

## REGULATORY COMPLIANCE



## ITEM DESCRIPTION

Quartz Crystal Resonator HC49/UP Short 2 Pad Surface Mount (SMD) 3.2mm Height Metal Resistance Weld Seal

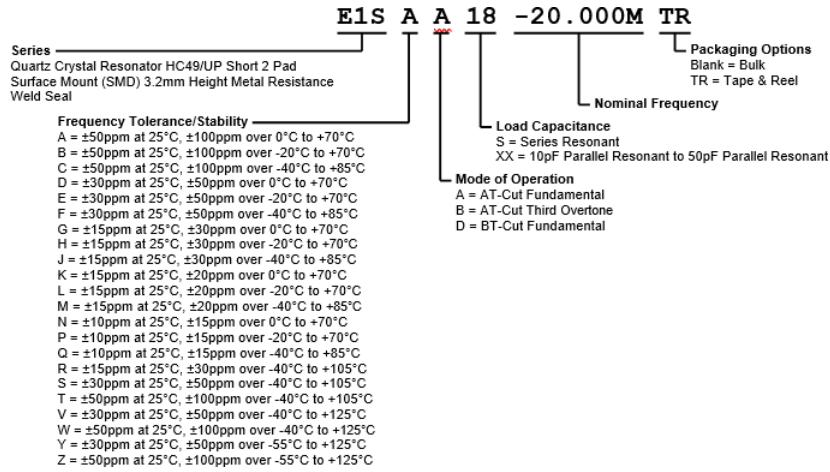
## ELECTRICAL SPECIFICATIONS

<b>Nominal Frequency</b>	3.579545MHz to 50MHz
<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 ±10ppm at 25°C, ±15ppm over -40°C to +85°C ±15ppm at 25°C, ±30ppm over -40°C to +105°C ±30ppm at 25°C, ±50ppm over -40°C to +105°C ±50ppm at 25°C, ±100ppm over -40°C to +105°C ±30ppm at 25°C, ±50ppm over -40°C to +125°C ±50ppm at 25°C, ±100ppm over -40°C to +125°C ±30ppm at 25°C, ±50ppm over -55°C to +125°C ±50ppm at 25°C, ±100ppm over -55°C to +125°C
<b>Aging at 25°C</b>	±5ppm/year Maximum
<b>Load Capacitance</b>	Series Resonant, 10pF 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 3.579545MHz to 30MHz) AT-Cut Third Overtone (Only available over Nominal Frequency range of 24.576MHz to 50MHz) BT-Cut Fundamental (Only available with Frequency Tolerance/Stability of ±50ppm at 25°C, ±100ppm over 0°C to +70°C; Only available over Nominal Frequency range of 24MHz to 40MHz)
<b>Drive Level</b>	1mWatt Maximum
<b>Storage Temperature Range</b>	-55°C to +125°C
<b>Insulation Resistance</b>	500 Megaohms Minimum (Measured at 100Vdc)

