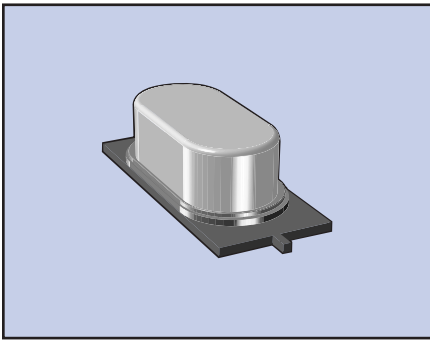




**THE DATASHEET OF  
ECS-110.5-20-5P-TR**





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"

| ECS | FREQUENCY (16.0000 MHz) | LOAD CAPACITANCE* | PACKAGE TYPE** |
|-----|-------------------------|-------------------|----------------|
| -   | 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 <sub>STG</sub> ) | T <sub>STG</sub>                    | -40     |               | +105    | °C    |
| SHUNT CAPACITANCE (C <sub>0</sub> )     | C <sub>0</sub>                      |         |               | 7.0     | pF    |
| LOAD CAPACITANCE (C <sub>L</sub> )      | C <sub>L</sub> (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)

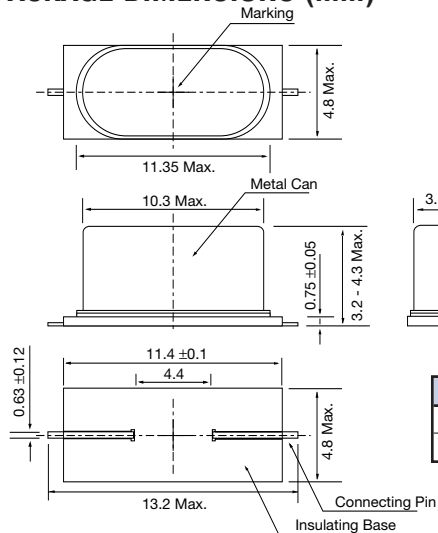


Figure 1) CSM-7 - Top, Side, Bottom and End views

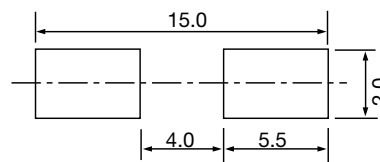


Figure 2) CSM-7 Land Pattern - Bottom view

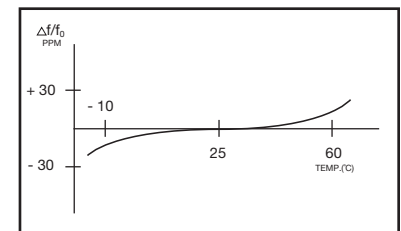


Figure 3) Frequency vs Temperature Curve

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

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

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 [ECS Inc. Information](#)

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-  Alternative Solution
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