

The CSM-12 is enclosed in a ceramic package. It is an excellent choice for a low profile crystal with a height of 2.5 mm.

FEATURES

- Cost effective
- Space saving design
- RoHS Compliant (Note 7 Exemption)
- Tape & Reel (1,000 pcs)

PART NUMBERING GUIDE "EXAMPLE"

| ECS | FREQUENCY (16.0000MHz) | LOAD CAPACITANCE* | PACKAGE TYPE |
|-----|------------------------|-------------------|--------------|
| ECS | - 160 - | 20 | - 18 |

* 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 | | 30.00 | MHz |
| MODE OF OSCILLATION | Fundamental | | | | |
| LOAD CAPACITANCE | C_L | 10.0 | 20.0 standard | Series | pF |
| DRIVE LEVEL | D_L | | | 100 | μ W |
| FREQUENCY TOLERANCE | @ +25°C | -30 | | +30 | PPM |
| EQUIVALENT SERIES RESISTANCE | R_1 | | See ESR CHART | | Ohms |
| FREQUENCY STABILITY | $\Delta f/f_0$ | -50 | | +50 | PPM |
| OPERATING TEMP. RANGE | T_{OPR} | -10 | | +70 | °C |
| STORAGE TEMP. RANGE | T_{STG} | -40 | | +85 | °C |
| SHUNT CAPACITANCE | C_0 | | | 7.0 | pF |
| AGING (FIRST YEAR @ +25°C) | $\Delta f/f_0$ | -5.0 | | +5.0 | PPM |

PACKAGE DIMENSIONS (mm)

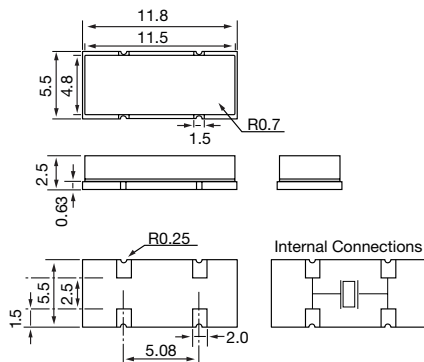


Figure 1) CSM-12 - Top, Side and Bottom views

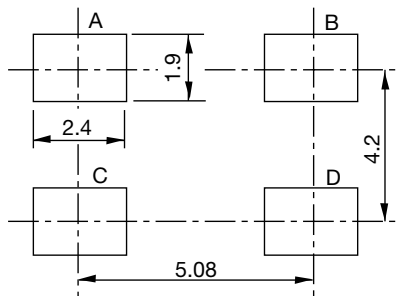


Figure 2) CSM-12 Land Pattern - Bottom view

| EQUIVALENT SERIES RESISTANCE CURVE | |
|------------------------------------|------------------|
| FREQUENCY MHz | (Ω MAX.) |
| 3.57 ~ 3.999 | 200 |
| 4.00 ~ 5.999 | 150 |
| 6.00 ~ 9.999 | 100 |
| 10.00 ~ 13.999 | 80 |
| 14.00 ~ 30.00 | 50 |

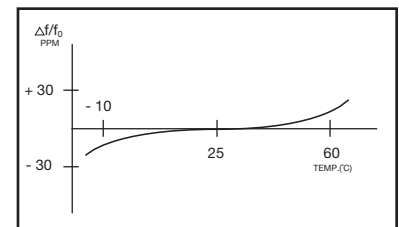


Figure 3) Frequency vs Temperature Curve