

REGULATORY COMPLIANCE



ITEM DESCRIPTION

Watch Crystal Resonator 1.5mm x 3.2mm x 0.9mm 2 Pad Plastic Surface Mount (SMD)

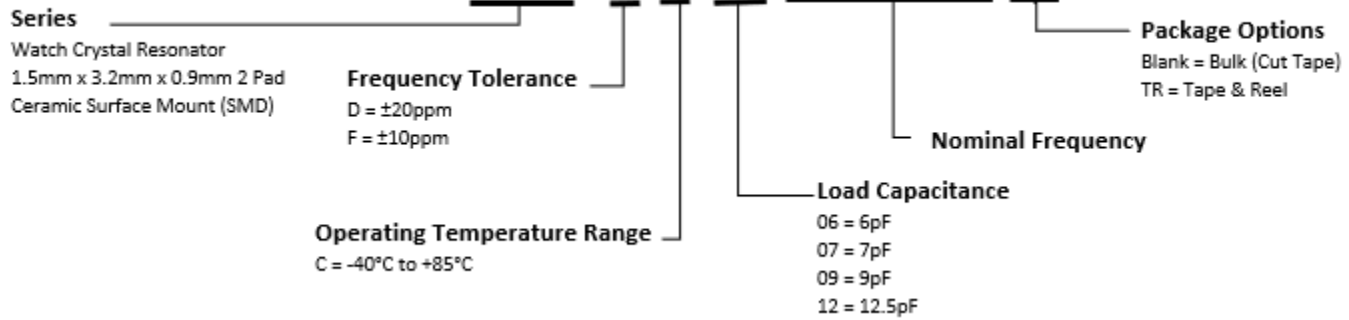
ELECTRICAL SPECIFICATIONS

Frequency	32.768kHz
Equivalent Series Resistance (ESR)	70 kOhms Max
Shunt Capacitance (Co)	1.6pF Max
Frequency Tolerance (at 25°C)	±20ppm (Tested at 0.1µW, See Options)
Frequency Stability (over Temperature)	-0.040ppm/(Change in °C) ² Max
Turn over Temperature	25°C ±5°C
Mode of Operation	Flexural Mode (Tuning Fork)
Load Capacitance	6pF, 7pF, 9pF, 12.5pF or Specify
Drive Level	0.1 µWatt Typical, 0.5µWatt Max
Aging (@25°C ± 3°C)	±2ppm/First Year Max
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-55°C to +125°C
Insulation Resistance	500 Mohms Minimum (at 100Vdc +/-15Vdc)

E8WS Series

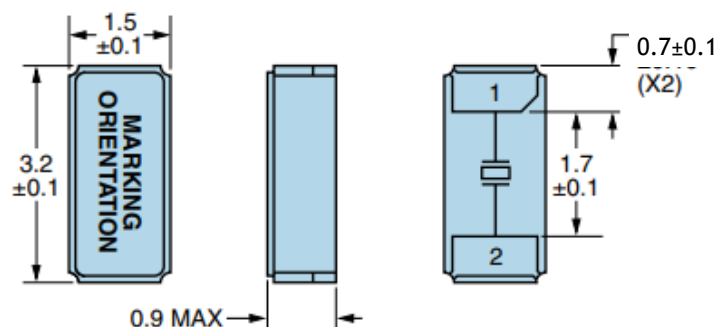
PART NUMBERING GUIDE

E8WS D C 12 -32.768K TR



E8WS Series

MECHANICAL DIMENSIONS



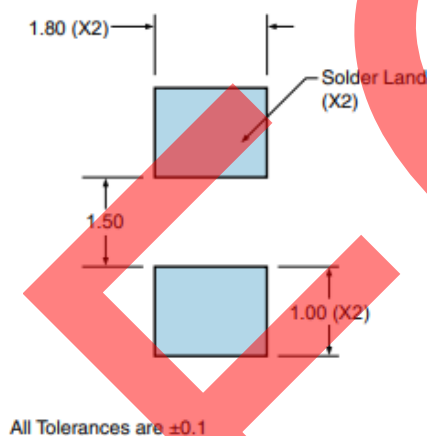
PIN	CONNECTION
1	Crystal
2	Crystal

Seam Sealed

Terminal Plating Thickness: Gold (0.3 to 1.0µm) over Nickel (3.0 to 4.0µm).

Note: Due to material availability, the outline and finish color of the component may vary. This variation in no way affects the electrical performance of the product.

