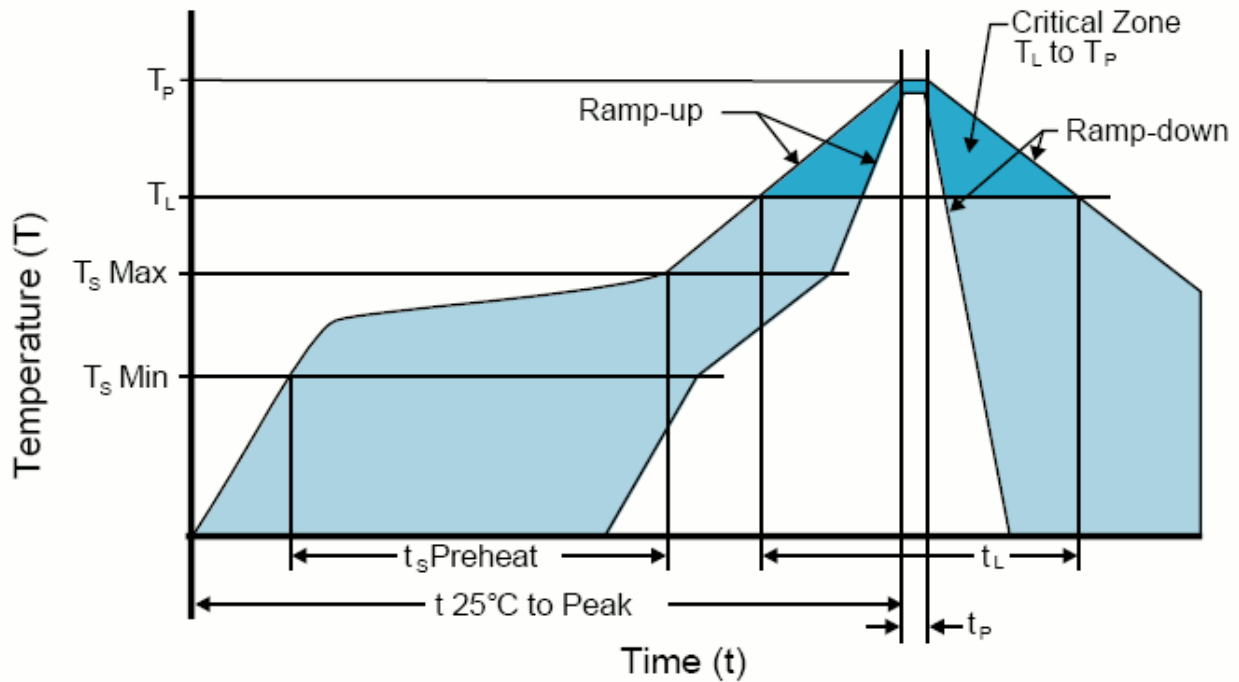
Quantity per Reel: 3,000 Units

All Dimensions in Millimeters

Compliant to EIA-481



RECOMMENDED SOLDER REFLOW METHOD



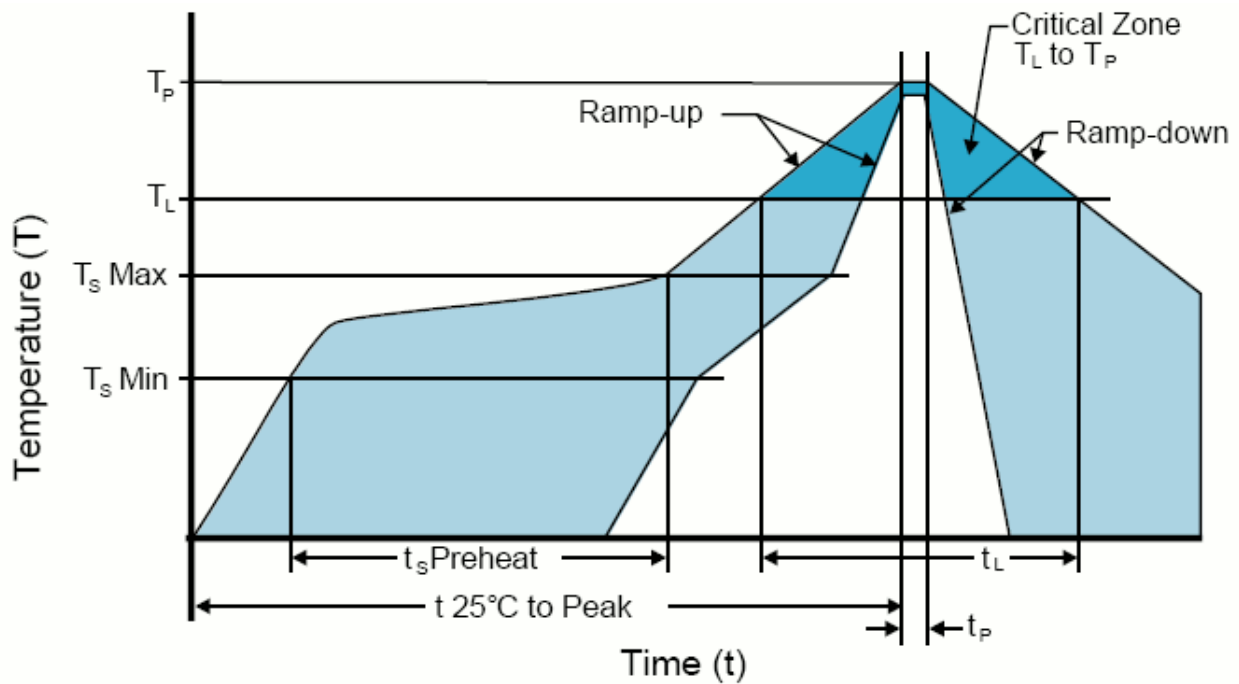
**HIGH TEMPERATURE INFRARED/CONVECTION**

<b><math>T_S</math> MAX to <math>T_L</math> (Ramp-up Rate)</b>	3°C/Second Maximum
<b>Preheat</b>	
- 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
<b>Ramp-up Rate (<math>T_L</math> to <math>T_P</math>)</b>	3°C/Second Maximum
<b>Time Maintained Above:</b>	
- Temperature ( $T_L$ )	217°C
- Time ( $t_L$ )	60 - 150 Seconds
<b>Peak Temperature (<math>T_P</math>)</b>	260°C Maximum for 10 Seconds Maximum
<b>Target Peak Temperature (<math>T_P</math> Target)</b>	250°C +0/-5°C
<b>Time within 5°C of actual peak (<math>t_p</math>)</b>	20 - 40 Seconds
<b>Ramp-down Rate</b>	6°C/Second Maximum
<b>Time 25°C to Peak Temperature (t)</b>	8 Minutes Maximum
<b>Moisture Sensitivity Level</b>	Level 1
<b>Additional Notes</b>	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 <sub>s</sub> MAX to T <sub>L</sub> (Ramp-up Rate)	5°C/Second Maximum
<b>Preheat</b>	
- Temperature Minimum (T <sub>s</sub> MIN)	N/A
- Temperature Typical (T <sub>s</sub> TYP)	150°C
- Temperature Maximum(T <sub>s</sub> MAX)	N/A
- Time (t <sub>s</sub> )	30 - 60 Seconds
Ramp-up Rate (T <sub>L</sub> to T <sub>P</sub> )	5°C/Second Maximum
<b>Time Maintained Above:</b>	
- Temperature (T <sub>L</sub> )	150°C
- Time (t <sub>L</sub> )	200 Seconds Maximum
Peak Temperature (T <sub>P</sub> )	245°C Maximum
Target Peak Temperature (T <sub>P</sub> Target)	245°C Maximum 2 Times / 230°C Maximum 1 Time
Time within 5°C of actual peak (t <sub>p</sub> )	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.)