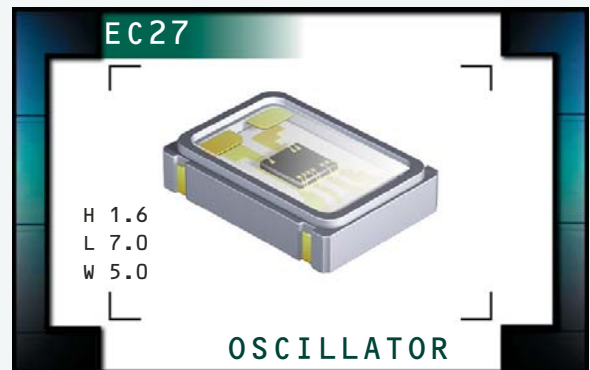


# EC27 Series



**ECLIPTEK**<sup>®</sup>  
CORPORATION

- RoHS Compliant (Pb-Free)
- LVHCMOS output
- 2.5V Supply Voltage
- Ceramic SMD package
- Stability to  $\pm 20$ ppm
- Standby Function
- Available on Tape and Reel



## ELECTRICAL SPECIFICATIONS

|  |   |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
|--|---|---|----------------------------|--|---------------------------|--|---------------------------------|------------------------|--------------|------------------------|--------------|-------------------------|--------------|--------------------------|--------------|--------------------------|--------------|
| <b>Frequency Range (F<sub>0</sub>)</b>                             | 1.544MHz to 125.000MHz, 125.009MHz, 125.00937MHz, 125.010MHz, 127.000MHz, 128.000MHz, 130.000MHz, 132.000MHz, 133.000MHz, 133.333MHz, 137.472MHz, 142.850MHz, and 150.000MHz  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Operating Temperature Range (OTR)</b>                           | 0°C to 70°C or -40°C to 85°C  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Storage Temperature Range (STR)</b>                             | -55°C to 125°C  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Supply Voltage (V<sub>DD</sub>)</b>                             | 2.5V <sub>DC</sub> $\pm 5\%$  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Input Current (I<sub>DD</sub>)</b>                              | <table border="0"> <tr> <td>1.544MHz to 9.999MHz</td> <td>3mA Maximum</td> </tr> <tr> <td>10.000MHz to 24.999MHz</td> <td>5mA Maximum</td> </tr> <tr> <td>25.000MHz to 34.999MHz</td> <td>8mA Maximum</td> </tr> <tr> <td>35.000MHz to 49.999MHz</td> <td>15mA Maximum</td> </tr> <tr> <td>50.000MHz to 69.999MHz</td> <td>20mA Maximum</td> </tr> <tr> <td>70.000MHz to 110.000MHz</td> <td>25mA Maximum</td> </tr> <tr> <td>110.001MHz to 125.000MHz</td> <td>35mA Maximum</td> </tr> <tr> <td>125.001MHz to 150.000MHz</td> <td>45mA Maximum</td> </tr> </table> | 1.544MHz to 9.999MHz                      | 3mA Maximum                | 10.000MHz to 24.999MHz   | 5mA Maximum               | 25.000MHz to 34.999MHz                           | 8mA Maximum                     | 35.000MHz to 49.999MHz | 15mA Maximum | 50.000MHz to 69.999MHz | 20mA Maximum | 70.000MHz to 110.000MHz | 25mA Maximum | 110.001MHz to 125.000MHz | 35mA Maximum | 125.001MHz to 150.000MHz | 45mA Maximum |
| 1.544MHz to 9.999MHz   | 3mA Maximum   |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 10.000MHz to 24.999MHz   | 5mA Maximum   |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 25.000MHz to 34.999MHz   | 8mA Maximum   |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 35.000MHz to 49.999MHz   | 15mA Maximum  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 50.000MHz to 69.999MHz   | 20mA Maximum  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 70.000MHz to 110.000MHz  | 25mA Maximum  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 110.001MHz to 125.000MHz   | 35mA Maximum  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 125.001MHz to 150.000MHz   | 45mA Maximum  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Frequency Tolerance/Stability</b>                               | Inclusive of all conditions: Calibration Tolerance at 25°C, $\pm 100$ ppm, $\pm 50$ ppm, $\pm 25$ ppm, Frequency Stability over the Operating Temperature Range, or $\pm 20$ ppm, Supply Voltage Change, Output Load Change, First Year Aging at 25°C, Shock, and Vibration   |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Output Voltage Logic High (V<sub>OH</sub>)</b>                  | 90% of V <sub>DD</sub> Minimum I <sub>OH</sub> =-8mA  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Output Voltage Logic Low (V<sub>OL</sub>)</b>                   | 10% of V <sub>DD</sub> Maximum I <sub>OL</sub> =+8mA  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Rise Time / Fall Time (T<sub>R</sub>/T<sub>F</sub>)</b>         | <table border="0"> <tr> <td>20% to 