SUGGESTED SOLDER PAD LAYOUT



All Dimensions in Millimeters

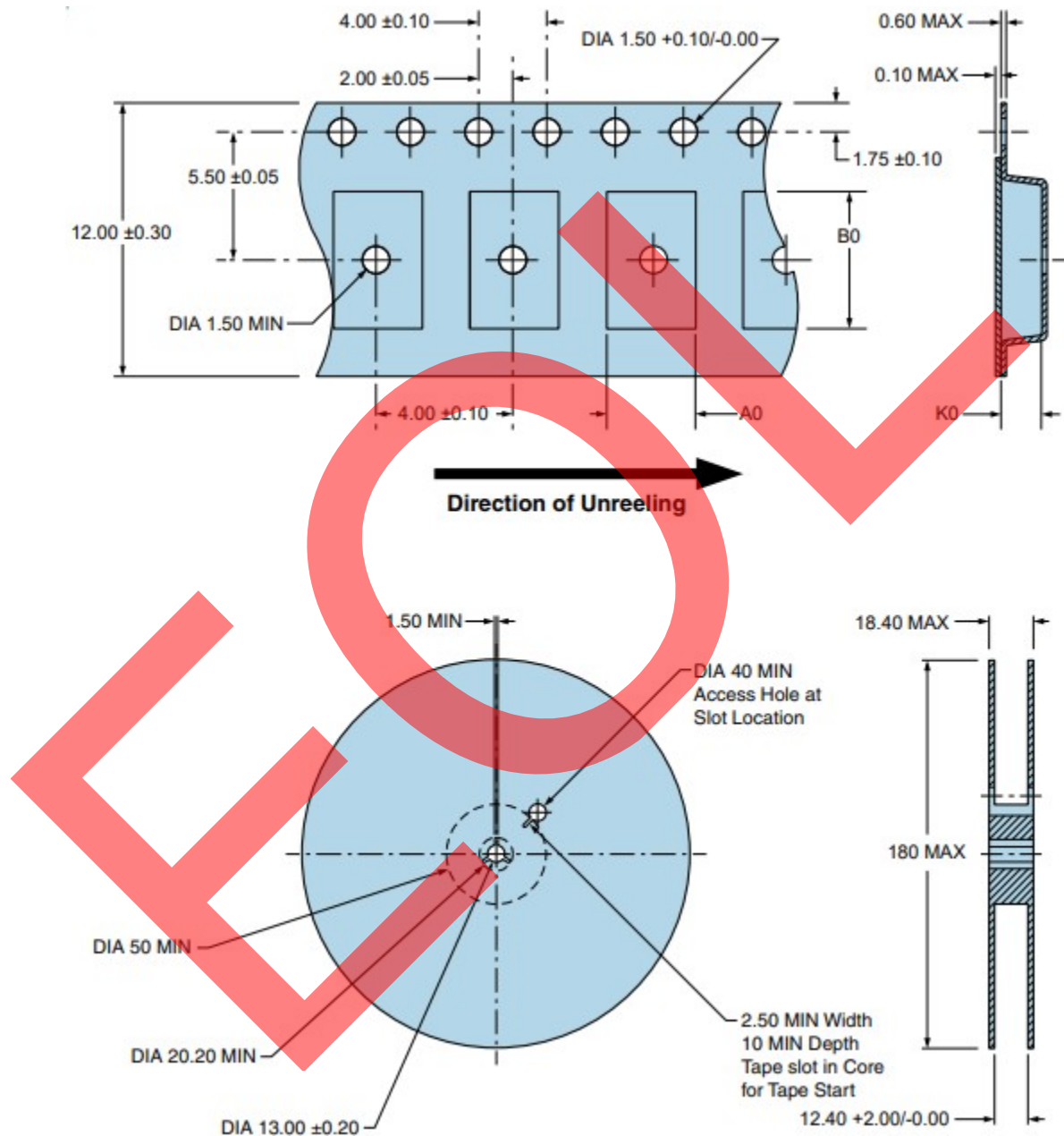
E8WS Series

TAPE & REEL DIMENSIONS

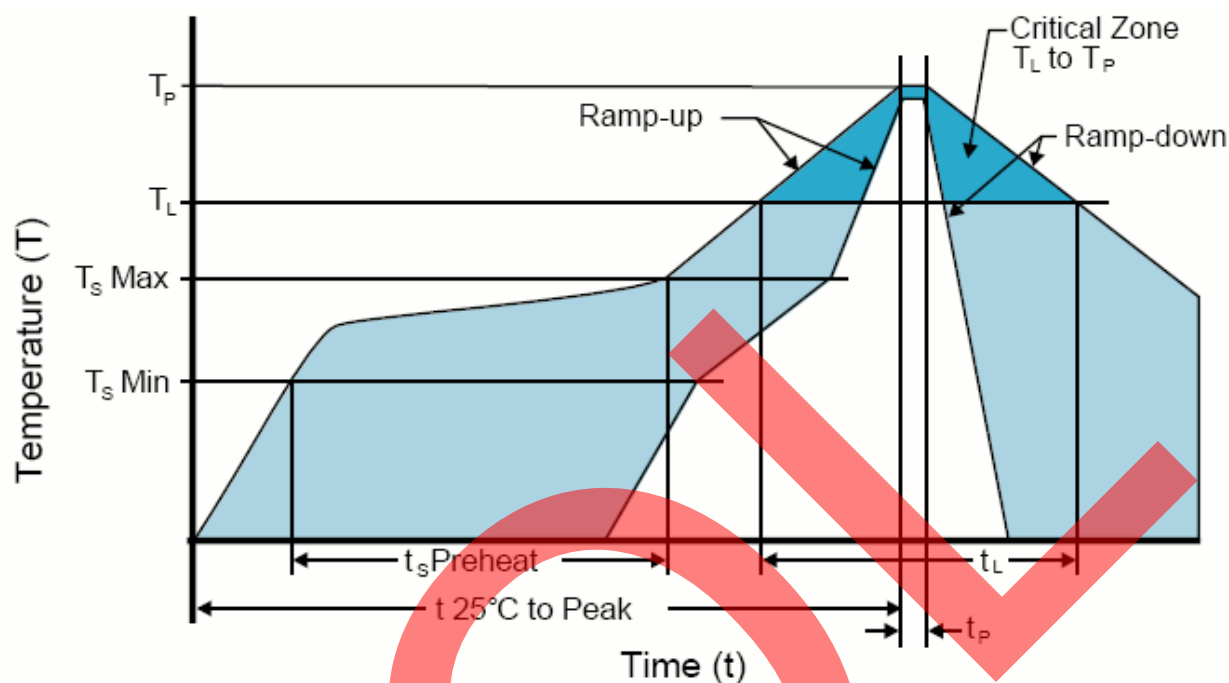
Quantity per Reel: 3000 Units

