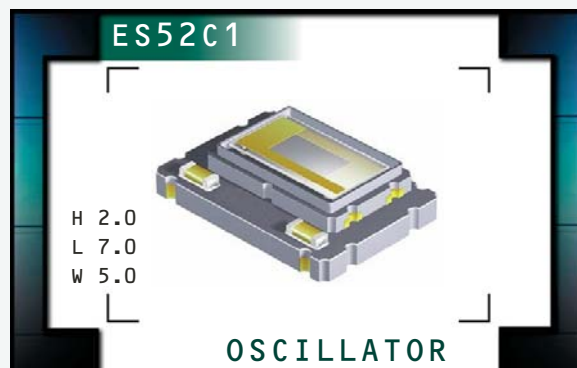


# ES52C1 Series

- Temperature Compensated Crystal Oscillators (TCXO)
- Clipped Sinewave Output
- +3.3V Supply Voltage
- External Voltage Control Option
- 4 Pad Ceramic SMD Package
- RoHS Compliant (Pb-free)



**ECLIPTEK**  
CORPORATION



## ELECTRICAL SPECIFICATIONS

|                                               |                                                                                                                                                                                                                                                                      |                                  |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| <b>Nominal Frequency (MHz)</b>                | 10MHz, 10.24MHz, 12MHz, 12.288MHz, 12.8MHz, 13MHz, 14MHz, 14.4MHz, 14.7456MHz, 15.36MHz, 16MHz, 16.384MHz, 16.8MHz, 17.5MHz, 18.432MHz, 19.2MHz, 19.44MHz, 20MHz, 20.48MHz, 24MHz, 24.5535MHz, 24.576MHz, 25MHz, 27MHz, 30MHz, 30.720MHz, 32MHz, 38.88MHz, and 40MHz |                                  |
| <b>Frequency Stability</b>                    | vs. Operating Temperature Range                                                                                                                                                                                                                                      | See Part Numbering Guide         |
|                                               | vs. Frequency Tolerance (25°C ±2°C, V <sub>DD</sub> = 3.3V <sub>DC</sub> , V <sub>C</sub> = 1.5V <sub>DC</sub> )                                                                                                                                                     | ±1.0ppm Maximum                  |
|                                               | vs. Input Voltage (±5%)                                                                                                                                                                                                                                              | ±0.2ppm Maximum                  |
|                                               | vs. Load (±1kΩ/±1pF)                                                                                                                                                                                                                                                 | ±0.2ppm Maximum                  |
| <b>Aging (at 25°C)</b>                        |                                                                                                                                                                                                                                                                      | ±1ppm / Year Maximum             |
| <b>Operating Temperature Range</b>            |                                                                                                                                                                                                                                                                      | See Part Numbering Guide         |
| <b>Supply Voltage (V<sub>DD</sub>)</b>        |                                                                                                                                                                                                                                                                      | 3.3V <sub>DC</sub> ±5%           |
| <b>Input Current</b>                          | 10.000MHz to 14.999999MHz                                                                                                                                                                                                                                            | 1.5mA Maximum                    |
|                                               | 15.000MHz to 25.999999MHz                                                                                                                                                                                                                                            | 2.0mA Maximum                    |
|                                               | 26.000MHz to 40.0000MHz                                                                                                                                                                                                                                              | 2.5mA Maximum                    |
| <b>Output Voltage</b>                         |                                                                                                                                                                                                                                                                      | 0.8Vp-p Clipped Sinewave Minimum |
| <b>Load Drive Capability</b>                  |                                                                                                                                                                                                                                                                      | 10kOhms // 10pF                  |
| <b>External Trim (Voltage Control Option)</b> | 1.5V <sub>DC</sub> ±1.0V <sub>DC</sub> ; Positive Transfer Characteristic                                                                                                                                                                                            | ±8ppm Minimum                    |
| <b>Linearity</b>                              |                                                                                                                                                                                                                                                                      | 10% Maximum                      |
| <b>Modulation Bandwidth</b>                   | Measured at -3dB, V <sub>C</sub> = 1.5V <sub>DC</sub>                                                                                                                                                                                                                | 3kHz Minimum                     |
| <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 10kHz                                                                                                                                                                                                                                                   | -145dBc/Hz                       |
|                                               | At offset of 100kHz                                                                                                                                                                                                                                                  | -145dBc/Hz                       |
| <b>Start Up Time</b>                          |                                                                                                                                                                                                                                                                      | 5mSec Maximum                    |
| <b>Storage Temperature Range</b>              |                                                                                                                                                                                                                                                                      | -55°C to +125°C                  |

MANUFACTURER  
ECLIPTEK CORP.