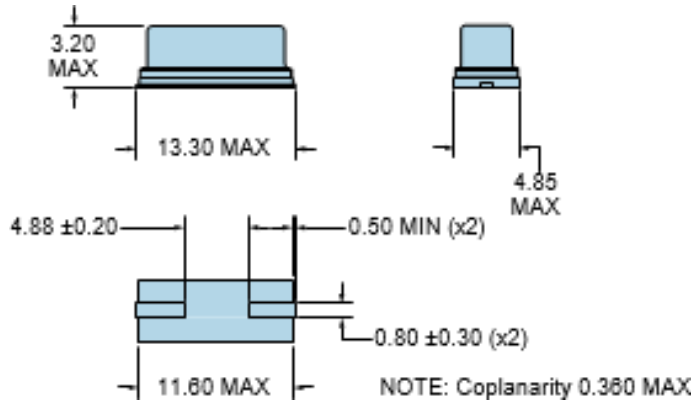
## EQUIVALENT SERIES RESISTANCE (ESR), MODE OF OPERATION AND CRYSTAL CUT

Frequency Range	ESR (Ohms Max)	Mode	Frequency Range	ESR (Ohms Max)	Mode
3.579545MHz to 4.999999MHz	200	AT-Cut Fundamental	15MHz to 15.999999MHz	60	AT-Cut Fundamental
5MHz to 5.999999MHz	150	AT-Cut Fundamental	16MHz to 23.999999MHz	50	AT-Cut Fundamental
6MHz to 7.999999MHz	102	AT-Cut Fundamental	24MHz to 30MHz	40	AT-Cut Fundamental
8MHz to 8.999999MHz	90	AT-Cut Fundamental	24.576MHz to 29.999999MHz	150	AT-Cut Third Overtone
9MHz to 9.999999MHz	80	AT-Cut Fundamental	30MHz to 50MHz	100	AT-Cut Third Overtone
10MHz to 14.999999MHz	70	AT-Cut Fundamental	24MHz to 40MHz	40	BT-Cut Fundamental

