

REGULATORY COMPLIANCE



ITEM DESCRIPTION

Quartz Crystal Resonator HC49/US Short Thru-Hole Metal Resistance Weld Seal

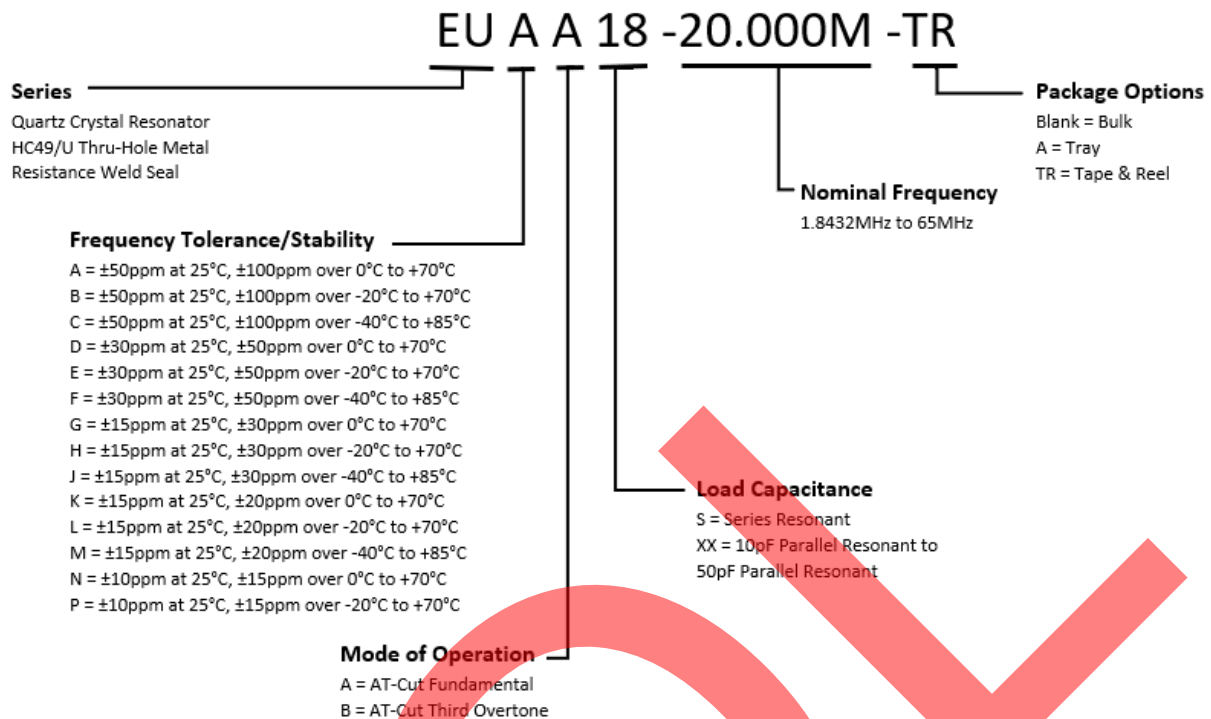
ELECTRICAL SPECIFICATIONS

Nominal Frequency	1.8432MHz to 65MHz
Frequency Tolerance/Stability	± 50 ppm at 25°C, ± 100 ppm over 0°C to +70°C ± 50 ppm at 25°C, ± 100 ppm over -20°C to +70°C ± 50 ppm at 25°C, ± 100 ppm over -40°C to +85°C ± 30 ppm at 25°C, ± 50 ppm over 0°C to +70°C ± 30 ppm at 25°C, ± 50 ppm over -20°C to +70°C ± 30 ppm at 25°C, ± 50 ppm over -40°C to +85°C ± 15 ppm at 25°C, ± 30 ppm over 0°C to +70°C ± 15 ppm at 25°C, ± 30 ppm over -20°C to +70°C ± 15 ppm at 25°C, ± 30 ppm over -40°C to +85°C ± 15 ppm at 25°C, ± 20 ppm over 0°C to +70°C ± 15 ppm at 25°C, ± 20 ppm over -20°C to +70°C ± 15 ppm at 25°C, ± 20 ppm over -40°C to +85°C ± 10 ppm at 25°C, ± 15 ppm over 0°C to +70°C ± 10 ppm at 25°C, ± 15 ppm over -20°C to +70°C
Aging at 25°C	± 5 ppm/year Maximum
Load Capacitance	Series Resonant, 10pF Parallel Resonant to 50pF Parallel Resonant
Shunt Capacitance	7pF Maximum
Equivalent Series Resistance	See the Equivalent Series Resistance (ESR), Mode of Operation, and Crystal Cut Table Below
Mode of Operation	AT-Cut Fundamental (Only available over Nominal Frequency range of 1.8432MHz to 27MHz) AT-Cut Third Overtone (Only available over Nominal Frequency range of 24MHz to 65MHz)
Drive Level	2mWatt Maximum
Storage Temperature Range	-40°C to +125°C
Insulation Resistance	500 Megaohms Minimum (Measured at 100Vdc)

