

# EB52F3E50N-9.8304M



## ITEM DESCRIPTION

Temperature Compensated Quartz Crystal Clock Oscillators TCXO LVCMOS (CMOS) 3.3Vdc 14-Pin DIP Metal Thru-Hole 9.8304MHz  $\pm 5.0$ ppm Maximum -40°C to +85°C

## ELECTRICAL SPECIFICATIONS

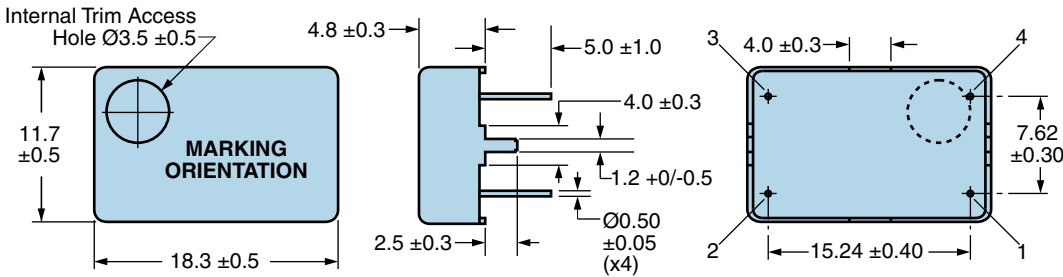
|                                       |                                                                                                                                                            |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal Frequency                     | 9.8304MHz                                                                                                                                                  |
| Frequency Stability                   | $\pm 5.0$ ppm Maximum (Inclusive of Operating Temperature Range)                                                                                           |
| Frequency Stability vs. Input Voltage | $\pm 0.3$ ppm Maximum ( $\pm 5\%$ )                                                                                                                        |
| Frequency Stability vs. Load          | $\pm 0.2$ ppm Maximum ( $\pm 2$ pF)                                                                                                                        |
| Frequency Stability vs. Aging         | $\pm 1$ ppm/Year Maximum (at 25°C)                                                                                                                         |
| Operating Temperature Range           | -40°C to +85°C                                                                                                                                             |
| Supply Voltage                        | 3.3Vdc $\pm 5\%$                                                                                                                                           |
| Input Current                         | 10mA Maximum                                                                                                                                               |
| Output Voltage Logic High (Voh)       | 90% of Vdd Minimum                                                                                                                                         |
| Output Voltage Logic Low (Vol)        | 10% of Vdd Maximum                                                                                                                                         |
| Rise/Fall Time                        | 10nSec Maximum (Measured at 20% to 80% of waveform)                                                                                                        |
| Duty Cycle                            | 50 $\pm 10$ (%) (Measured at 50% of waveform)                                                                                                              |
| Load Drive Capability                 | 15pF Maximum                                                                                                                                               |
| Output Logic Type                     | CMOS                                                                                                                                                       |
| Control Voltage                       | None (No Connect on Pin 1)                                                                                                                                 |
| Internal Trim                         | $\pm 3$ ppm Minimum (Top of Can)                                                                                                                           |
| Modulation Bandwidth                  | 10kHz Minimum (Measured at -3dB with a Control Voltage of 1.65Vdc)                                                                                         |
| Input Impedance                       | 10kOhms Typical                                                                                                                                            |
| Phase Noise                           | -70dBc at 10Hz Offset<br>-100dBc at 100Hz Offset<br>-130dBc at 1kHz Offset<br>-140dBc at 10kHz Offset<br>-145dBc at 100kHz Offset (All Values are Typical) |
| Storage Temperature Range             | -40°C to +85°C                                                                                                                                             |

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

|                              |                                                              |
|------------------------------|--------------------------------------------------------------|
| Fine Leak Test               | MIL-STD-883, Method 1014 Condition A (Internal Crystal Only) |
| Gross Leak Test              | MIL-STD-883, Method 1014 Condition C (Internal Crystal Only) |
| 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                         |

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MECHANICAL DIMENSIONS (all dimensions in millimeters)

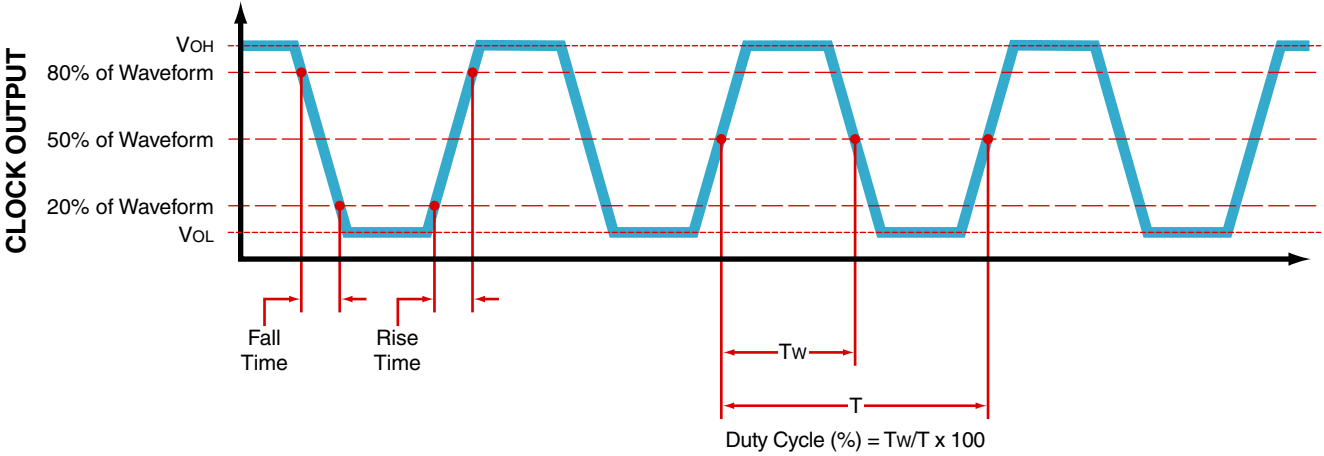


| PIN | CONNECTION     |
|-----|----------------|
| 1   | No Connect     |
| 2   | Case/Ground    |
| 3   | Output         |
| 4   | Supply Voltage |

| LINE | MARKING                                               |
|------|-------------------------------------------------------|
| 1    | ECLIPTEK                                              |
| 2    | 9.8304M                                               |
| 3    | XXXXXX<br>XXXXXX=Ecliptek<br>Manufacturing Identifier |

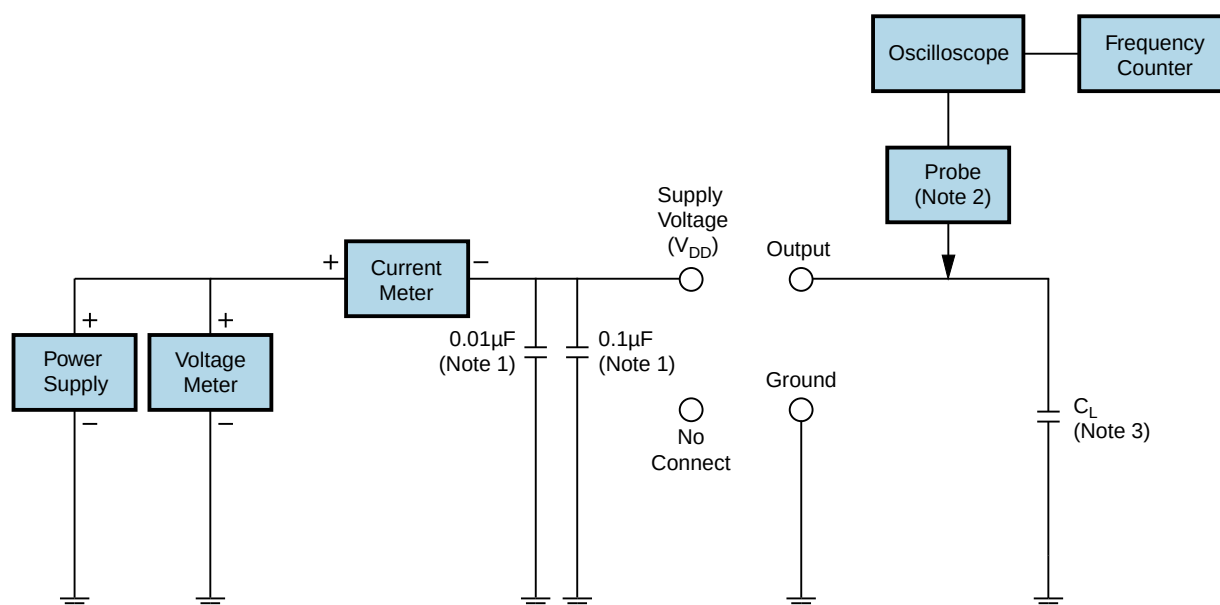
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OUTPUT WAVEFORM



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## Test Circuit for No Connect Option



