

## REGULATORY COMPLIANCE



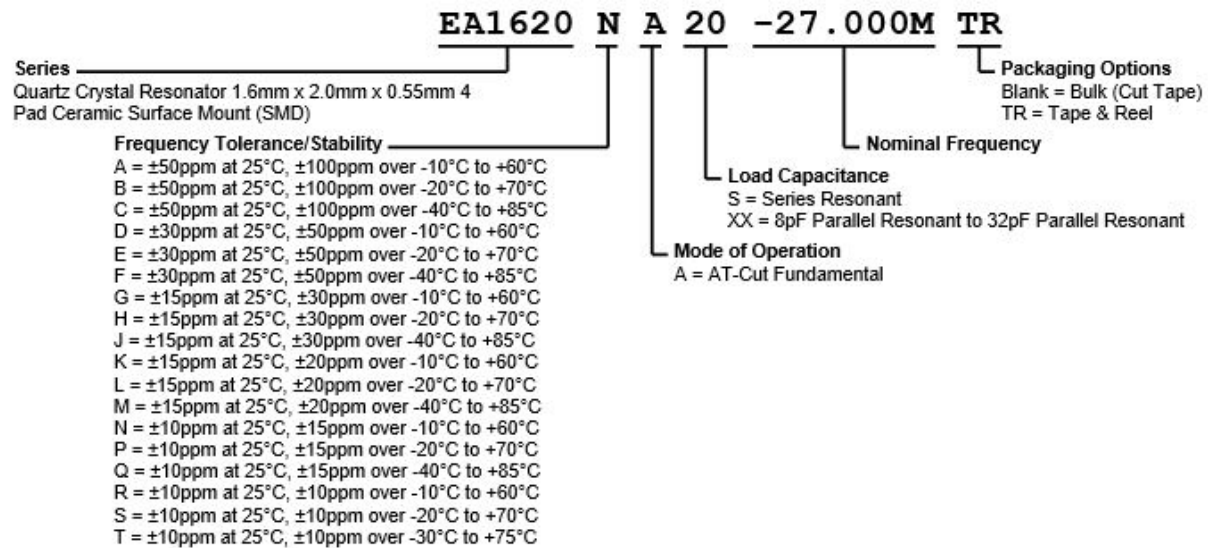
## ITEM DESCRIPTION

Quartz Crystal Resonator 1.6mm x 2.0mm x 0.55mm 4 Pad Ceramic Surface Mount (SMD)