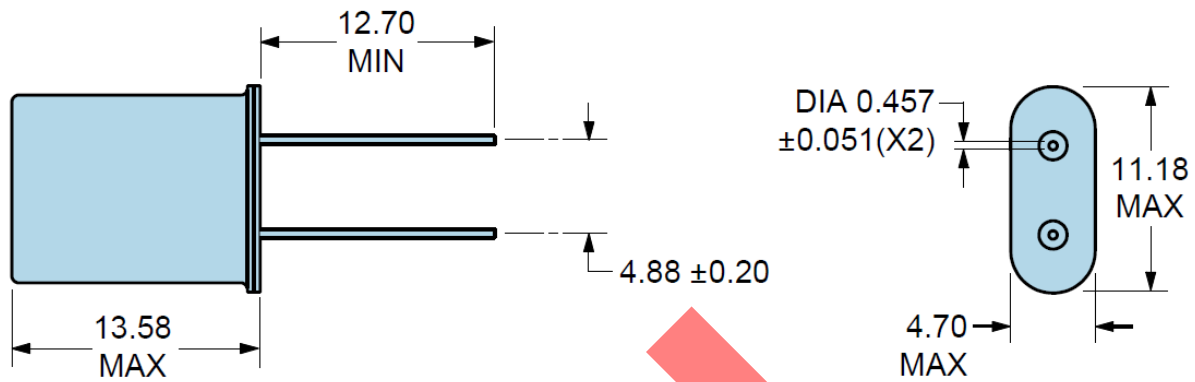
EQUIVALENT SERIES RESISTANCE (ESR), MODE OF OPERATION AND CRYSTAL CUT

Frequency Range	ESR (Ohms Max)	Mode	Frequency Range	ESR (Ohms Max)	Mode
1.8432MHz to 1.999999MHz	650	AT-Cut Fundamental	4.1MHz to 4.999999MHz	80	AT-Cut Fundamental
2MHz to 2.399999MHz	550	AT-Cut Fundamental	5MHz to 5.999999MHz	75	AT-Cut Fundamental
2.4MHz to 2.999999MHz	350	AT-Cut Fundamental	6MHz to 6.999999MHz	50	AT-Cut Fundamental
3MHz to 3.199999MHz	250	AT-Cut Fundamental	7MHz to 7.999999MHz	40	AT-Cut Fundamental
3.2MHz to 3.499999MHz	200	AT-Cut Fundamental	8MHz to 9.999999MHz	35	AT-Cut Fundamental
3.5MHz to 3.599999MHz	180	AT-Cut Fundamental	10MHz to 12.999999MHz	30	AT-Cut Fundamental
3.6MHz to 3.899999MHz	150	AT-Cut Fundamental	13MHz to 27MHz	25	AT-Cut Fundamental
3.9MHz to 3.999999MHz	120	AT-Cut Fundamental	24MHz to 29.999999MHz	60	AT-Cut Third Overtone
4MHz to 4.099999MHz	100	AT-Cut Fundamental	30MHz to 65MHz	40	AT-Cut Third Overtone