## PART NUMBERING GUIDE

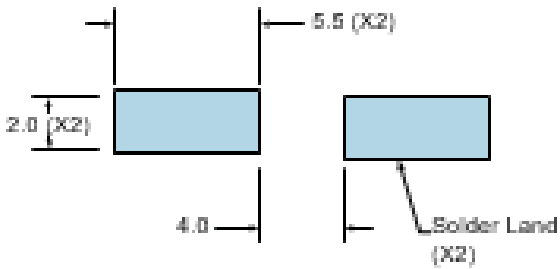


## MECHANICAL DIMENSIONS



## SUGGESTED SOLDER PAD LAYOUT

All Dimensions in Millimeters



All Tolerances are  $\pm 0.1$

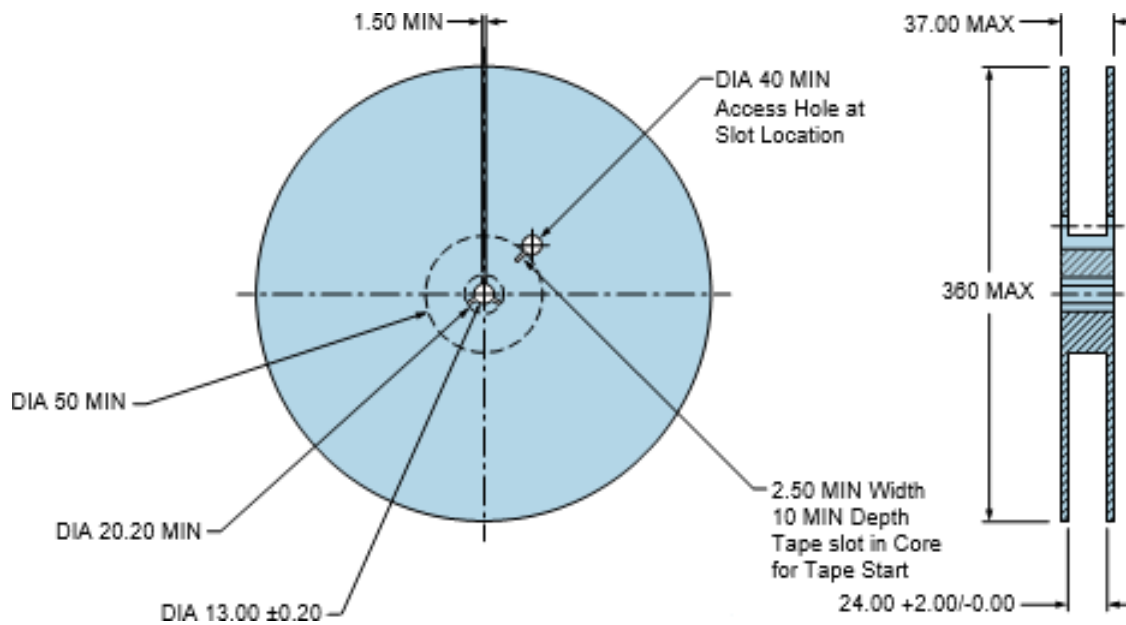
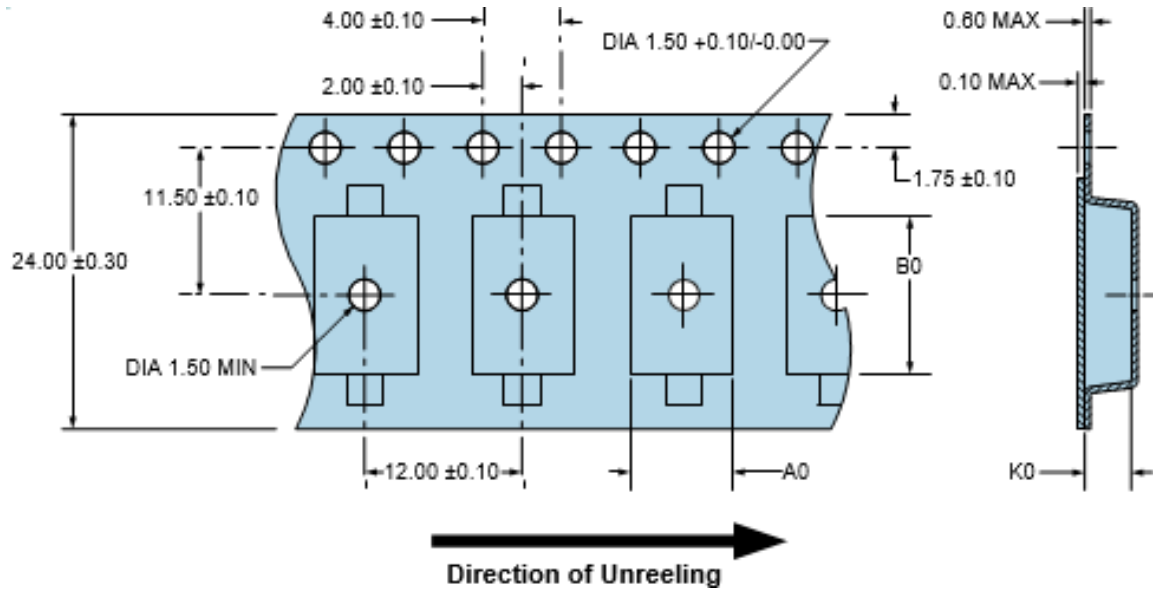
# E1S Series