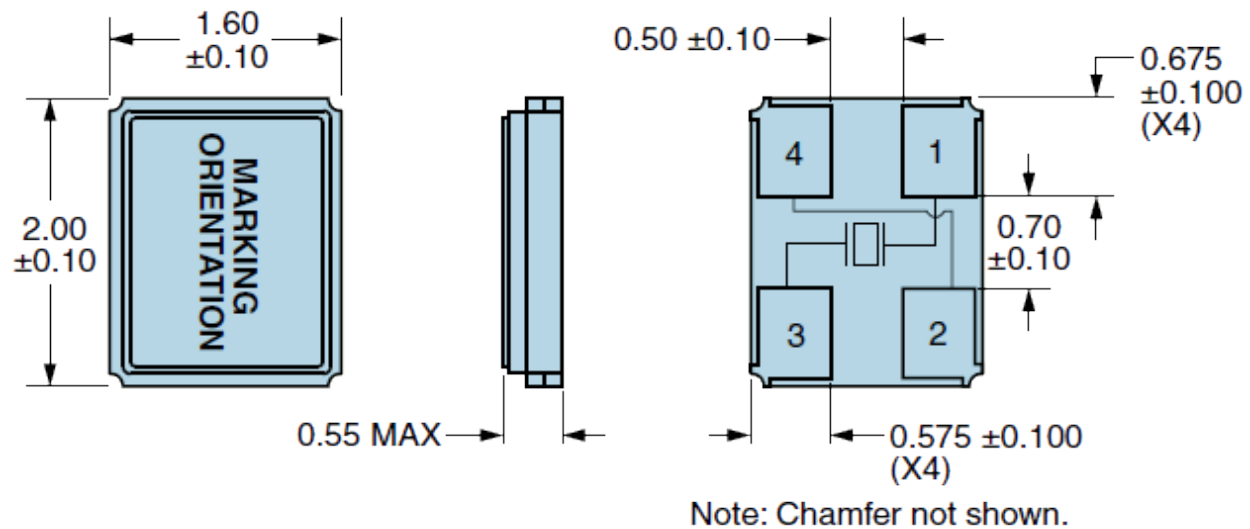
## ELECTRICAL SPECIFICATIONS

Nominal Frequency	16MHz to 54MHz
Frequency Tolerance/Stability	±50ppm at 25°C, ±100ppm over -10°C to +60°C ±50ppm at 25°C, ±100ppm over -20°C to +70°C ±50ppm at 25°C, ±100ppm over -40°C to +85°C ±30ppm at 25°C, ±50ppm over -10°C to +60°C ±30ppm at 25°C, ±50ppm over -20°C to +70°C ±30ppm at 25°C, ±50ppm over -40°C to +85°C ±15ppm at 25°C, ±30ppm over -10°C to +60°C ±15ppm at 25°C, ±30ppm over -20°C to +70°C ±15ppm at 25°C, ±30ppm over -40°C to +85°C ±15ppm at 25°C, ±20ppm over -10°C to +60°C ±15ppm at 25°C, ±20ppm over -20°C to +70°C ±15ppm at 25°C, ±20ppm over -40°C to +85°C ±10ppm at 25°C, ±15ppm over -10°C to +60°C ±10ppm at 25°C, ±15ppm over -20°C to +70°C ±10ppm at 25°C, ±15ppm over -40°C to +85°C ±10ppm at 25°C, ±10ppm over -10°C to +60°C ±10ppm at 25°C, ±10ppm over -20°C to +70°C ±10ppm at 25°C, ±10ppm over -30°C to +75°C
Aging at 25°C	±3ppm/year Maximum
Load Capacitance	Series Resonant, 8pF Parallel Resonant to 32pF Parallel Resonant
Shunt Capacitance	5pF Maximum
Equivalent Series Resistance	160 Ohms Maximum over Nominal Frequency of 16MHz to 17.999999MHz 150 Ohms Maximum over Nominal Frequency of 18MHz to 19.999999MHz 120 Ohms Maximum over Nominal Frequency of 20MHz to 25.999999MHz 100 Ohms Maximum over Nominal Frequency of 26MHz to 29.999999MHz 80 Ohms Maximum over Nominal Frequency of 30MHz to 35.999999MHz 60 Ohms Maximum over Nominal Frequency of 36MHz to 54MHz
Mode of Operation	AT-Cut Fundamental
Drive Level	100µWatts Maximum
Spurious Response	Measured from Fo to Fo +5000ppm -3dB Minimum
Storage Temperature Range	-40°C to +125°C
Insulation Resistance	Measured at 100Vdc 500 Megaohms Minimum

## PART NUMBERING GUIDE



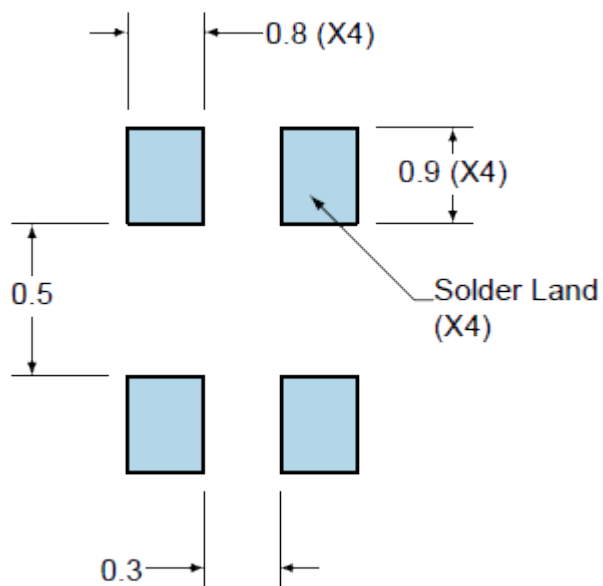
## MECHANICAL DIMENSIONS



## Seam Sealed

Terminal Plating Thickness: Gold (0.3 to 1.0 $\mu$ m) over Nickel (1.27 to 8.89 $\mu$ m).

