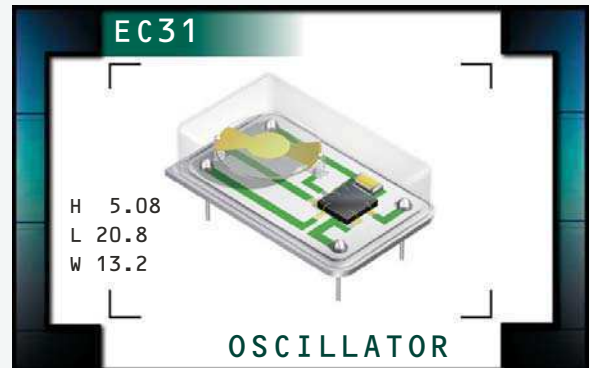


EC31 Series



- RoHS Compliant (Pb-free)
- Voltage Controlled Crystal Oscillator (VCX0)
- 5.0V Supply Voltage
- HCMOS/TTL output
- 14 pin DIP package
- Stability to ± 20 ppm
- Wide frequency and pull range



ELECTRICAL SPECIFICATIONS

| | | |
|---|--|--|
| Frequency Range (MHz) | | 1.000MHz to 155.520MHz |
| Operating Temperature Range | | 0°C to 70°C or -40°C to 85°C |
| Storage Temperature Range | | -55°C to 125°C |
| Supply Voltage (V_{DD}) | | 5.0V _{DC} $\pm 5\%$ |
| Aging (at 25°C) | | ± 5 ppm / year Maximum |
| Load Drive Capability | | 10TTL Load or 15pF HCMOS Load Maximum |
| Start Up Time | | 10 mSeconds Maximum |
| Frequency Deviation / Control Voltage | 2.5V _{DC} ± 2.0 V _{DC} Positive Transfer Characteristic, | ± 50 ppm Minimum |
| | 2.5V _{DC} ± 2.0 V _{DC} Positive Transfer Characteristic, | ± 100 ppm Minimum |
| | 2.5V _{DC} ± 2.0 V _{DC} Positive Transfer Characteristic, | ± 150 ppm Minimum |
| | 2.5V _{DC} ± 2.5 V _{DC} Positive Transfer Characteristic, or | ± 200 ppm Minimum |
| Linearity | | $\pm 20\%$, $\pm 15\%$, $\pm 10\%$ Maximum, or $\pm 5\%$ Maximum (not avail. w/ ± 200 ppm Freq. Dev.) |
| Input Current | 1.000MHz to 20.000MHz | 20mA Maximum |
| | 20.001MHz to 30.000MHz | 40mA Maximum |
| | 30.001MHz to 155.520MHz | 50mA Maximum |
| Frequency Tolerance / Stability | Inclusive of Operating Temperature Range, Supply Voltage, and Load | ± 100 ppm, ± 50 ppm, ± 25 ppm, or ± 20 ppm Maximum (0°C to 70°C only) |
| Output Voltage Logic High (V_{OH}) | w/TTL Load | 2.4V _{DC} Minimum |
| | w/HCMOS Load | V _{DD} -0.5V _{DC} Minimum |
| Output Voltage Logic Low (V_{OL}) | w/TTL Load | 0.4V _{DC} Maximum |
| | w/HCMOS Load | 0.5V _{DC} Maximum |
| Duty Cycle | at 1.4V _{DC} w/TTL Load; at 50% of Waveform w/HCMOS Load | 50 ± 10 (%) (Standard) |
| | at 1.4V _{DC} w/TTL Load and w/HCMOS Load | 50 ± 5 (%) (Optional) |
| Rise Time / Fall Time | 0.4V _{DC} to 2.4V _{DC} w/TTL Load; 20% to 80% of Waveform w/HCMOS Load | 5 nSeconds Maximum |
| Period Jitter: Absolute | Freq. Deviation Options Blank, A or B | ± 100 pSeconds Max ≤ 44.736 MHz |
| | Freq. Deviation Options C | ± 100 pSeconds Max ≤ 30.000 MHz |
| | | ± 200 pSeconds Max > 30.000 MHz |
| | Freq. Deviation Options Blank, A or B | ± 200 pSeconds Max > 44.736 MHz |
| Period Jitter: One Sigma | Freq. Deviation Options Blank, A or B | ± 25 pSeconds Max ≤ 44.736 MHz |
| | Freq. Deviation Options C | ± 25 pSeconds Max ≤ 30.000 MHz |
| | | ± 50 pSeconds Max > 30.000 MHz |
| | Freq. Deviation options Blank, A or B | ± 50 pSeconds Max > 44.736 MHz |

| MANUFACTURER | CATEGORY | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|----------------|------------|--------|------------|---------|-------|-----------|
| ECLIPTEK CORP. | OSCILLATOR | EC31 | 14 pin DIP | 5.0V | OS13 | 08/06 |