80% of Waveform, 1.544MHz to 24MHz</td> <td>6 nSeconds Maximum</td> </tr> <tr> <td>20% to 80% of Waveform, 24.001MHz to 110MHz</td> <td>4 nSeconds Maximum</td> </tr> <tr> <td>20% to 80% of Waveform, 110.001MHz to 150MHz</td> <td>2 nSeconds Maximum</td> </tr> </table>  | 20% to 80% of Waveform, 1.544MHz to 24MHz | 6 nSeconds Maximum         | 20% to 80% of Waveform, 24.001MHz to 110MHz                        | 4 nSeconds Maximum        | 20% to 80% of Waveform, 110.001MHz to 150MHz     | 2 nSeconds Maximum              |                        |              |                        |              |                         |              |                          |              |                          |              |
| 20% to 80% of Waveform, 1.544MHz to 24MHz                          | 6 nSeconds Maximum  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 20% to 80% of Waveform, 24.001MHz to 110MHz                        | 4 nSeconds Maximum  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 20% to 80% of Waveform, 110.001MHz to 150MHz                       | 2 nSeconds Maximum  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Duty Cycle (SYM)</b>  | <table border="0"> <tr> <td>50% of Waveform</td> <td>50 <math>\pm 10</math>(%) (Standard)</td> </tr> <tr> <td>50% of Waveform (at 25°C, at V<sub>DD</sub>=2.5Vdc over &gt;125MHz)</td> <td>50 <math>\pm 5</math>(%) (Optional)</td> </tr> </table>  | 50% of Waveform                           | 50 $\pm 10$ (%) (Standard) | 50% of Waveform (at 25°C, at V <sub>DD</sub> =2.5Vdc over >125MHz) | 50 $\pm 5$ (%) (Optional) |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 50% of Waveform  | 50 $\pm 10$ (%) (Standard)  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| 50% of Waveform (at 25°C, at V <sub>DD</sub> =2.5Vdc over >125MHz) | 50 $\pm 5$ (%) (Optional)   |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Load Drive Capability (C<sub>LOAD</sub>)</b>                    | 15pF HCMOS Load Maximum   |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Tri-State Input Voltage</b>                                     | <table border="0"> <tr> <td>No Connection</td> <td>Enables Output</td> </tr> <tr> <td>V<sub>IH</sub>: <math>\geq 90\%</math> of V<sub>DD</sub></td> <td>Enables Output</td> </tr> <tr> <td>V<sub>IL</sub>: <math>\leq 10\%</math> of V<sub>DD</sub></td> <td>Disables Output: High Impedance</td> </tr> </table>  | No Connection                             | Enables Output             | V <sub>IH</sub> : $\geq 90\%$ of V <sub>DD</sub>                   | Enables Output            | V <sub>IL</sub> : $\leq 10\%$ of V <sub>DD</sub> | Disables Output: High Impedance |                        |              |                        |              |                         |              |                          |              |                          |              |
| No Connection  | Enables Output  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| V <sub>IH</sub> : $\geq 90\%$ of V <sub>DD</sub>                   | Enables Output  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| V <sub>IL</sub> : $\leq 10\%$ of V <sub>DD</sub>                   | Disables Output: High Impedance   |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Standby Current</b>   | Disabled Output: High Impedance<br>10 $\mu$ A Maximum   |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Aging (at 25°C)</b>   | $\pm 5$ ppm/year Maximum  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>Start Up Time (T<sub>S</sub>)</b>                               | 10 mSeconds Maximum   |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |
| <b>RMS Phase Jitter</b>  | 12kHz to 20MHz offset frequency<br>1pSeconds Maximum  |   |                            |  |                           |  |                                 |                        |              |                        |              |                         |              |                          |              |                          |              |