## SUGGESTED SOLDER PAD LAYOUT



PIN	CONNECTION
1	Crystal
2	Cover/Ground
3	Crystal
4	Cover/Ground

All Tolerances are  $\pm 0.1$

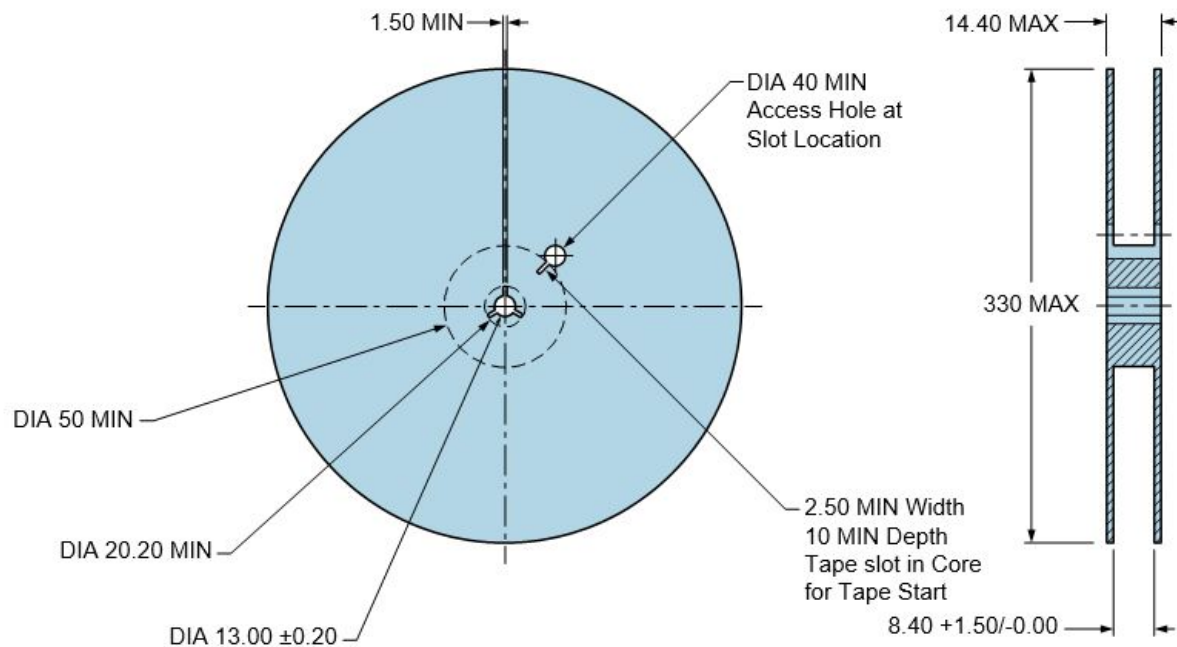
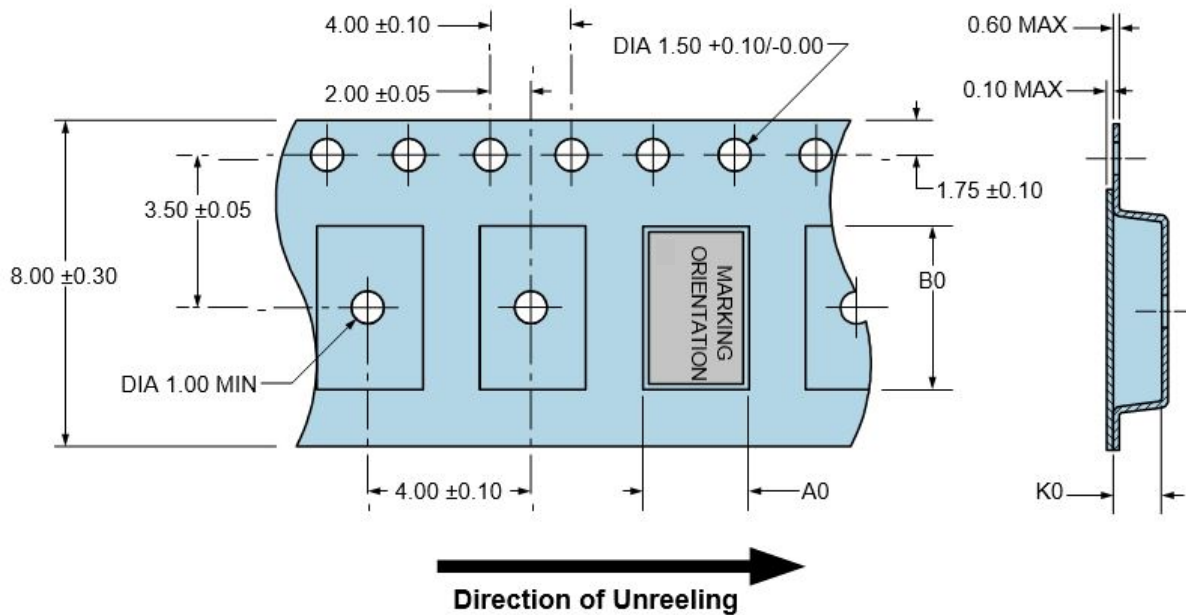
All Dimensions in Millimeters