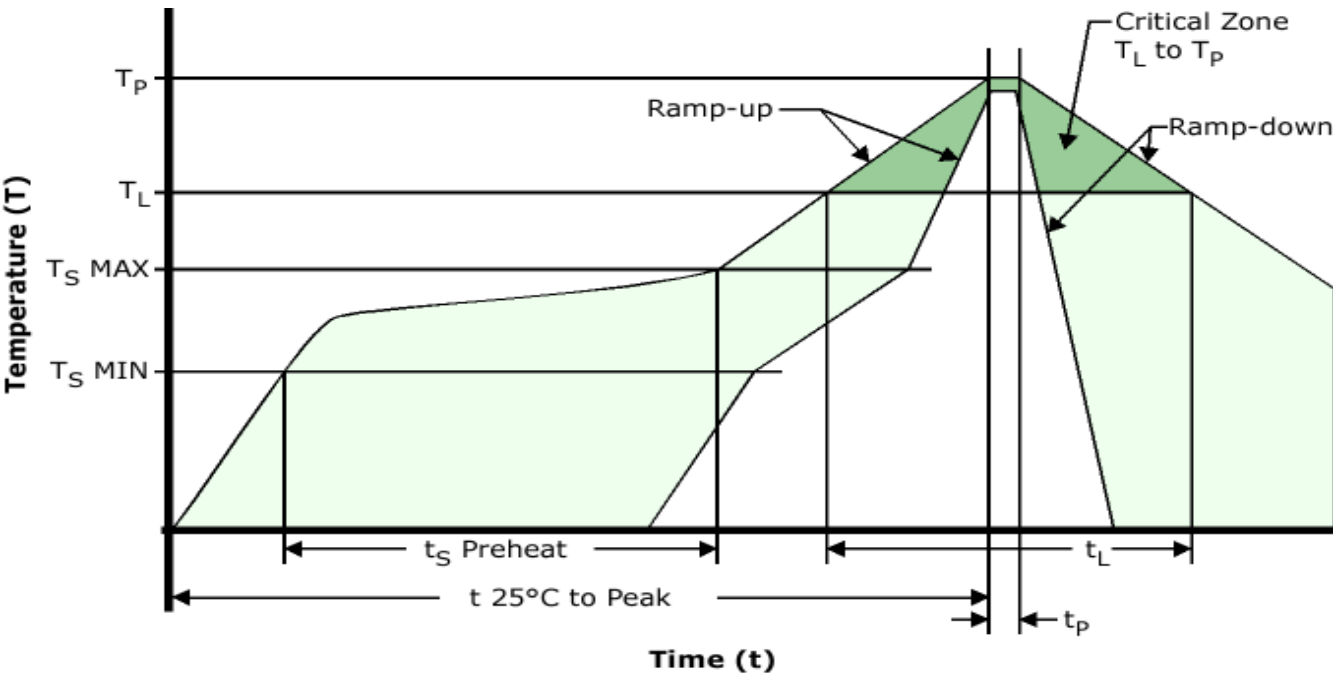
Note 1: An external 0.01µF ceramic bypass capacitor in parallel with a 0.1µF high frequency ceramic bypass capacitor close (less than 2mm) to the package ground and supply voltage pin is required.

Note 2: A low capacitance (<12pF), 10X attenuation factor, high impedance (>10Mohms), and high bandwidth (>300MHz) passive probe is recommended.

Note 3: Capacitance value  $C_L$  includes sum of all probe and fixture capacitance.

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Recommended Solder Reflow Methods



Low Temperature Solder Bath (Wave Solder)

|                                     |                                                       |
|-------------------------------------|-------------------------------------------------------|
| Ts MAX to Tl (Ramp-up Rate)         | 5°C/Second Maximum                                    |
| Preheat                             |                                                       |
| - Temperature Minimum (Ts MIN)      | N/A                                                   |
| - Temperature Typical (Ts TYP)      | 150°C                                                 |
| - Temperature Maximum (Ts MAX)      | N/A                                                   |
| - Time (ts MIN)                     | 30 - 60 Seconds                                       |
| Ramp-up Rate (Tl to Tp)             | 5°C/Second Maximum                                    |
| Time Maintained Above:              |                                                       |
| - Temperature (Tl)                  | 150°C                                                 |
| - Time (tL)                         | 200 Seconds Maximum                                   |
| Peak Temperature (Tp)               | 245°C Maximum                                         |
| Target Peak Temperature (Tp Target) | 245°C Maximum 1 Time / 235°C Maximum 2 Times          |
| Time within 5°C of actual peak (tp) | 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. (Temperatures listed are applied to device leads only.)

High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum. (Temperatures listed are applied to device leads only.)

Low Temperature Solder Bath (Wave Solder) Note 1

Device is non-hermetic; Post reflow aqueous wash is not recommended

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**Low Temperature Solder Bath (Wave Solder) Note 2**

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Temperatures shown are applied to back of PCB board and device leads only.