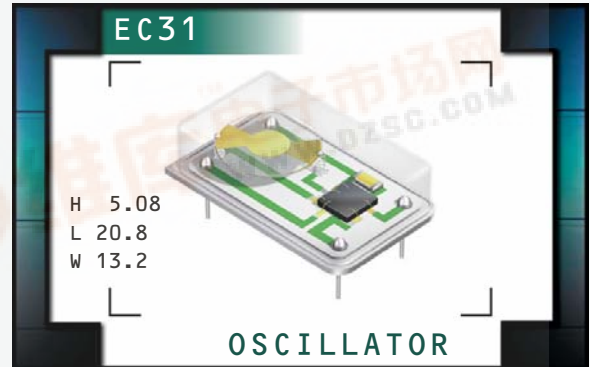


# EC31 Series

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

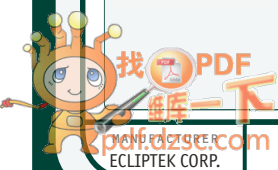


**ECLIPTEK**<sup>®</sup>  
CORPORATION



## 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 <sub>DD</sub> )	5.0V <sub>DC</sub> $\pm 5\%$	
Aging (at 25°C)	$\pm 5$ 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 <sub>DC</sub> $\pm 2.0$ V <sub>DC</sub> Positive Transfer Characteristic,	$\pm 50$ ppm Minimum
	2.5V <sub>DC</sub> $\pm 2.0$ V <sub>DC</sub> Positive Transfer Characteristic,	$\pm 100$ ppm Minimum
	2.5V <sub>DC</sub> $\pm 2.0$ V <sub>DC</sub> Positive Transfer Characteristic,	$\pm 150$ ppm Minimum
	2.5V <sub>DC</sub> $\pm 2.5$ V <sub>DC</sub> Positive Transfer Characteristic, or	$\pm 200$ ppm Minimum
Linearity	$\pm 20\%$ , $\pm 15\%$ , $\pm 10\%$ Maximum, or $\pm 5\%$ Maximum (not avail. w/ $\pm 200$ 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	$\pm 100$ ppm, $\pm 50$ ppm, $\pm 25$ ppm, or $\pm 20$ ppm Maximum (0°C to 70°C only)
Output Voltage Logic High (V <sub>OH</sub> )	w/TTL Load	2.4V <sub>DC</sub> Minimum
	w/HCMOS Load	V <sub>DD</sub> -0.5V <sub>DC</sub> Minimum
Output Voltage Logic Low (V <sub>OL</sub> )	w/TTL Load	0.4V <sub>DC</sub> Maximum
	w/HCMOS Load	0.5V <sub>DC</sub> Maximum
Duty Cycle	at 1.4V <sub>DC</sub> w/TTL Load; at 50% of Waveform w/HCMOS Load	50 $\pm 10$ (%) (Standard)
	at 1.4V <sub>DC</sub> w/TTL Load and w/HCMOS Load	50 $\pm 5$ (%) (Optional)
Rise Time / Fall Time	0.4V <sub>DC</sub> to 2.4V <sub>DC</sub> w/TTL Load; 20% to 80% of Waveform w/HCMOS Load	5 nSeconds Maximum
Period Jitter: Absolute	Freq. Deviation Options Blank, A or B	$\pm 100$ pSeconds Max $\leq 44.736$ MHz
	Freq. Deviation Options C	$\pm 100$ pSeconds Max $\leq 30.000$ MHz $\pm 200$ pSeconds Max $> 30.000$ MHz
	Freq. Deviation Options Blank, A or B	$\pm 200$ pSeconds Max $> 44.736$ MHz
Period Jitter: One Sigma	Freq. Deviation Options Blank, A or B	$\pm 25$ pSeconds Max $\leq 44.736$ MHz
	Freq. Deviation Options C	$\pm 25$ pSeconds Max $\leq 30.000$ MHz $\pm 50$ pSeconds Max $> 30.000$ MHz
	Freq. Deviation options Blank, A or B	$\pm 50$ pSeconds Max $> 44.736$ MHz



## 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<sub>DC</sub> ±2.5V<sub>DC</sub>)

### AVAILABLE OPTIONS

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

### FREQUENCY

### OPERATING TEMP. RANGE

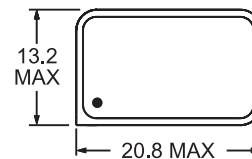
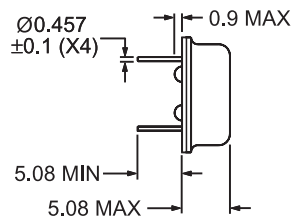
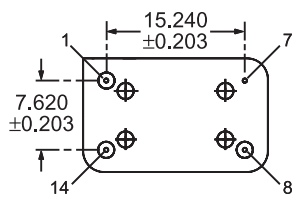
Blank=0°C to 70°C (Standard)  
 ET=-40°C to 85°C

