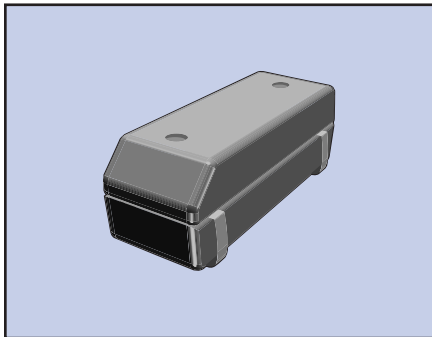




This wide frequency range SMD quartz crystal is an excellent choice for surface mount applications. The ruggedized molded package is made from the same thermoplastic that is industry standard for integrated circuits.

## FEATURES

- Low profile
- Industry standard footprint
- High temperature seal capabilities
- Excellent shock resistance
- Excellent environmental characteristics
- Tape and Reel (1000 pcs)

## PART NUMBERING GUIDE "EXAMPLE"

|     | FREQUENCY (16.0000 MHz) | LOAD CAPACITANCE* | PACKAGE TYPE |
|-----|-------------------------|-------------------|--------------|
| ECS | 160                     | 20                | 7S           |

\* Load capacitance (xx=xx pF, S= series resonance)

Note: See Product Selection Guide for additional options.

## OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

| PARAMETERS                  | CONDITIONS                 | MINIMUM | TYPICAL       | MAXIMUM | UNITS |
|-----------------------------|----------------------------|---------|---------------|---------|-------|
| FREQUENCY RANGE             | $f_0$                      | 3.57    |               | 70.00   | MHz   |
| SHUNT CAPACITANCE           | $C_0$                      |         |               | 7.0     | pF    |
| LOAD CAPACITANCE            | $C_L$ (Customer Specified) | 12      | 20.0 standard | Series  | pF    |
| DRIVE LEVEL                 | 3.50 ~ 70.00MHz            |         |               | 100     | μW    |
| CALIBRATION TOLERANCE       | @ 25°C                     | -30     |               | +30     | PPM   |
| FREQUENCY STABILITY         | $\Delta f/f_0$             | -50     |               | +50     | PPM   |
| OPERATING TEMPERATURE RANGE | $T_{OPR}$                  | -10     |               | +70     | °C    |
| STORAGE TEMPERATURE RANGE   | $T_{STG}$                  | -40     |               | +85     | °C    |

## EQUIVALENT SERIES RESISTANCE / MODE OF OSCILLATION

| FREQUENCY RANGE (MHz) | MODE        | MAX ESR $\Omega$ | FREQUENCY RANGE (MHz) | MODE        | MAX ESR $\Omega$ |
|-----------------------|-------------|------------------|-----------------------|-------------|------------------|
| 3.570 ~ 3.999         | Fundamental | 250              | 9.000 ~ 12.999        | Fundamental | 60               |
| 4.000 ~ 4.999         | Fundamental | 150              | 13.000 ~ 19.999       | Fundamental | 40               |
| 5.000 ~ 5.999         | Fundamental | 120              | 20.000 ~ 30.000       | Fundamental | 30               |
| 6.000 ~ 6.999         | Fundamental | 100              | 30.000 ~ 70.000       | 3rd O/T     | 100              |
| 7.000 ~ 8.999         | Fundamental | 80               |                       |             |                  |

## PACKAGE DIMENSIONS (mm)

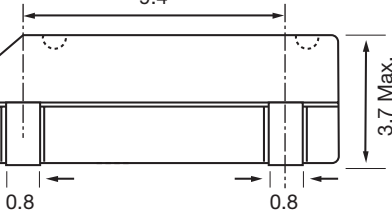
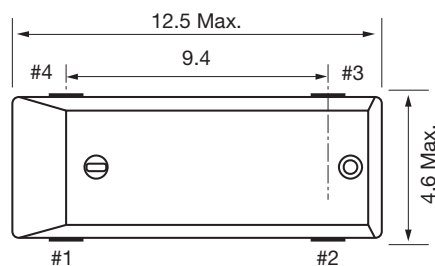


Figure 1) ECX-3S - Top, Side and End views

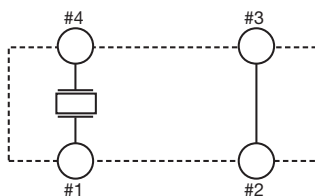


Figure 2) Internal Connections - Top view

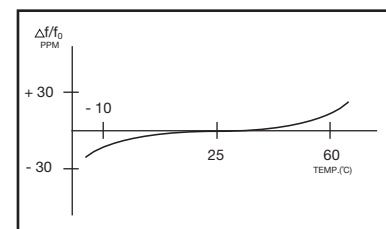
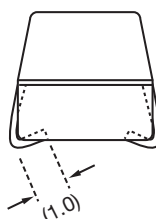


Figure 3) Frequency vs Temperature Curve

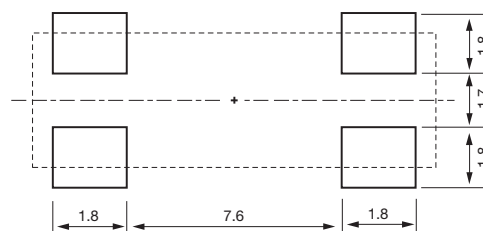


Figure 4) ECX-3S Land Pattern - Bottom view

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[ECS-147.4-20-7S-TR](#) [ECS-147.4-S-7S-TR](#) [ECS-160-20-7S-TR](#) [ECS-160-S-7S-TR](#) [ECS-200-S-7S-TR](#) [ECS-240-16-](#)  
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