

# E1SJA20-9.8438M TR



## ITEM DESCRIPTION

Quartz Crystal Resonator HC49/UP Short 2 Pad Surface Mount (SMD) 3.2mm Height Metal Resistance Weld Seal 9.8438MHz  $\pm 15\text{ppm}$  at 25°C,  $\pm 30\text{ppm}$  over -40°C to +85°C 20pF Parallel Resonant

## ELECTRICAL SPECIFICATIONS

|                               |                                                                    |
|-------------------------------|--------------------------------------------------------------------|
| Nominal Frequency             | 9.8438MHz                                                          |
| Frequency Tolerance/Stability | $\pm 15\text{ppm}$ at 25°C, $\pm 30\text{ppm}$ over -40°C to +85°C |
| Aging at 25°C                 | $\pm 5\text{ppm/year}$ Maximum                                     |
| Load Capacitance              | 20pF Parallel Resonant                                             |
| Shunt Capacitance             | 7pF Maximum                                                        |
| Equivalent Series Resistance  | 80 Ohms Maximum                                                    |
| Mode of Operation             | AT-Cut Fundamental                                                 |
| Drive Level                   | 1mWatt Maximum                                                     |
| Storage Temperature Range     | -40°C to +125°C                                                    |
| Insulation Resistance         | 500 Megaohms Minimum (Measured at 100Vdc)                          |

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

|                              |                                               |
|------------------------------|-----------------------------------------------|
| ESD Susceptibility           | MIL-STD-883, Method 3015, Class 1, HBM: 1500V |
| Fine Leak Test               | MIL-STD-883, Method 1014, Condition A         |
| Flammability                 | UL94-V0                                       |
| Gross Leak Test              | MIL-STD-883, Method 1014, Condition C         |
| Mechanical Shock             | MIL-STD-202, Method 213, Condition C          |
| Moisture Resistance          | MIL-STD-883, Method 1004                      |
| Moisture Sensitivity         | J-STD-020, MSL1                               |
| Resistance to Soldering Heat | MIL-STD-202, Method 210, Condition K          |
| Resistance to Solvents       | MIL-STD-202, Method 215                       |
| Solderability                | MIL-STD-883, Method 2003                      |
| Temperature Cycling          | MIL-STD-883, Method 1010, Condition B         |
| Vibration                    | MIL-STD-883, Method 2007, Condition A         |

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MECHANICAL DIMENSIONS (all dimensions in millimeters)

| LINE | MARKING                             |
|------|-------------------------------------|
| 1    | E9.8438M<br>E=EclipseTek Designator |



Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are ±0.1

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## Tape & Reel Dimensions

Quantity Per Reel: 1,000 units

All Dimensions in Millimeters

Compliant to EIA-481



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Recommended Solder Reflow Methods



High Temperature Infrared/Convection

|                                     |                                      |
|-------------------------------------|--------------------------------------|
| Ts MAX to TL (Ramp-up Rate)         | 3°C/Second Maximum                   |
| Preheat                             |                                      |
| - Temperature Minimum (Ts MIN)      | 150°C                                |
| - Temperature Typical (Ts TYP)      | 175°C                                |
| - Temperature Maximum (Ts MAX)      | 200°C                                |
| - Time (ts MIN)                     | 60 - 180 Seconds                     |
| Ramp-up Rate (TL to TP)             | 3°C/Second Maximum                   |
| Time Maintained Above:              |                                      |
| - Temperature (TL)                  | 217°C                                |
| - Time (tL)                         | 60 - 150 Seconds                     |
| Peak Temperature (TP)               | 260°C Maximum for 10 Seconds Maximum |
| Target Peak Temperature (TP Target) | 250°C +0/-5°C                        |
| Time within 5°C of actual peak (tp) | 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                              |

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Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 245°C

|                                            |                     |                                                        |
|--------------------------------------------|---------------------|--------------------------------------------------------|
| <b>Ts MAX to TL (Ramp-up Rate)</b>         |                     | 5°C/Second Maximum                                     |
| <b>Preheat</b>                             |                     |                                                        |
| - Temperature Minimum (Ts MIN)             | N/A                 |                                                        |
| - Temperature Typical (Ts TYP)             | 150°C               |                                                        |
| - Temperature Maximum (Ts MAX)             | N/A                 |                                                        |
| - Time (ts MIN)                            | 30 - 60 Seconds     |                                                        |
| <b>Ramp-up Rate (TL to TP)</b>             |                     | 5°C/Second Maximum                                     |
| <b>Time Maintained Above:</b>              |                     |                                                        |
| - Temperature (TL)                         | 150°C               |                                                        |
| - Time (tL)                                | 200 Seconds Maximum |                                                        |
| <b>Peak Temperature (TP)</b>               |                     | 245°C Maximum                                          |
| <b>Target Peak Temperature (TP Target)</b> |                     | 245°C Maximum 2 Times / 230°C Maximum 1 Time           |
| <b>Time within 5°C of actual peak (tp)</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                                                |

Low Temperature Manual Soldering

185°C Maximum for 10 Seconds Maximum, 2 times Maximum.

High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum.