

**EC1F-4.194304M**
[Click part number to visit Part Number Details page](#)
**REGULATORY COMPLIANCE** (Data Sheet downloaded on Oct 26, 2016)**ITEM DESCRIPTION**

Quartz Crystal Resonator HC49/US Short Thru-Hole 2.5mm Height Metal Resistance Weld Seal 4.194304MHz  $\pm 15$ ppm at 25°C,  $\pm 30$ ppm over 0°C to +70°C 18pF Parallel Resonant

**ELECTRICAL SPECIFICATIONS**

|                               |                                                      |
|-------------------------------|------------------------------------------------------|
| Nominal Frequency             | 4.194304MHz                                          |
| Frequency Tolerance/Stability | $\pm 15$ ppm at 25°C, $\pm 30$ ppm over 0°C to +70°C |
| Aging at 25°C                 | $\pm 5$ ppm/year Maximum                             |
| Load Capacitance              | 18pF Parallel Resonant                               |
| Shunt Capacitance (C0)        | 7pF Maximum                                          |
| Equivalent Series Resistance  | 200 Ohms Maximum                                     |
| Mode of Operation             | AT-Cut Fundamental                                   |
| Drive Level                   | 1mWatt Maximum                                       |
| Storage Temperature Range     | -40°C to +85°C                                       |
| Insulation Resistance         | 500 Megaohms Minimum at 100Vdc                       |

**ENVIRONMENTAL & MECHANICAL SPECIFICATIONS**

|                              |                                      |
|------------------------------|--------------------------------------|
| Fine Leak Test               | MIL-STD-883, Method 1014 Condition A |
| Gross Leak Test              | MIL-STD-883, Method 1014 Condition C |
| Lead Integrity               | MIL-STD-883, Method 2004             |
| Mechanical Shock             | MIL-STD-202, Method 213 Condition C  |
| Resistance to Soldering Heat | MIL-STD-202, Method 210              |
| Resistance to Solvents       | MIL-STD-202, Method 215              |
| Solderability                | MIL-STD-883, Method 2003             |
| Temperature Cycling          | MIL-STD-883, Method 1010             |
| Vibration                    | MIL-STD-883, Method 2007 Condition A |

EC1F-4.194304M

 Click part number to visit  
Part Number Details page

MECHANICAL DIMENSIONS (all dimensions in millimeters)

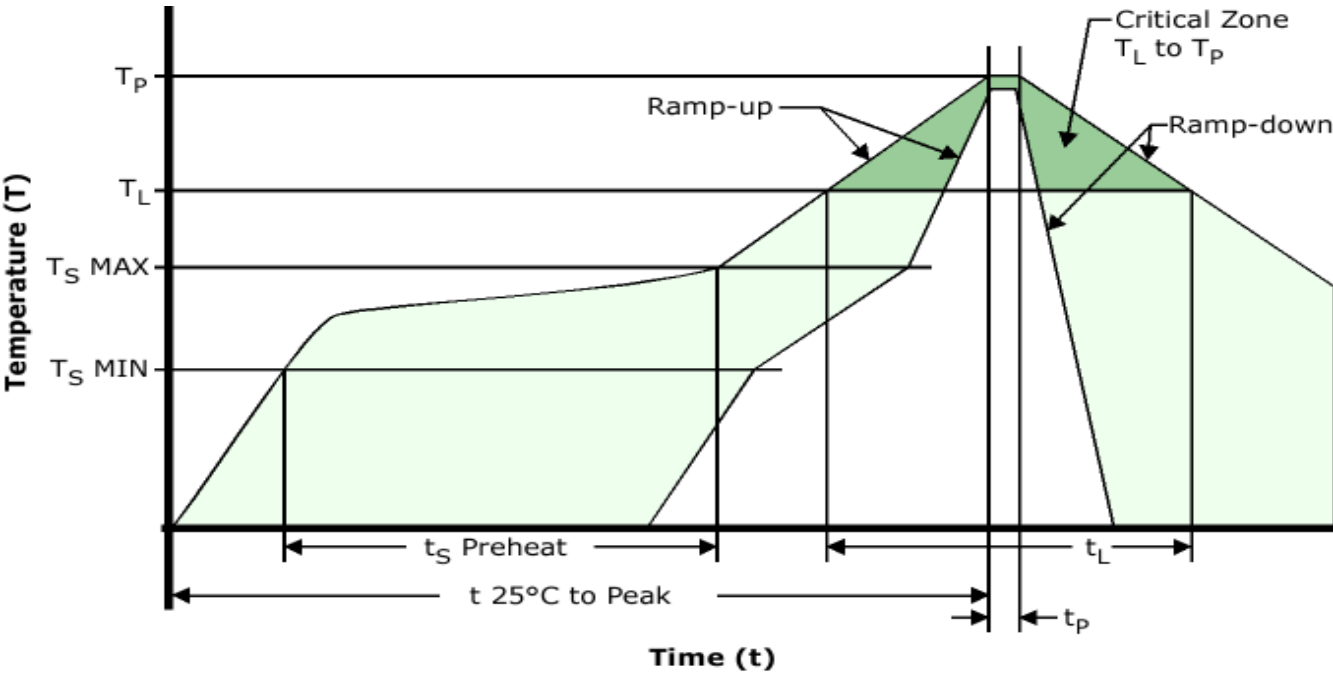
| LINE | MARKING                                                                                 |
|------|-----------------------------------------------------------------------------------------|
| 1    | <b>E4.1943M</b><br><i>E=EclipseTek Designator</i><br><i>M=Frequency Unit of Measure</i> |