MANUFACTURER  
ECLIPTEK CORP.

CATEGORY  
OSCILLATOR

SERIES  
EC27

PACKAGE  
CERAMIC

VOLTAGE  
2.5V

CLASS  
OS52

REV. DATE  
11/06

## PART NUMBERING GUIDE

### EC27 00 ET TS - 30.000M TR

#### FREQUENCY TOLERANCE / STABILITY

00=±100ppm Maximum (Standard)  
 45=±50ppm Maximum, 25=±25ppm Maximum  
 20=±20ppm Maximum

#### OPERATING TEMPERATURE RANGE

Blank=0°C to 70°C (Standard)  
 ET=-40°C to 85°C

#### PACKAGING OPTIONS

Blank=Bulk (Standard)  
 TR=Tape and Reel

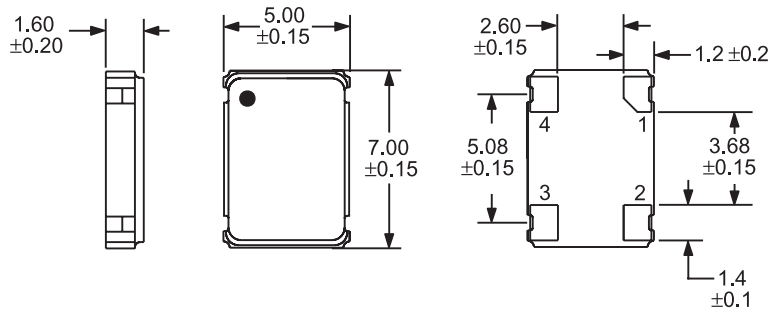
#### FREQUENCY

#### DUTY CYCLE

Blank=50±10%(%) (Standard)  
 T=50±5(%)

#### MECHANICAL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS

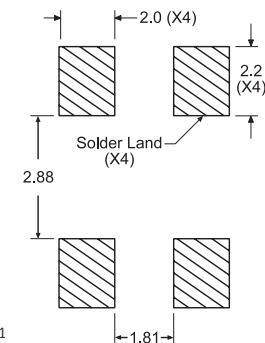


Pin 1: Tri-State  
 Pin 2: Case Ground

Pin 3: Output  
 Pin 4: Supply Voltage

#### SUGGESTED SOLDER PAD LAYOUT

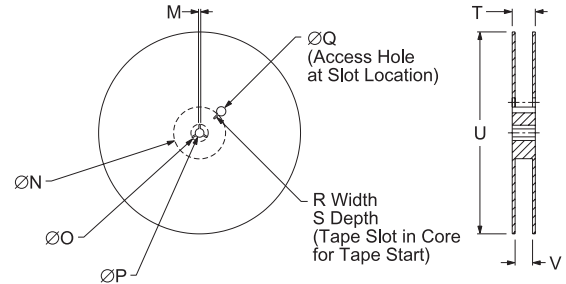
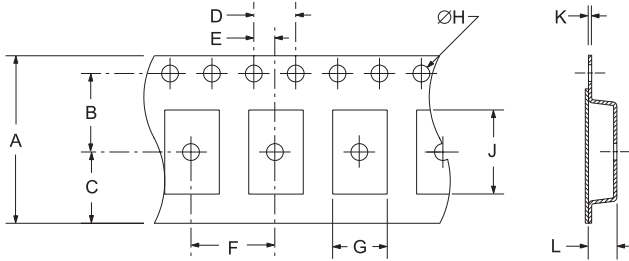
ALL DIMENSIONS IN MILLIMETERS