### 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<sub>c</sub>)  
 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

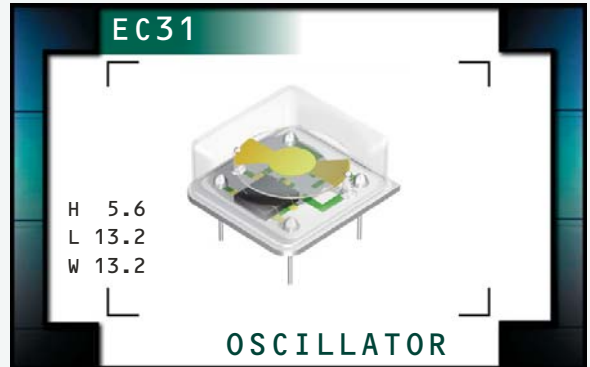
MANUFACTURER	CATEGORY	SERIES	PACKAGE	VOLTAGE	CLASS	REV. DATE
ECLIPTEK CORP.	OSCILLATOR	EC31	14 pin DIP	5.0V	OS13	08/06

# EC31 Series



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

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



## NOTES

### ELECTRICAL SPECIFICATIONS

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

## 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

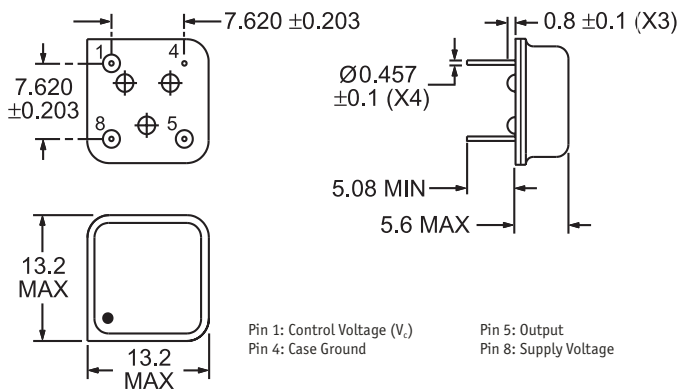
Blank=0°C to 70°C (Standard)  
 ET=-40°C to 85°C

#### LINEARITY

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

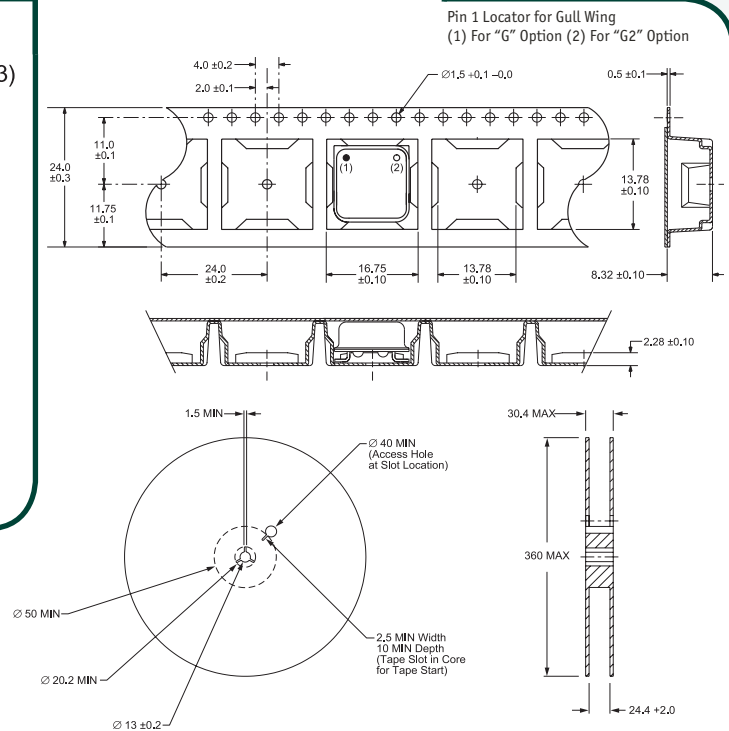
#### MECHANICAL DIMENSIONS

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  
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Note: Pin 1 shall be designated with a dot

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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.