EC1F-4.194304M

 Click part number to visit  
Part Number Details page

Recommended Solder Reflow Methods



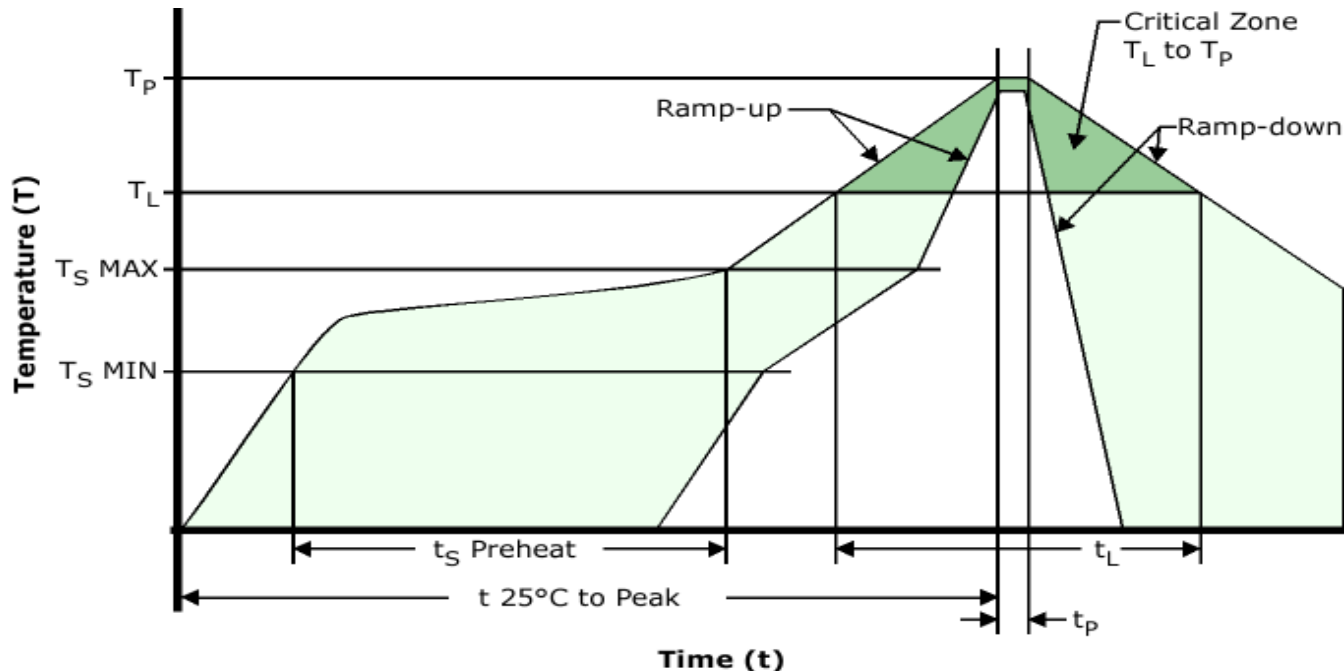
High Temperature Solder Bath (Wave Solder)

|                                     |                                      |
|-------------------------------------|--------------------------------------|
| 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                              |

# EC1F-4.194304M

[Click part number to visit Part Number Details page](#)

## Recommended Solder Reflow Methods



## Low Temperature Solder Bath (Wave Solder)

T<sub>S</sub> MAX to T<sub>L</sub> (Ramp-up Rate) 5°C/Second Maximum

### Preheat

- 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> MIN) 30 - 60 Seconds

Ramp-up Rate (T<sub>L</sub> to T<sub>P</sub>) 5°C/Second Maximum

### Time Maintained Above:

- Temperature (T<sub>L</sub>) 150°C
- Time (t<sub>L</sub>) 200 Seconds Maximum

Peak Temperature (T<sub>P</sub>) 245°C Maximum

Target Peak Temperature (T<sub>P</sub> Target) 245°C Maximum 1 Time / 235°C Maximum 2 Times

Time within 5°C of actual peak (t<sub>p</sub>) 5 Seconds Maximum 1 Time / 15 Seconds Maximum 2 Times

Ramp-down Rate 5°C/Second Maximum

Time 25°C to Peak Temperature (t) N/A

Moisture Sensitivity Level 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.