PART NUMBERING GUIDE

EC31 00 T A 15 ET - 24.000M - G

FREQUENCY TOLERANCE / STABILITY

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

DUTY CYCLE

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

FREQUENCY DEVIATION

Blank=±50ppm Minimum (Standard)
A=±100ppm Minimum
B=±150ppm Minimum,
C=±200ppm Minimum (2.5V_{DC} ±2.5V_{DC})

AVAILABLE OPTIONS

Blank=None (Standard)
CLXXX=Custom Lead Length (See Page 133)
G=Full Size Gull Wing (See Page 132)

FREQUENCY

OPERATING TEMP. RANGE

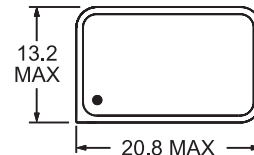
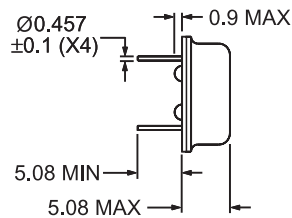
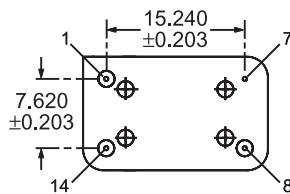
Blank=0°C to 70°C (Standard)
ET=-40°C to 85°C

LINEARITY

Blank=20% Maximum (Standard)
05=5% Maximum, 10=10% Maximum
15=15% Maximum

NOTES

MECHANICAL DIMENSIONS ALL DIMENSIONS IN MILLIMETERS



Pin 1: Control Voltage (V_c)
Pin 7: Case Ground

Pin 8: Output
Pin 14: Supply Voltage

ENVIRONMENTAL/MECHANICAL SPECIFICATIONS

| Characteristic | Specification |
|--------------------|--|
| Seal Integrity | Bubble test in Perfluorocarbon at +125°C ±5°C for 60 seconds minimum. |
| Solderability | Sn63 Solder dip at +230°C ±5°C for 5 seconds/95% coverage. |
| Marking Permanency | 10 Strokes with brush after 1 minute soak in solvent, 3 times. |
| Shock | Random drop on hard wooden plate 3 times from a height of 20cm. |
| Vibration | Frequency with an amplitude of 1.5mm sweeping between 10Hz to 55Hz within 1 minute (approximately) for 2 hours minimum on each axis (X, Y and Z) for a total of 6 hours. |

MARKING SPECIFICATIONS

Line 1: ECLIPTEK

Line 2: EC31

Series Designator

Line 3: XX.XXX M.

Frequency in MHz
(5 Digits Maximum + Decimal)

Line 4: XX Y ZZ

Week of Year
Last Digit of Year
Ecliptek Manufacturing Identifier

Note: Pin 1 shall be designated with a dot

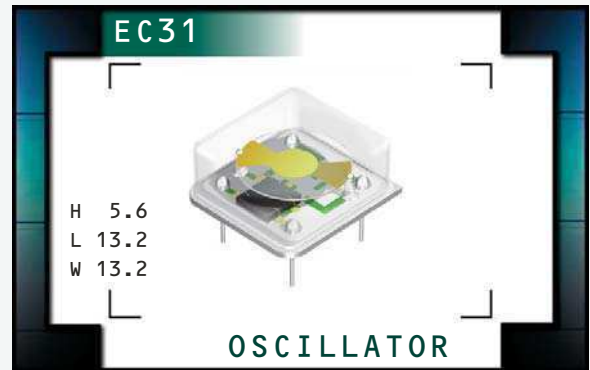
| MANUFACTURER | CATEGORY | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|----------------|------------|--------|------------|---------|-------|-----------|
| ECLIPTEK CORP. | OSCILLATOR | EC31 | 14 pin DIP | 5.0V | OS13 | 08/06 |

