

## REGULATORY COMPLIANCE



## ITEM DESCRIPTION

Quartz Crystal Resonator 5.0mm x 7.0mm x 1.3mm 4 Pad Ceramic Surface Mount (SMD)

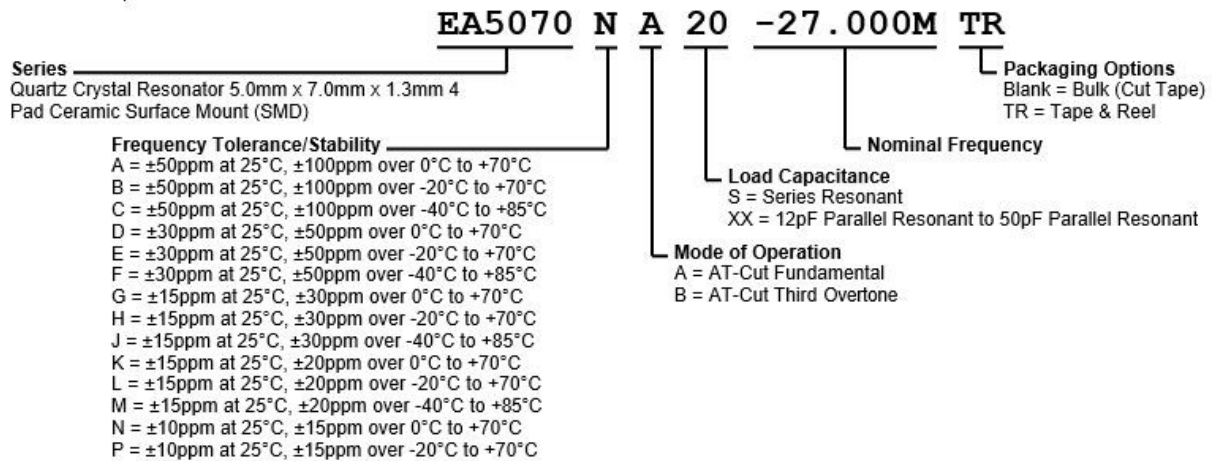
## ELECTRICAL SPECIFICATIONS

<b>Nominal Frequency</b>	6MHz to 66MHz
<b>Frequency Tolerance/Stability</b>	±50ppm at 25°C, ±100ppm over 0°C to +70°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 0°C to +70°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 0°C to +70°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 0°C to +70°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 0°C to +70°C ±10ppm at 25°C, ±15ppm over -20°C to +70°C
<b>Aging at 25°C</b>	±3ppm/year Maximum
<b>Load Capacitance</b>	Series Resonant, 12pF Parallel Resonant to 50pF Parallel Resonant
<b>Shunt Capacitance</b>	7pF Maximum
<b>Equivalent Series Resistance</b>	See the Equivalent Series Resistance (ESR), Mode of Operation, and Crystal Cut Table Below
<b>Mode of Operation</b>	AT-Cut Fundamental (Only available over Nominal Frequency range of 6MHz to 40MHz) AT-Cut Third Overtone (Only available over Nominal Frequency range of 35.328MHz to 66MHz)
<b>Drive Level</b>	50µWatts Maximum
<b>Spurious Response</b>	Measured from Fo to Fo +5000ppm -3dB Minimum
<b>Storage Temperature Range</b>	-40°C to +85°C
<b>Insulation Resistance</b>	Measured at 100Vdc 500 Megaohms Minimum

