



The CSM-7 is an excellent choice for the SMD version of the HC-49US leaded crystal. The CSM-7 has a case height of 4.3 mm maximum in a resistance weld metal package. A package profile of 3.2 mm maximum is also available.

FEATURES

- Cost effective
- Space saving design
- Low profile
- Tape & Reel (1,000 pcs)

PART NUMBERING GUIDE "EXAMPLE"

| | FREQUENCY (16.0000 MHz) | LOAD CAPACITANCE* | PACKAGE TYPE** |
|-----|-------------------------|-------------------|----------------|
| ECS | 160 | 20 | 5P |

* Load capacitance (xx=xx pF, S= series resonance), ** Package Type examples (-5P= 4.3mm max. height, -5PL= 3.2mm max. height)
 For extended temp range of -40 to +85°C ad -DN suffix for example ECS-160-20-5P-DN
 Note: See Product Selection Guide for additional options.

OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

| PARAMETERS | CONDITIONS | MINIMUM | TYPICAL | MAXIMUM | UNITS |
|---|-------------------------------------|---------|---------------|---------|-------|
| FREQUENCY RANGE | f_0 | 3.57 | | 70.000 | MHz |
| FREQUENCY TOLERANCE | @ +25°C | | | ±30 | PPM |
| FREQUENCY STABILITY, ref @ 25°C | Standard -10 +70°C | | | ±50 | PPM |
| | "DN" Option -40 +85°C | | | ±100 | PPM |
| OPERATING TEMPERATURE | Standard | -10 | | +70 | °C |
| | "DN" Option | -40 | | +85 | °C |
| STORAGE TEMPERATURE (T _{STG}) | T _{STG} | -40 | | +105 | °C |
| SHUNT CAPACITANCE (C ₀) | C ₀ | | | 7.0 | pF |
| LOAD CAPACITANCE (C _L) | C _L (Customer Specified) | 10 | 20.0 standard | Series | pF |
| DRIVE LEVEL | 3.570 - 70.000 MHz | | | 0.5 | mW |
| AGING (FIRST YEAR) | @ +25°C | | | ±5.0 | PPM |

EQUIVALENT SERIES RESISTANCE

| FREQUENCY RANGE (MHz) | MODE | MAX ESR Ω | FREQUENCY RANGE (MHz) | MODE | MAX ESR Ω |
|-----------------------|-------------|-----------|-----------------------|-------------|-----------|
| 3.570 ~ 4.999 | Fundamental | 150 | 13.000 ~ 19.000 | Fundamental | 40 |
| 5.000 ~ 5.999 | Fundamental | 80 | 20.000 ~ 29.000 | Fundamental | 30 |
| 6.000 ~ 6.999 | Fundamental | 70 | 26.000 ~ 39.999 | 3rd O/T | 100 |
| 7.000 ~ 8.999 | Fundamental | 60 | 40.000 ~ 70.000 | 3rd O/T | 80 |
| 9.000 ~ 12.999 | Fundamental | 50 | | | |

PACKAGE DIMENSIONS (mm)

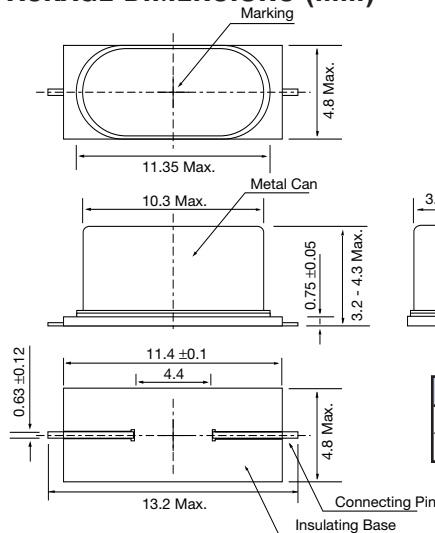


Figure 1) CSM-7 - Top, Side, Bottom and End views



Figure 2) CSM-7 Land Pattern - Bottom view



Figure 3) Frequency vs Temperature Curve

| Height "H" (max.) | |
|-------------------|--------|
| -5P | 4.3 mm |
| -5PL | 3.2 mm |