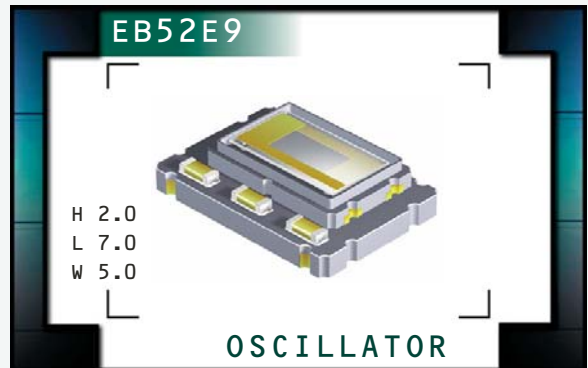


# EB52E9 Series



- Temperature Compensated Crystal Oscillators (TCXO)
- LVCMOS Output
- +3.3V Supply Voltage
- Stratum 3
- External Voltage Control Option
- 10 Pad Ceramic SMD Package
- RoHS Compliant (Pb-Free)



## ELECTRICAL SPECIFICATIONS

|  |  |                                 |
|--|--|---------------------------------|
| <b>Nominal Frequency (MHz)</b>   | 6.400, 6.500, 9.720, 10.000, 12.800, 13.000  |                                 |
| <b>Frequency Stability</b>   | vs. Operating Temperature Range ( $V_{DD} = 3.3V_{DC}$ , $V_C = 1.65V_{DC}$ )  | $\pm 0.28$ ppm Maximum          |
| <b>Total Holdover Stability</b>  | Inclusive of Frequency Stability and 24 Hours Aging  | $\pm 0.37$ ppm Maximum          |
| <b>Total Frequency Tolerance</b>   | Inclusive of Frequency Tolerance, Frequency Stability, $V_{DD}$ ( $\pm 1\%$ ), Load ( $\pm 5\%$ ), Solder Reflow, and 20 Years Aging | $\pm 4.6$ ppm Maximum           |
| <b>Operating Temperature Range</b>   | See Part Numbering Guide   |                                 |
| <b>Supply Voltage (<math>V_{DD}</math>)</b>                                  | $3.3V_{DC} \pm 5\%$  |                                 |
| <b>Input Current</b>   | 10mA Maximum   |                                 |
| <b>Output Voltage Logic High (<math>V_{OH}</math>)</b>                       | $I_{OH} = -4mA$  | 90% of $V_{DD}$ Minimum         |
| <b>Output Voltage Logic Low (<math>V_{OL}</math>)</b>                        | $I_{OL} = +4mA$  | 10% of $V_{DD}$ Maximum         |
| <b>Rise/Fall Time</b>  | Measured at 20% to 80% of Waveform   | 5nSec Maximum                   |
| <b>Duty Cycle</b>  | Measured at 50% of Waveform  | 50 $\pm 5$ (%) Maximum          |
| <b>Load Drive Capability</b>   | 15pF Maximum   |                                 |
| <b>External Trim (Control Voltage Option)</b>                                | $1.65V_{DC} \pm 1.65V_{DC}$ : Positive Transfer Characteristic   | $\pm 5$ ppm Minimum             |
| <b>Control Voltage Range</b>   | $0.0V_{DC}$ to $V_{DD}$  |                                 |
| <b>Linearity</b>   | 5% Maximum   |                                 |
| <b>Input Impedance</b>   | 100kOhms Minimum   |                                 |
| <b>Typical Phase Noise (at 12.800MHz)</b>                                    | At offset of 10Hz  | -80dBc/Hz                       |
|  | At offset of 100Hz   | -115dBc/Hz                      |
|  | At offset of 1kHz  | -135dBc/Hz                      |
|  | At offset of $\geq 10$ kHz   | -145dBc/Hz                      |
| <b>Tri-State Input Voltage (<math>V_{IH}</math> and <math>V_{IL}</math>)</b> | No Connect   | Enables Output                  |
|  | +0.9 $V_{DD}$ Minimum  | Enables Output                  |
|  | +0.1 $V_{DD}$ Maximum  | Disables Output: High Impedance |
| <b>RMS Phase Jitter</b>  | $F_J = 12kHz$ to 20MHz   | 1pSec Maximum                   |
| <b>Start Up Time</b>   | 5mSec Maximum  |                                 |
| <b>Storage Temperature Range</b>   | $-40^\circ C$ to $125^\circ C$   |                                 |

| MANUFACTURER   | CATEGORY   | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|----------------|------------|--------|---------|---------|-------|-----------|
| ECLIPTEK CORP. | OSCILLATOR | EB52E9 | CERAMIC | 3.3V    | OS5Q  | 07/07     |