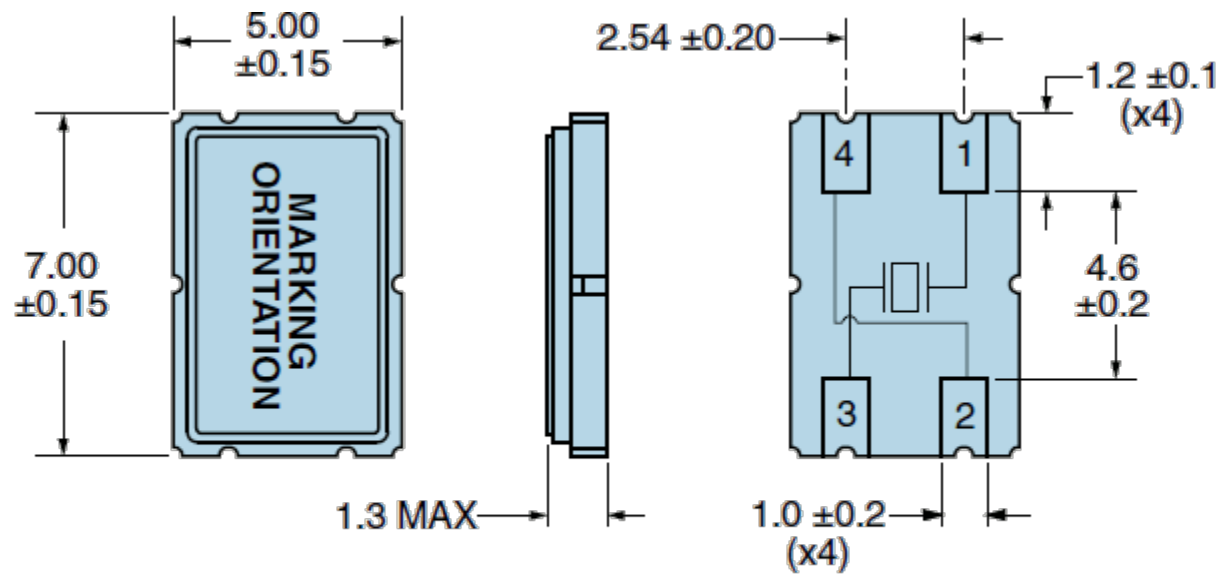
## EQUIVALENT SERIES RESISTANCE (ESR), MODE OF OPERATION AND CRYSTAL CUT

Frequency Range	ESR (Ohms Max)	Mode	Frequency Range	ESR (Ohms Max)	Mode
6MHz to 9.999999MHz	90	AT-Cut Fundamental	16MHz to 40MHz	30	AT-Cut Fundamental
10MHz to 10.999999MHz	60	AT-Cut Fundamental	35.328MHz to 39.999999MHz	100	AT-Cut Third Overtone
11MHz to 13.999999MHz	50	AT-Cut Fundamental	40MHz to 59.999999MHz	80	AT-Cut Third Overtone
14MHz to 15.999999MHz	40	AT-Cut Fundamental	60MHz to 66MHz	80	AT-Cut Third Overtone

## PART NUMBERING GUIDE



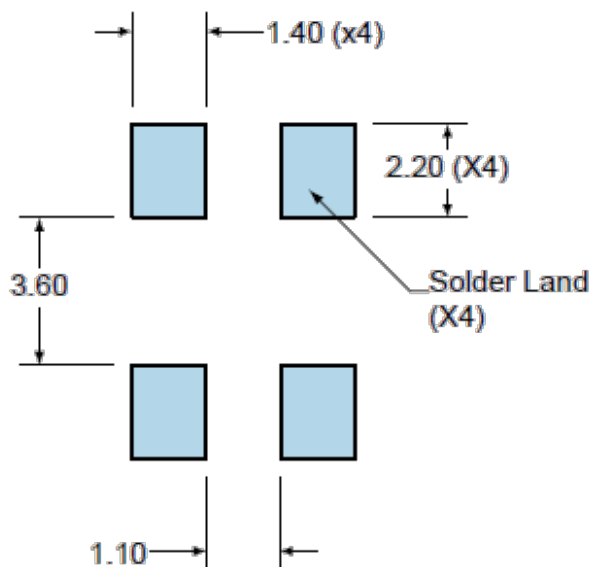
## MECHANICAL DIMENSIONS



Note: Chamfer and index mark not shown.