PART NUMBERING GUIDE

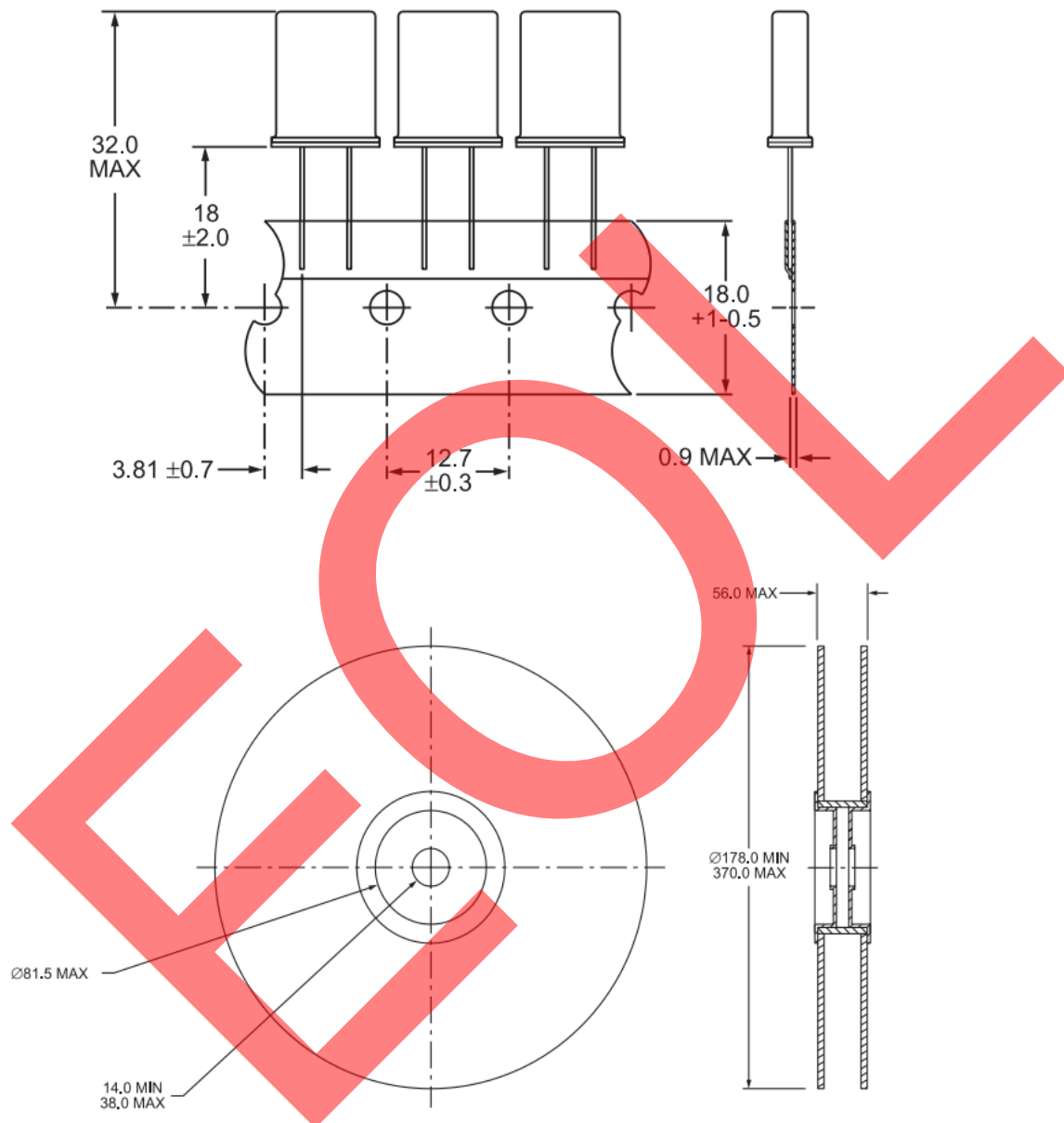


MECHANICAL DIMENSIONS

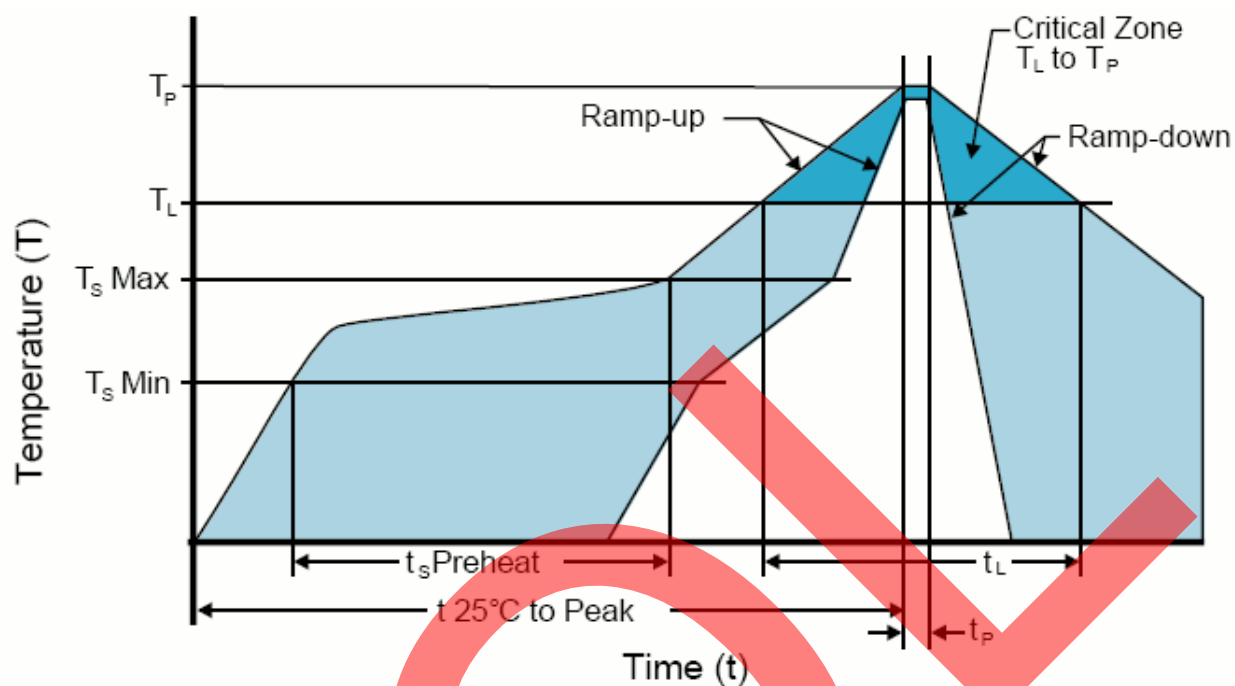


TAPE & REEL

- 1000 pieces per reel
- Compliant to EIA-481
- All Dimensions in Millimeters



RECOMMENDED SOLDER REFLOW METHOD