EC31 Series



ECLIPTEK[®]
CORPORATION

- RoHS Compliant (Pb-free)
- Voltage Controlled Crystal Oscillator (VCXO)
- 5.0V Supply Voltage
- HCMOS/TTL output
- 8 pin DIP package
- Stability to ± 20 ppm
- Wide frequency and pull range



NOTES

ELECTRICAL SPECIFICATIONS

| | | |
|---|--|---|
| Frequency Range (MHz) | 1.000MHz to 44.736MHz | |
| Operating Temperature Range | 0°C to 70°C or -40°C to 85°C | |
| Storage Temperature Range | -55°C to 125°C | |
| Supply Voltage (V_{DD}) | 5.0V _{DC} $\pm 5\%$ | |
| Aging (at 25°C) | ± 5 ppm / year Maximum | |
| Load Drive Capability | 10TTL Load or 15pF HCMOS Load Maximum | |
| Start Up Time | 10 mSeconds Maximum | |
| Frequency Deviation / Control Voltage | 2.5V _{DC} ± 2.0 V _{DC} Positive Transfer Characteristic, | ± 50 ppm Minimum |
| | 2.5V _{DC} ± 2.0 V _{DC} Positive Transfer Characteristic, | ± 100 ppm Minimum |
| | 2.5V _{DC} ± 2.0 V _{DC} Positive Transfer Characteristic, | ± 150 ppm Minimum |
| Linearity | $\pm 20\%$, $\pm 15\%$, $\pm 10\%$ Maximum, or $\pm 5\%$ Maximum | |
| Input Current | 1.000MHz to 20.000MHz | 20mA Maximum |
| | 20.0001MHz to 30.000MHz | 40mA Maximum |
| | 30.001MHz to 44.736MHz | 50mA Maximum |
| Frequency Tolerance / Stability | Inclusive of Operating Temperature Range, Supply Voltage, and Load | ± 100 ppm, ± 50 ppm, ± 25 ppm, or ± 20 ppm Maximum (0°C to 70°C Only) |
| Output Voltage Logic High (V_{OH}) | w/TTL Load | 2.4V _{DC} Minimum |
| | w/HCMOS Load | V _{DD} - 0.5V _{DC} Minimum |
| Output Voltage Logic Low (V_{OL}) | w/TTL Load | 0.4V _{DC} Maximum |
| | w/HCMOS Load | 0.5V _{DC} Maximum |
| Duty Cycle | at 1.4V _{DC} w/TTL Load; at 50% of Waveform w/HCMOS Load | 50 ± 10 (%) (Standard) |
| | at 1.4V _{DC} w/TTL Load and HCMOS Load | 50 ± 5 (%) (Optional) |
| Rise Time / Fall Time | 0.4V _{DC} to 2.4V _{DC} w/TTL Load; 20% to 80% of Waveform w/HCMOS Load | 5 nSeconds Maximum |
| Period Jitter: Absolute | ± 100 pSeconds Maximum | |
| Period Jitter: One Sigma | ± 25 pSeconds Maximum | |

| MANUFACTURER | CATEGORY | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|----------------|------------|--------|-----------|---------|-------|-----------|
| ECLIPTEK CORP. | OSCILLATOR | EC31 | 8 pin DIP | 5.0V | OS18 | 08/06 |

PART NUMBERING GUIDE

EC31 00 HST A 15 ET - 24.000M - G TR

FREQUENCY TOLERANCE / STABILITY

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

PACKAGE

HS=Half Size 8 Pin DIP

DUTY CYCLE

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

FREQUENCY DEVIATION

Blank=±50ppm Minimum (Standard)
 A=±100ppm Minimum
 B=±150ppm Minimum

PACKAGING OPTIONS

Blank=Bulk (Standard)
 TR=Tape & Reel (only offered with
 Half Size G and Half Size G2 Options)

AVAILABLE OPTIONS

Blank=None (Standard)
 CLXX=Custom Lead Length (See Page 133)
 G=Half Size Gull Wing (See Page 132)
 G2=Alternate Half Size Gull Wing (See Page 132)