CATEGORY  
OSCILLATOR

SERIES  
ES52C1

PACKAGE  
CERAMIC

VOLTAGE  
3.3V

CLASS  
OS4K

REV. DATE  
01/10

## PART NUMBERING GUIDE

### ES52C1 C 25 V - 13.000M TR

#### OPERATING TEMPERATURE RANGE

A=0°C to +50°C  
 B=0°C to +70°C  
 C=-20°C to +70°C  
 D=-30°C to +85°C  
 E=-40°C to +85°C

#### FREQUENCY STABILITY

10 = ±1.0ppm Maximum  
 15 = ±1.5ppm Maximum  
 20 = ±2.0ppm Maximum  
 25 = ±2.5ppm Maximum

#### PACKAGING OPTIONS

Blank=Bulk  
 TR=Tape & Reel

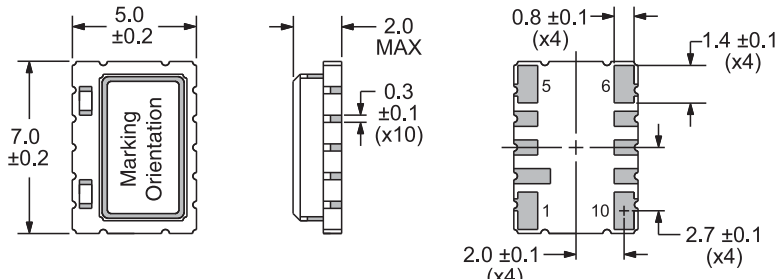
#### FREQUENCY

#### EXTERNAL TRIM

N=None (No Connection on Pin 1)  
 V=Voltage Control

#### MECHANICAL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS

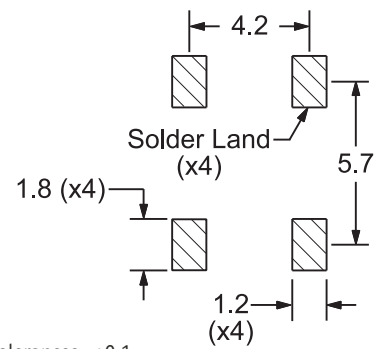


Pin 1: Control Voltage  
 or No Connect  
 Pin 5: Case Ground

Pin 6: Output  
 Pin 10: Supply Voltage  
 Pin 2-4, 7-9: Do Not Connect

#### SUGGESTED SOLDER PAD LAYOUT

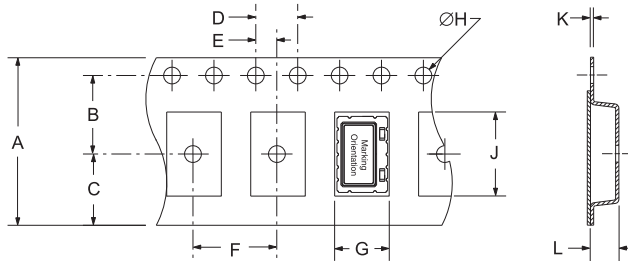
ALL DIMENSIONS IN MILLIMETERS



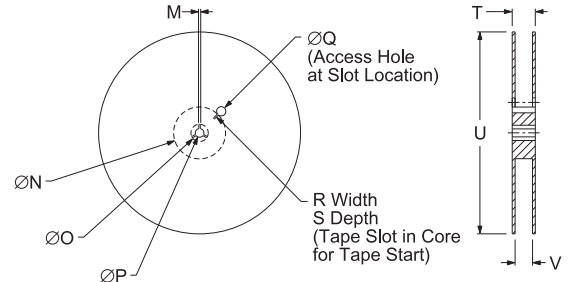
Tolerances = ±0.1

#### 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*     | 0.30±0.05 |



| 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 |

\*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  
 Eclipsetek Manufacturing Identifier

| MANUFACTURER   | CATEGORY   | SERIES | PACKAGE | VOLTAGE | CLASS | REV. DATE |
|----------------|------------|--------|---------|---------|-------|-----------|
| ECLIPTEK CORP. | OSCILLATOR | ES52C1 | CERAMIC | 3.3V    | OS4K  | 01/10     |