## PART NUMBERING GUIDE

### EB52E9 C 1 V - 13.000M TR

#### OPERATING TEMPERATURE RANGE

B=-10°C to 60°C  
C=-20°C to 70°C

#### PACKAGING OPTIONS

Blank=Bulk  
TR=Tape & Reel

#### FREQUENCY STABILITY

1 = ±0.28ppm Maximum

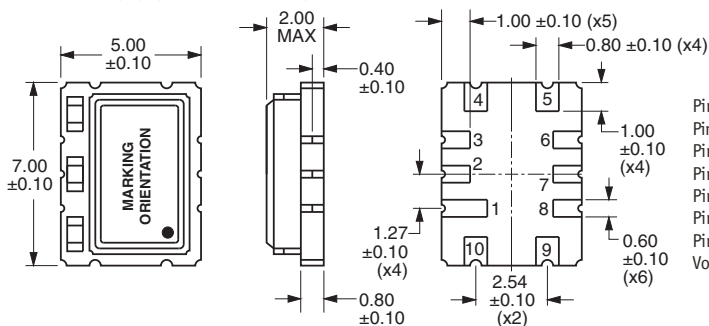
#### FREQUENCY

#### EXTERNAL TRIM

N=None (No Connection on Pad 10)  
V=Voltage Control

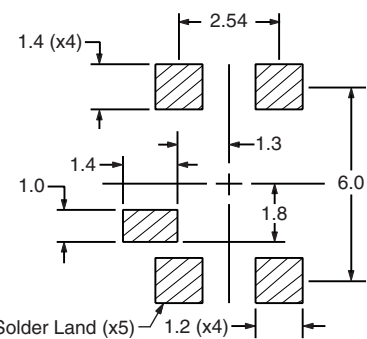
#### MECHANICAL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS



#### SUGGESTED SOLDER PAD LAYOUT

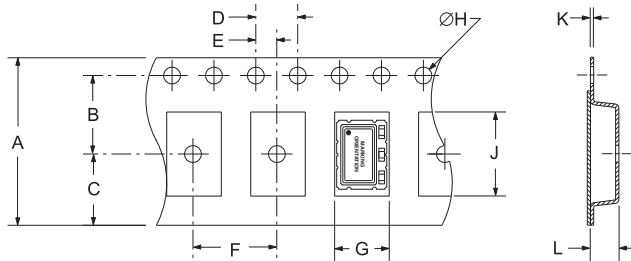
ALL DIMENSIONS IN MILLIMETERS



Tolerances= ±0.1

#### TAPE AND REEL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS



| TAPE    | A        | B           | C        | D          | E       |
|---------|----------|-------------|----------|------------|---------|
|         | 16.0±0.2 | 7.5±0.1     | 6.75±0.1 | 4.0±0.1    | 2.0±0.1 |
| F       | G        | H           | J        | K          | L       |
| 8.0±0.1 | B0*      | 1.5+0.1-0.0 | A0*      | 0.32 ±0.05 | K0*     |

| REEL    | M       | N        | O        | P        | Q        |
|---------|---------|----------|----------|----------|----------|
|         | 1.5 MIN | 50 MIN   | 20.2 MIN | 13.0±0.2 | 40 MIN   |
| R       | S       | T        | U        | V        | QTY/REEL |
| 2.5 MIN | 10 MIN  | 22.4 MAX | 360 MAX  | 16.4±2-0 | 1,000    |

\*Compliant to EIA 481A

#### ENVIRONMENTAL/MECHANICAL SPECIFICATIONS

##### Characteristic

Fine Leak Test  
Gross Leak Test  
Mechanical Shock  
Vibration  
Solderability  
Temperature Cycling  
Resistance to Soldering Heat  
Resistance to Solvents

##### Specification

MIL-STD-883, Method 1014, Condition A  
MIL-STD-883, Method 1014, Condition C  
MIL-STD-202, Method 213, Condition C  
MIL-STD-883, Method 2007, Condition A  
MIL-STD-883, Method 2003  
MIL-STD-883, Method 1010  
MIL-STD-202, Method 210  
MIL-STD-202, Method 215

#### MARKING SPECIFICATIONS

Line 1: E XX.XXX  
Frequency in MHz (5 Digits Maximum + Decimal)

Line 2: XX Y ZZ  
Week of Year  
Last Digit of Year  
Ecliptek Manufacturing Identifier

| MANUFACTURER   | CATEGORY   | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|----------------|------------|--------|---------|---------|-------|-----------|
| ECLIPTEK CORP. | OSCILLATOR | EB52E9 | CERAMIC | 3.3V    | OS5Q  | 07/07     |