**TAPE & REEL DIMENSIONS**

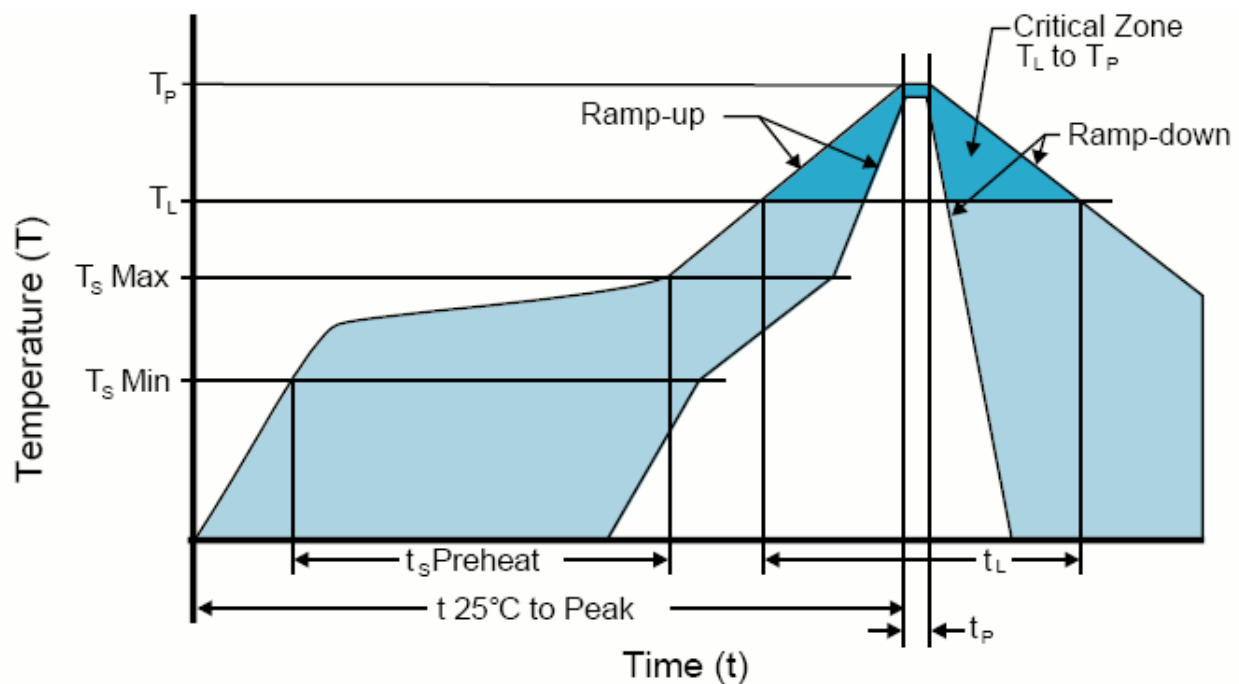
Quantity per Reel: 1,000 Units

All Dimensions in Millimeters

Compliant to EIA-481



## RECOMMENDED SOLDER REFLOW METHOD



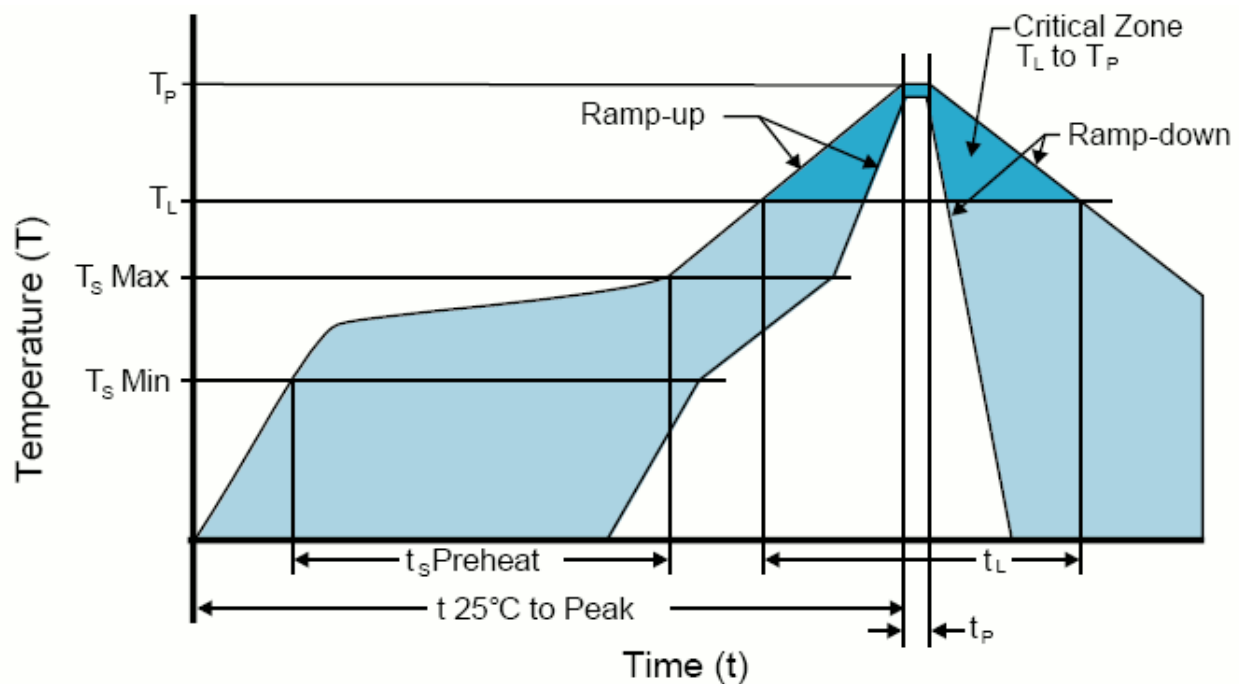
## HIGH TEMPERATURE INFRARED/CONVECTION

T <sub>s</sub> MAX to T <sub>L</sub> (Ramp-up Rate)	3°C/Second Maximum
Preheat	
- Temperature Minimum (T <sub>s</sub> MIN)	150°C
- Temperature Typical (T <sub>s</sub> TYP)	175°C
- Temperature Maximum (T <sub>s</sub> MAX)	200°C
- Time (t <sub>s</sub> )	60 - 180 Seconds
Ramp-up Rate (T <sub>L</sub> to T <sub>P</sub> )	3°C/Second Maximum
Time Maintained Above:	
- Temperature (T <sub>L</sub> )	217°C
- Time (t <sub>L</sub> )	60 - 150 Seconds
Peak Temperature (T <sub>P</sub> )	260°C Maximum for 10 Seconds Maximum
Target Peak Temperature (T <sub>P</sub> Target)	250°C +0/-5°C
Time within 5°C of actual peak (t <sub>p</sub> )	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 <sub>s</sub> MAX to T <sub>L</sub> (Ramp-up Rate)	5°C/Second Maximum
Preheat	
- 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
Time Maintained Above:	
- 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.)