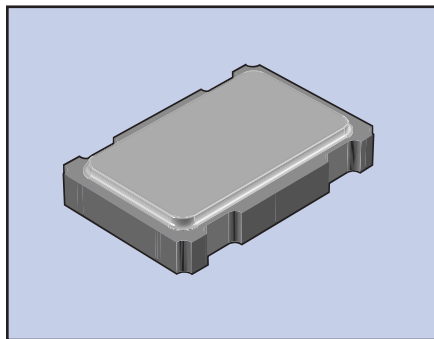




The ECS-3961 (5V) and ECS-3963 (3V) is our smallest crystal controlled low-current clock oscillator. This subminiature, very low profile leadless ceramic package is ideal for today's SMD manufacturing environment. Package is seam welded with a metal lid.

## FEATURES

- 3x5 mm footprint
- SMD
- 3 & 5V versions
- Seam welded package
- Tape and Reel (1,000 pcs)
- PbFree/RoHS Compliant



## PART NUMBERING GUIDE "EXAMPLE"

| MANUFACTURER | SERIES   | FREQUENCY (14.4 MHz) | (STABILITY TOLERANCE (A=±100 PPM)) |
|--------------|----------|----------------------|------------------------------------|
| ECS          | - 3961 - | 144                  | - A                                |

Sample Part Number: ECS-3961-144-A

## OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

| PARAMETERS                    | CONDITIONS                  | ECS-3961 (5V) |       |        | ECS-3963 (3.0V) |       |        | UNITS |
|-------------------------------|-----------------------------|---------------|-------|--------|-----------------|-------|--------|-------|
|                               |                             | MIN           | TYP   | MAX    | MIN             | TYP   | MAX    |       |
| FREQUENCY RANGE               |                             | 2.500         |       | 35.000 | 2.500           |       | 66.666 | MHz   |
| FREQUENCY STABILITY**         | Option (A)                  | -100          |       | +100   | -100            |       | +100   | PPM   |
|                               | Option (B)                  | -50           |       | +50    | -50             |       | +50    | PPM   |
|                               | Option (C)**                | -25           |       | +25    | -25             |       | +25    | PPM   |
| OPERATING TEMPERATURE         |                             | -10           |       | +70    | -10             |       | +70    | °C    |
| STORAGE TEMPERATURE           |                             | -55           |       | +125   | -55             |       | +125   | °C    |
| INPUT VOLTAGE V <sub>CC</sub> |                             | +4.5          | +5    | +5.5   | +2.7            | +3.0  | +3.3   | V DC  |
| INPUT CURRENT                 | 2.5 ~ 35.0 MHz              |               |       | 15     |                 |       | 10     | mA    |
|                               | 35.0 ~ 50.0 MHz             |               |       | -      |                 |       | 15     | mA    |
|                               | 1.8 ~ 36.0 MHz              |               |       | -      |                 |       | 20     | mA    |
| OUTPUT SYMMETRY               | @ 1/2 V <sub>CC</sub> Level | 40/60         | 50 ±4 | 60/40  | 40              | 50 ±4 | 60     | %     |
| RISE AND FALL TIMES           |                             |               |       | 10     |                 |       | 10     | ns    |
| LOGIC "0" LEVEL               | V <sub>CC</sub> x 0.1V max. |               |       |        |                 |       |        |       |
| LOGIC "1" LEVEL               | V <sub>CC</sub> x 0.9V max. |               |       |        |                 |       |        |       |
| LOAD                          |                             |               |       | 15     |                 |       | 15     | pF    |
| START-UP                      |                             |               |       | 10     |                 |       | 10     | ms    |

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

\*\* Reduced operating temperature with option C (±25 PPM) -10° ~ +60°C

\*\*\* An internal pullup resistor from pin 1 to 4 allows active output if pin 1 is left open.

## PACKAGE DIMENSIONS (mm)

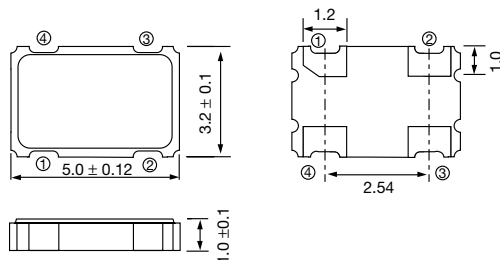


Figure 1) ECS-3961/3963 Series Top, Side and Bottom Views

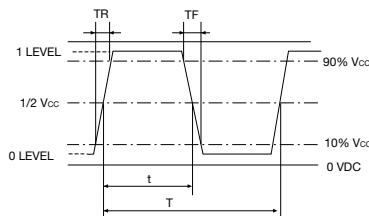


Figure 2) Output Waveform

| ECS-3961 (5V) Standby Control Voltage |  |                     |  |
|---------------------------------------|--|---------------------|--|
| PIN #1 = OPEN***                      |  | #3 = OUTPUT         |  |
| PIN #1 = +3.5V MIN                    |  | #3 = OUTPUT         |  |
| PIN #1 = 1.5V MAX                     |  | #3 = NO OSCILLATION |  |

| ECS-3963 (3V) Standby Control Voltage |  |                     |  |
|---------------------------------------|--|---------------------|--|
| PIN #1 = OPEN***                      |  | #3 = OUTPUT         |  |
| PIN #1 = +2.1V MIN                    |  | #3 = OUTPUT         |  |
| PIN #1 = 0.9V MAX                     |  | #3 = NO OSCILLATION |  |

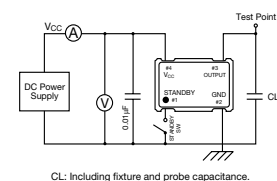


Figure 3) Test Circuit

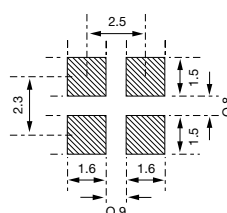


Figure 4) Land Pattern

| PIN CONNECTIONS |              |
|-----------------|--------------|
| #1              | TRI-STATE*** |
| #2              | GND          |
| #3              | OUTPUT       |
| #4              | Vcc          |