Tolerances=±0.1

#### TAPE AND REEL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS



| TAPE | A        | B         | C       | D      | E    |
|------|----------|-----------|---------|--------|------|
|      | 16±.3-.1 | 7.5±.1    | 6.75±.1 | 4±.1   | 2±.1 |
| F    | G        | H         | J       | K      | L    |
| 8±.1 | B0*      | 1.5+-.1-0 | A0*     | .3±.05 | K0*  |

| REEL    | M       | N        | O        | P        | Q        |
|---------|---------|----------|----------|----------|----------|
|         | 1.5 MIN | 50 MIN   | 20.2 MIN | 13±.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 2002  
 MIL-STD-883, Method 1010  
 MIL-STD-202, Method 210  
 MIL-STD-202, Method 215

#### MARKING SPECIFICATIONS

Line 1: ECLIPTEK

Line 2: XX.XXX M

Frequency in MHz (5 Digits Maximum + Decimal)

Line 3: XXY ZZ

Week of Year  
 Last Digit of Year  
 Ecliptek Manufacturing Identifier

| MANUFACTURER   | CATEGORY   | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|----------------|------------|--------|---------|---------|-------|-----------|
| ECLIPTEK CORP. | OSCILLATOR | EC27   | CERAMIC | 2.5V    | OS52  | 11/06     |



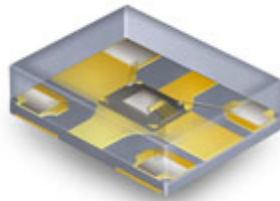
**ECLIPTEK<sup>®</sup>**  
CORPORATION

**Ecliptek**  
MEMS Oscillators

### **Ecliptek MEMS Oscillators**

*- Lower Cost, Quicker Delivery Alternative!*

The EMO™ family of oscillators offers exceptional performance, shorter delivery and significant cost advantages by utilizing a revolutionary new MEMS resonator technology. This important innovation enables Ecliptek to offer the ultimate in flexibility with delivery of 2 days for samples and 5 to 10 days for quantities up to 10,000 pieces on tape and reel.



| Supply Voltage<br>(V <sub>DC</sub> ) | Package Dimensions<br>(all dimensions in millimeters) |                       |                       |                       |
|--------------------------------------|---|-----------------------|-----------------------|-----------------------|
|                                      | 5 x 7   | 3.2 x 5               | 2.5 x 3.2             | 2 x 2.5               |
| 1.8                                  | <a href="#">EMK11</a>                                 | <a href="#">EMK21</a> | <a href="#">EMK31</a> | <a href="#">EMK41</a> |
| 2.5                                  | <a href="#">EMK12</a>                                 | <a href="#">EMK22</a> | <a href="#">EMK32</a> | <a href="#">EMK42</a> |
| 3.3                                  | <a href="#">EMK13</a>                                 | <a href="#">EMK23</a> | <a href="#">EMK33</a> | <a href="#">EMK43</a> |

Would you like to request EMO™ samples or a quotation now?

[Click Here](#)

Want to learn more about the Ecliptek EMO™ family of MEMS oscillators?

[Click Here](#)

#### **Product Features:**

- Improved frequency stability through the use of a MEMS resonator
- 1.8VDC, 2.5VDC, or 3.3VDC supply voltages
- Frequency range of 1MHz to 125MHz, HCMOS output
- Frequency stability to ±50ppm, -40°C to +85°C operation
- Tri-state or power down functions
- RoHS compliant
- High temperature +260°C reflow capability
- EIA compliant tape and reel packaging
- Four SMD package sizes

If you have any questions or would like additional information regarding the Ecliptek EMO™ family of oscillators, please contact our [Sales Department](#).