Terminal Plating Thickness: Gold (0.3 to 1.0 $\mu$ m). 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  $\pm 0.1$

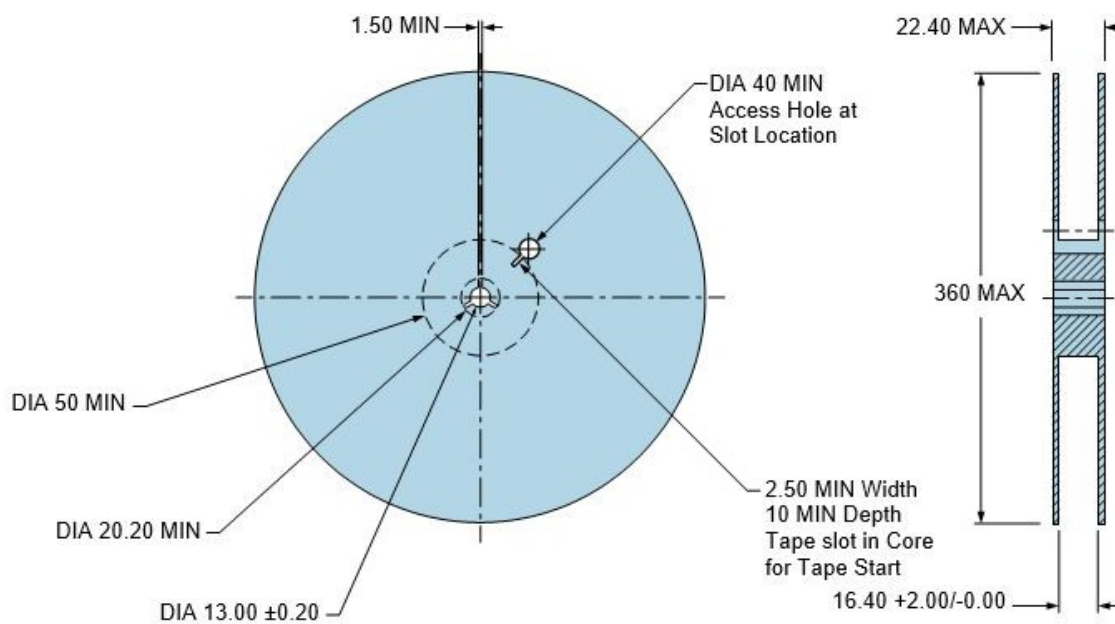
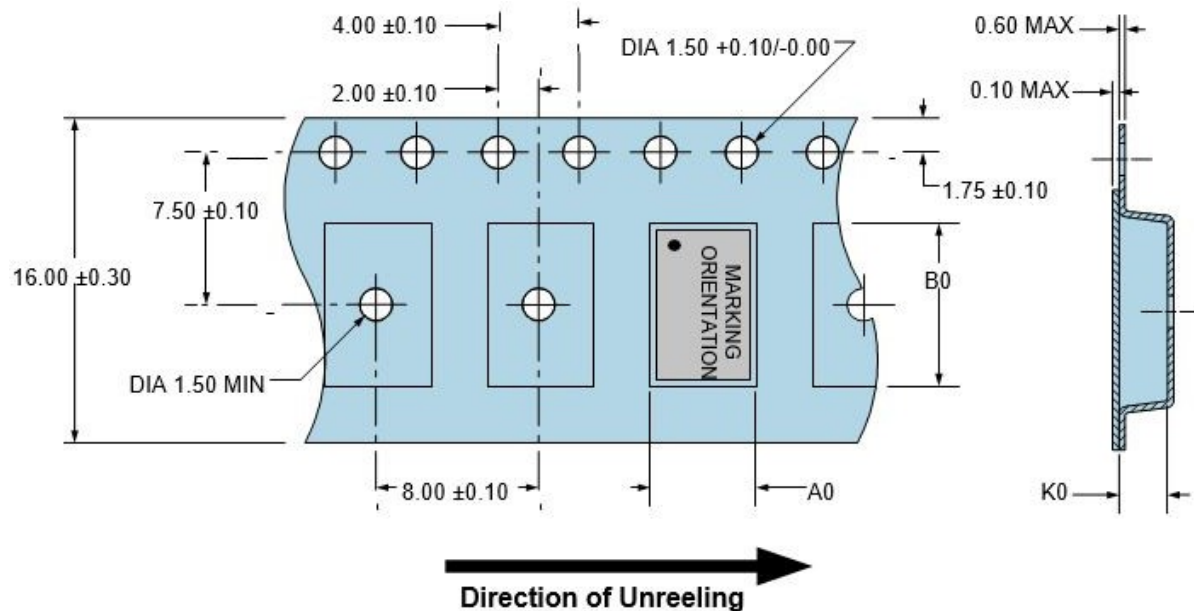
All Dimensions in Millimeters