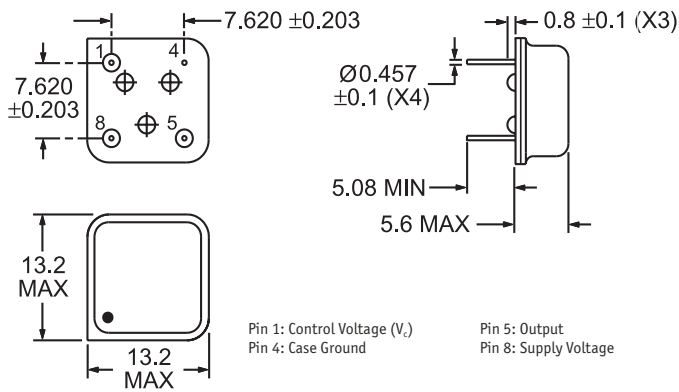
FREQUENCY

OPERATING TEMP. RANGE
 Blank=0°C to 70°C (Standard)
 ET=-40°C to 85°C

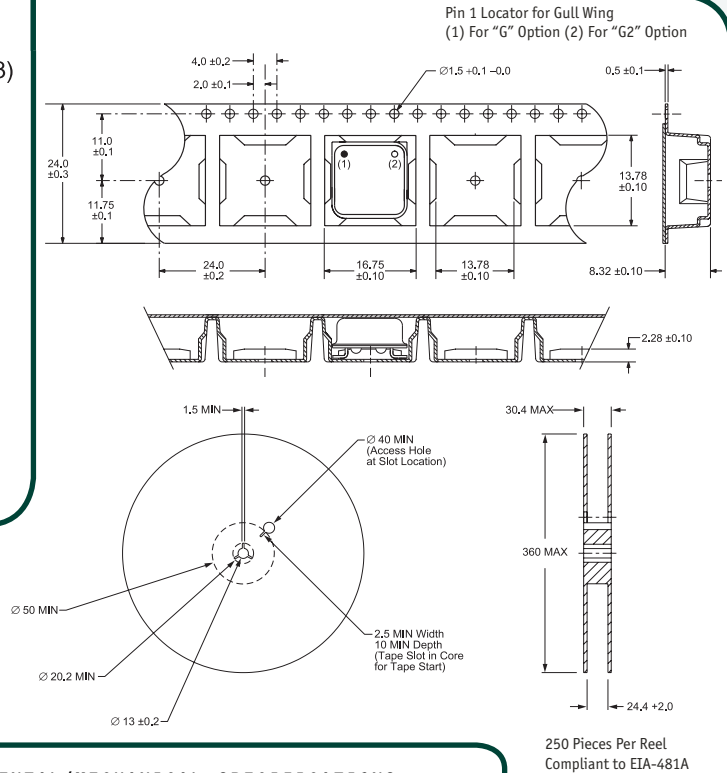
LINEARITY

Blank=20% Maximum (Standard)
 05=5% Maximum, 10=10% Maximum
 15=15% Maximum

MECHANICAL DIMENSIONS
 ALL DIMENSIONS IN MILLIMETERS



TAPE AND REEL DIMENSIONS
 ALL DIMENSIONS IN MILLIMETERS



MARKING SPECIFICATIONS

Line 1: ECLIPTEK
 Line 2: EC31 Series Designator
 Line 3: XX.XXX M Frequency in MHz (5 Digits Maximum + Decimal)
 Line 4: XX Y ZZ Week of Year, Last Digit of Year, Ecliptek Manufacturing Identifier
 Note: Pin 1 shall be designated with a dot

ENVIRONMENTAL/MECHANICAL SPECIFICATIONS

| Characteristic | Specification |
|--------------------|--|
| Seal Integrity | Bubble test in Perfluorocarbon at +125°C ±5°C for 60 seconds minimum. |
| Solderability | Sn63 Solder dip at +230°C ±5°C for 5 seconds/95% coverage. |
| Marking Permanency | 10 Strokes with brush after 1 minute soak in solvent, 3 times. |
| Shock | Random drop on hard wooden plate 3 times from a height of 20cm. |
| Vibration | Frequency with an amplitude of 1.5mm sweeping between 10Hz to 55Hz within 1 minute (approximately) for 2 hours minimum on each axis (X, Y and Z) for a total of 6 hours. |

| MANUFACTURER | CATEGORY | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|----------------|------------|--------|-----------|---------|-------|-----------|
| ECLIPTEK CORP. | OSCILLATOR | EC31 | 8 pin DIP | 5.0V | OS18 | 08/06 |