## TAPE & REEL DIMENSIONS

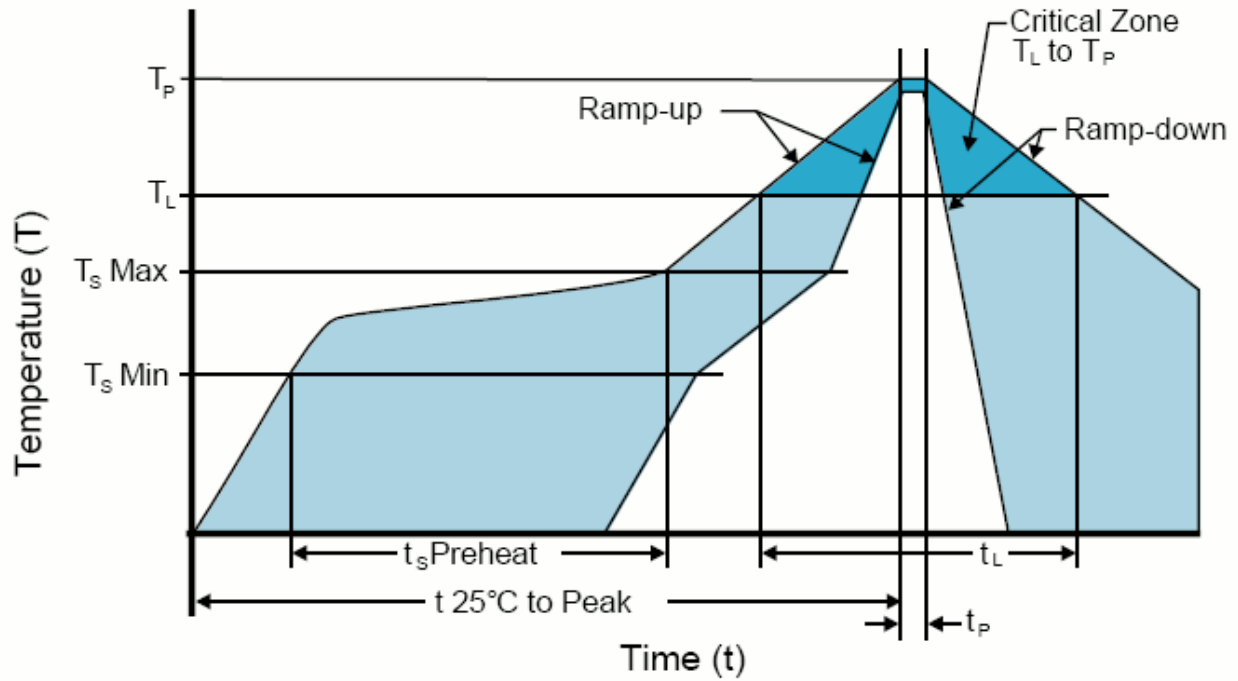
Quantity Per Reel: 1,000 units

All Dimensions in Millimeters

Compliant to EIA-481



**RECOMMENDED SOLDER REFLOW METHOD**

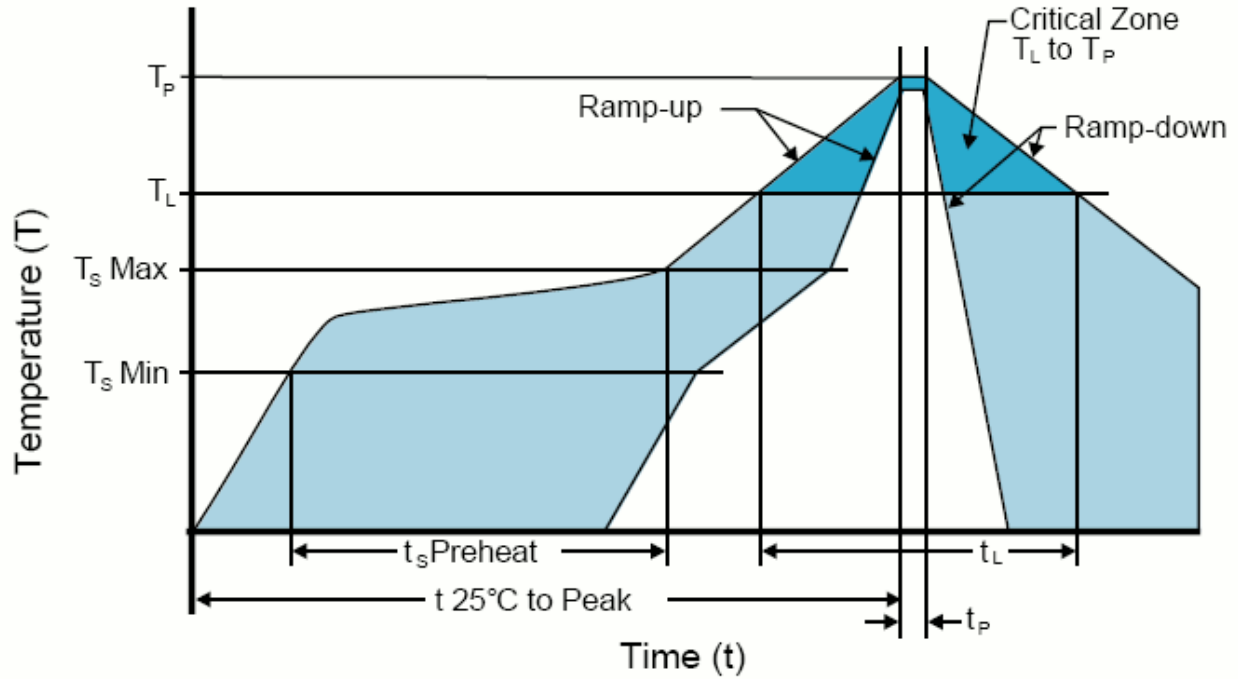


HIGH TEMPERATURE INFRARED/CONVECTION	
T <sub>s</sub> MAX to T <sub>L</sub> (Ramp-up Rate)	3°C/Second Maximum
<b>Preheat</b>	
- Temperature Minimum (T <sub>s</sub> MIN)	150°C
- Temperature Typical (T <sub>s</sub> TYP)	175°C
- Temperature Maximum(T <sub>s</sub> MAX)	200°C
- Time (t <sub>s</sub> )	60 - 180 Seconds
Ramp-up Rate (T <sub>L</sub> to T <sub>P</sub> )	3°C/Second Maximum
<b>Time Maintained Above:</b>	
- 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**

<b>T<sub>s</sub> MAX to T<sub>L</sub> (Ramp-up Rate)</b>	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
<b>Ramp-up Rate (T<sub>L</sub> to T<sub>P</sub>)</b>	5°C/Second Maximum
<b>Time Maintained Above:</b>	
- Temperature (T <sub>L</sub> )	150°C
- Time (t <sub>L</sub> )	200 Seconds Maximum
<b>Peak Temperature (T<sub>P</sub>)</b>	245°C Maximum
<b>Target Peak Temperature (T<sub>P</sub> Target)</b>	245°C Maximum 2 Times / 230°C Maximum 1 Time
<b>Time within 5°C of actual peak (t<sub>p</sub>)</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.)