## TAPE & REEL DIMENSIONS

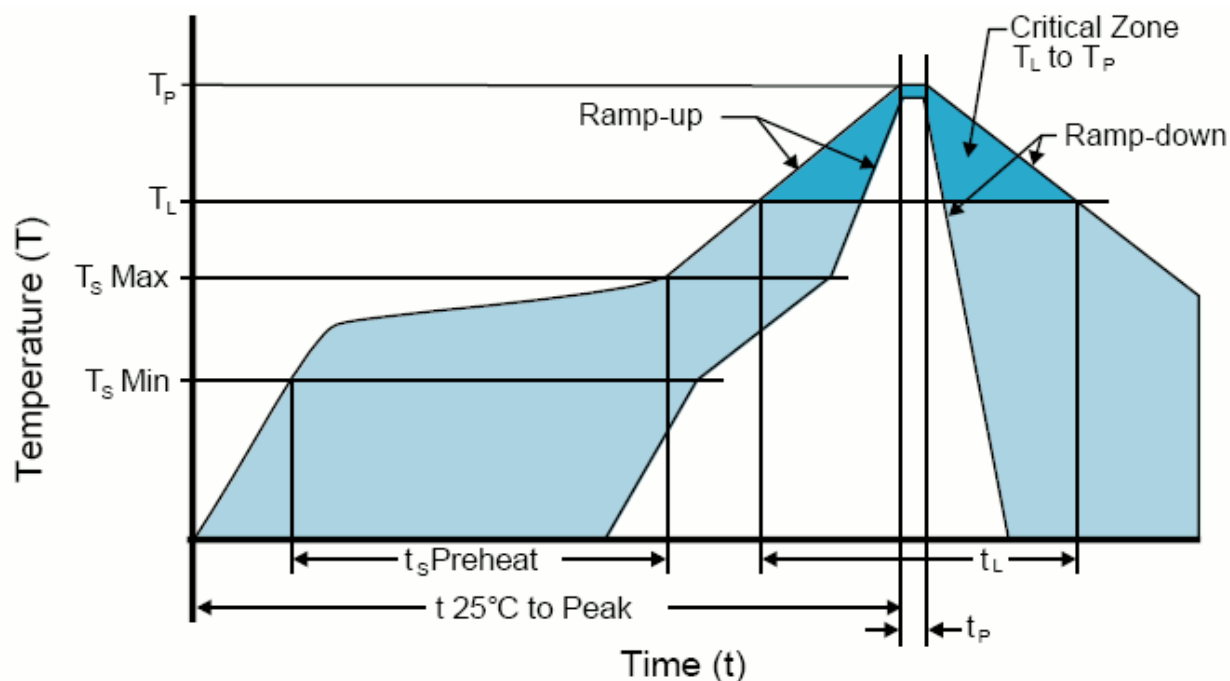
Quantity per Reel: 1,000 Units

All Dimensions in Millimeters

Compliant to EIA-481



## RECOMMENDED SOLDER REFLOW METHOD



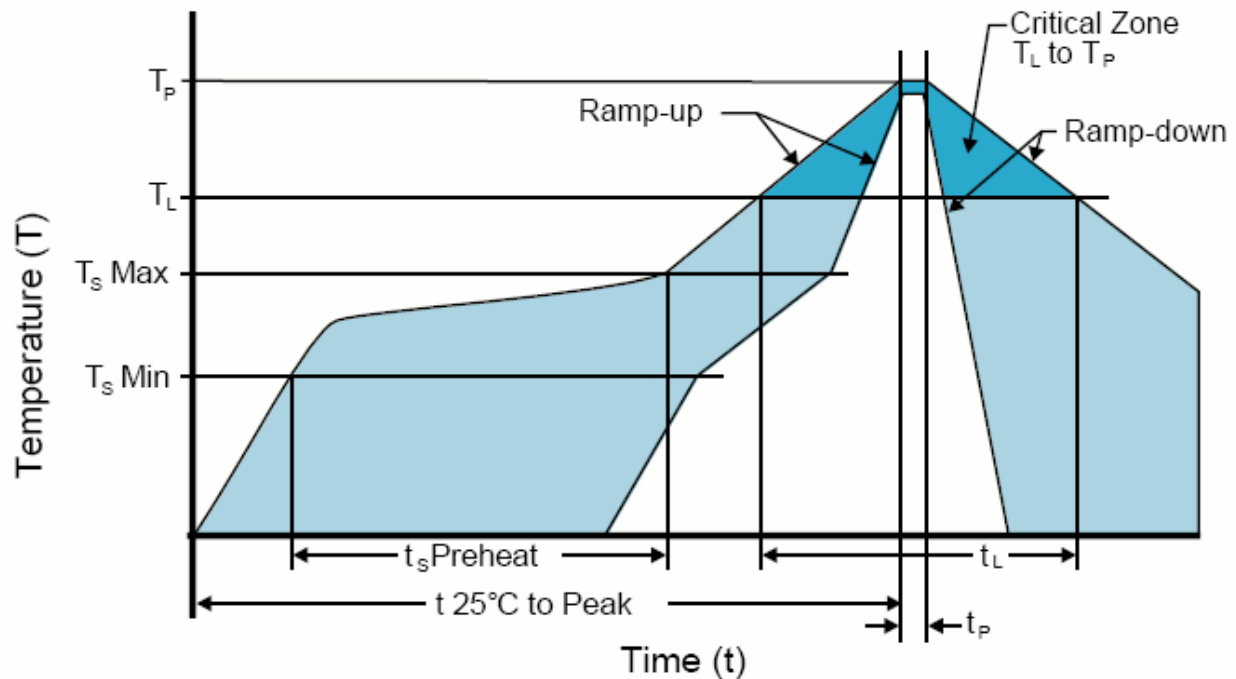
## HIGH TEMPERATURE INFRARED/CONVECTION

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

<b><math>T_s</math> MAX to <math>T_L</math> (Ramp-up Rate)</b>	5°C/Second Maximum
<b>Preheat</b>	
- Temperature Minimum ( $T_s$ MIN)	N/A
- Temperature Typical ( $T_s$ TYP)	150°C
- Temperature Maximum ( $T_s$ MAX)	N/A
- Time ( $t_s$ )	30 - 60 Seconds
<b>Ramp-up Rate (<math>T_L</math> to <math>T_P</math>)</b>	5°C/Second Maximum
<b>Time Maintained Above:</b>	
- Temperature ( $T_L$ )	150°C
- Time ( $t_L$ )	200 Seconds Maximum
<b>Peak Temperature (<math>T_P</math>)</b>	245°C Maximum
<b>Target Peak Temperature (<math>T_P</math> Target)</b>	245°C Maximum 2 Times / 230°C Maximum 1 Time
<b>Time within 5°C of actual peak (<math>t_P</math>)</b>	10 Seconds Maximum 2 Times / 80 Seconds Maximum 1 Time
<b>Ramp-down Rate</b>	5°C/Second Maximum
<b>Time 25°C to Peak Temperature (t)</b>	N/A
<b>Moisture Sensitivity Level</b>	Level 1
<b>Additional Notes</b>	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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