All Dimensions in Millimeters

Compliant to EIA-481



RECOMMENDED SOLDER REFLOW METHOD



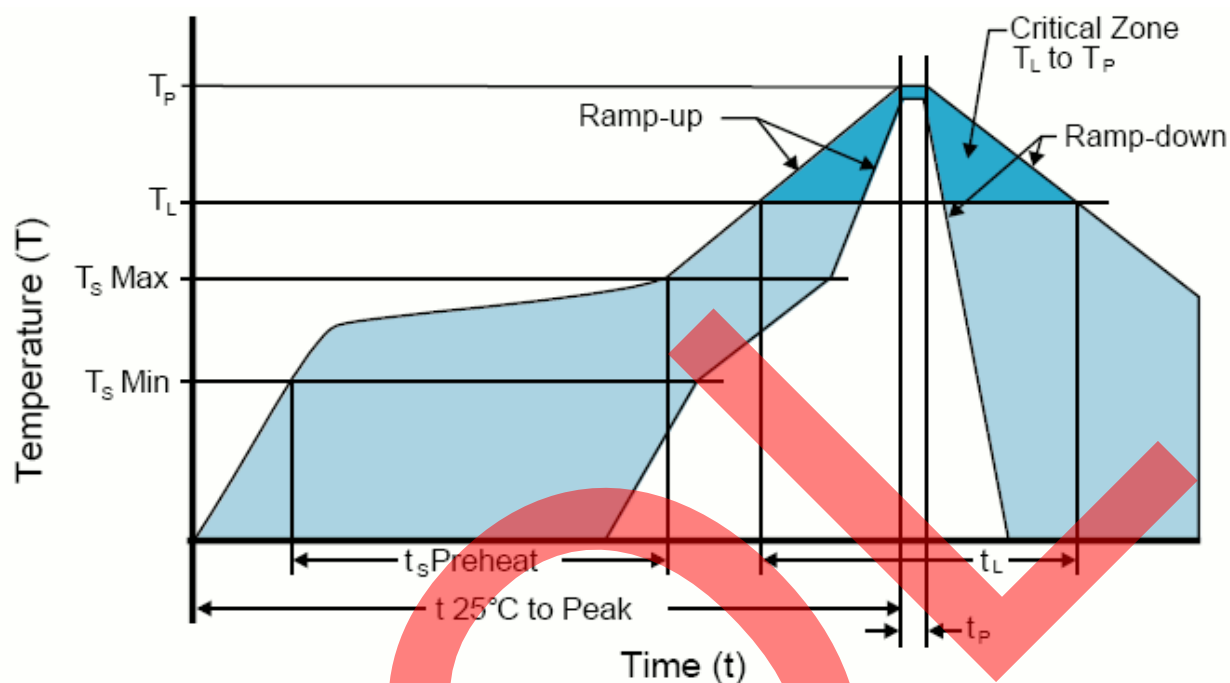
HIGH TEMPERATURE INFRARED/CONVECTION

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.)