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Crystals](#) category:*

*Click to view products by [Abracon](#) manufacturer:*

Other Similar products are found below :

[MC405 32.0000K-R3:PURE SN](#) [7B-27.000MBBK-T](#) [MP1-8.0 99-BU](#) [9B-15.360MBBK-B](#) [PTX-A2JM-10.000M](#) [9C-7.680MBBK-T](#) [H10S-12.000-18-EXT-TR](#) [R38-32.768-12.5-5PPM-NPB](#) [BTD1062E05A-513](#) [21U15A-21.4MHZ](#) [RTX-781DF1-S-20.950](#) [LFXTAL066198Cutt](#) [9C-14.31818MBBK-T](#) [A-11.000MHZ-27](#) [SPT2A-.032768B](#) [SPT2A.032768G](#) [SSPT7F-9PF20-R](#) [FX325BS-38.88EEM1201](#) [MP-1-25.000MHZ-3L](#) [MP-1-6.000MHZ](#) [LFXTAL065253Cutt](#) [LFXTAL066431Cutt](#) [XT9S20ANA14M7456](#) [XT9SNLANA16M](#) [646G-24-2](#) [7B-30.000MBBK-T](#) [6504-202-1501](#) [6526-202-1501](#) [BTJ120E02C](#) [SG636PCE-20.000MC](#) [3404](#) [C1E-24.000-7-2020-R](#) [C1E-19.200-12-1530-X-R](#) [C1E-16.000-12-1530-X-R](#) [FL5000014](#) [EUCA18-3.1872M](#) [425F35E027M0000](#) [17196](#) [MS3V-T1R-32.768kHz-7pF-20PPM-TA-QC-Au](#) [VXM7-1C1-16M000](#) [MS1V-T1K-32.768kHz-10pF-20PPM-TA-QC-Au](#) [MS1V-T1K-32.768kHz-12.5pF-20PPM-TA-QC-Au](#) [MS3V-T1R-32.768kHz-9pF-20PPM-TA-QC-Au](#) [17000](#) [17301](#) [16875](#) [ECS-80-18-30B-JEM-TR](#) [ECS-100-10-30B-CKL-TR](#) [MS1V-T1K-32.768kHz-6pF-20PPM-TA-QC-Au](#)