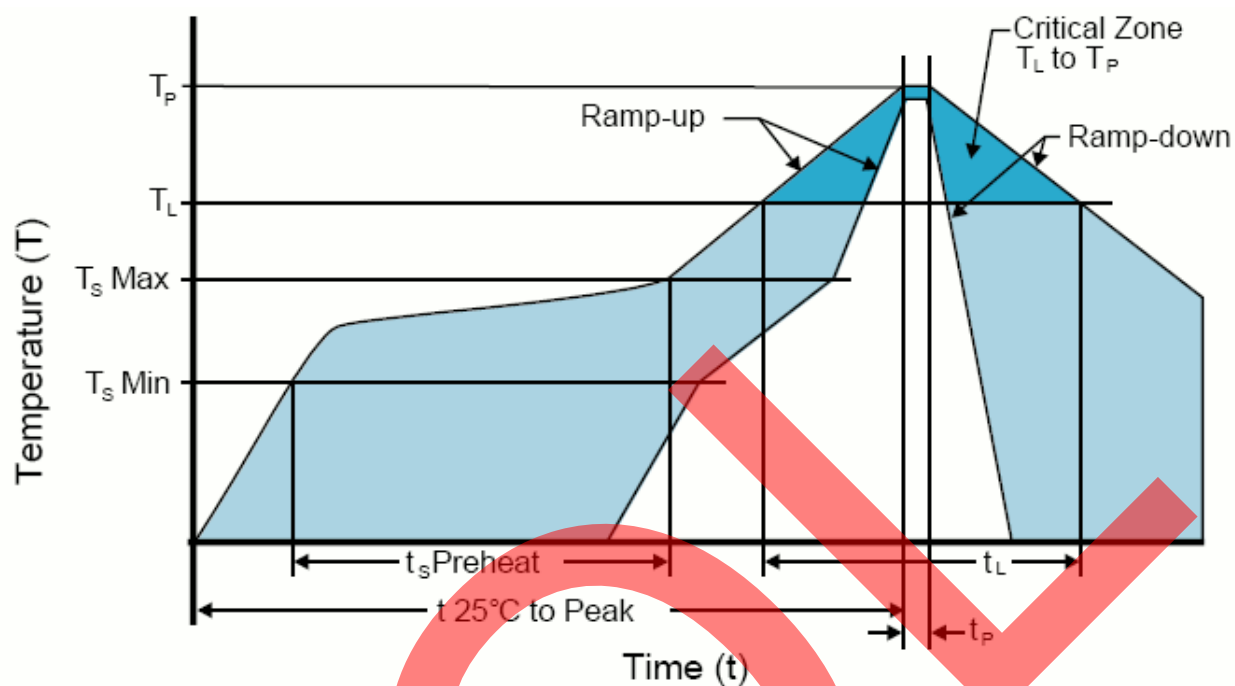
HIGH TEMPERATURE INFRARED/CONVECTION

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)	30 - 60 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)	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.)