

- ▶ 3.3 or 5.0V version
- ▶ 3.2 x 5 mm Footprint
- ▶ Low current consumption
- ▶ Pb Free/RoHS Compliant

# ECS-3961/3963

## SMD CLOCK OSCILLATOR

ECS-3961 (5V) and ECS-3963 (3.3V) miniature SMD crystal controlled oscillators. Package is seam welded with a metal lid.

### OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS            | CONDITIONS                | ECS-3961 (+5V) |      |         | ECS-3963 (+3.3V) |      |         | UNITS |
|-----------------------|---------------------------|----------------|------|---------|------------------|------|---------|-------|
|                       |                           | MIN            | TYP  | MAX     | MIN              | TYP  | MAX     |       |
| Frequency Range       |                           | 1.544          |      | 125.000 | 1.000            |      | 125.000 | MHz   |
| Operating Temperature | Standard                  | -10            |      | +70     | -10              |      | +70     | °C    |
|                       | Extended (N Option)       | -40            |      | +85     | -40              |      | +85     | °C    |
| Storage Temperature   |                           | -55            |      | +125    | -55              |      | +125    | °C    |
| Supply Voltage        |                           | +4.5           | +5.0 | +5.5    | +2.7             | +3.3 | +3.6    | VDC   |
| Frequency Stability * | Option A                  |                |      | ± 100   |                  |      | ± 100   | ppm   |
|                       | Option B                  |                |      | ± 50    |                  |      | ± 50    | ppm   |
|                       | Option C                  |                |      | ± 25    |                  |      | ± 25    | ppm   |
| Input Current         | 1.544 to 9.999 MHz        |                |      | 15      |                  |      | 8       | mA    |
|                       | 10.0 to 34.999 MHz        |                |      | 20      |                  |      | 10      | mA    |
|                       | 35.0 to 49.999 MHz        |                |      | 35      |                  |      | 25      | mA    |
|                       | 50.0 to 125 MHz           |                |      | 40      |                  |      | 35      | mA    |
| Output Symmetry       | @ 50%Vcc level            |                |      | 40/60   |                  |      | 40/60   | %     |
|                       | @ 50%Vcc level (T Option) |                |      | 45/55   |                  |      | 45/55   | %     |
| Rise and Fall Times   | 10% Vdd to 90% level      |                |      | 5       |                  |      | 5       | ns    |
| "0" level             | VOL                       |                |      | 10% Vdd |                  |      | 10% Vdd | VDC   |
| "1" level             | VOH                       | 90% Vdd        |      |         | 90% Vdd          |      |         | VDC   |
| Output Load           | HCMOS                     |                |      | 30      |                  |      | 15      | pF    |
| Startup time          |                           |                |      | 10      |                  |      | 10      | ms    |

\* Note: Inclusive of 25°C tolerance, operating temperature, input voltage change, load change, shock and vibration.

### DIMENSIONS (mm)

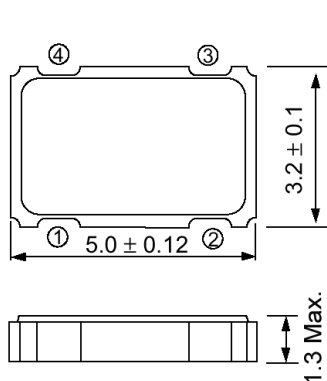


Figure 1) Top, Side and Bottom views

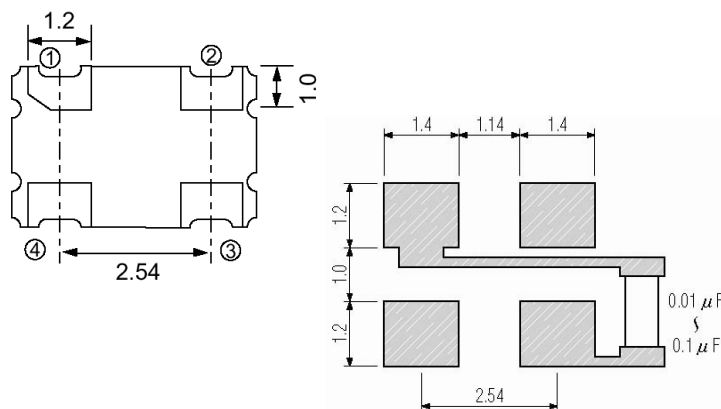


Figure 2) Suggested Land Pattern

| Pin Connections |              |
|-----------------|--------------|
| Pin #1          | Tri-State ** |
| Pin #2          | Ground       |
| Pin #3          | Output       |
| Pin #4          | VDD          |

| Tri-State Control Voltage |                |
|---------------------------|----------------|
| Pad 1                     | Pad 3          |
| Open                      | Oscillation    |
| 70% Vdd Min.              | Oscillation    |
| 30% Vdd Max.              | No Oscillation |

\*\* Note: Internal pullup resistor from pin 1 to 4 allows active output if pin 1 is left open.

### PART NUMBERING GUIDE: Example ECS-3963-200-BN-TR

| ECS | - Series                     | - Frequency Abbreviation                        | - Stability                                   | Temperature                                                                   | Symmetry                   | - Packaging                 |
|-----|------------------------------|-------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|----------------------------|-----------------------------|
|     | 3961 = +5.0V<br>3963 = +3.3V | 200 = 20.000 MHz<br>See Frequency Abbreviations | A = ± 100 ppm<br>B = ± 50 ppm<br>C = ± 25 ppm | Blank = -10 ~ +70°C<br>M = -20 ~ +70°C<br>N = -40 ~ +85°C<br>U = -55 ~ +125°C | Blank = 40/60<br>T = 45/55 | TR = Tape & Reel<br>1K/Reel |