

The CSM-12 is enclosed in a ceramic package. It is an excellent choice for a full size version of our miniature quartz crystal. The CSM-12 has a low profile dimension of 2.5mm maximum.

## FEATURES

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

## PART NUMBERING GUIDE *"EXAMPLE"*

ECS	FREQUENCY (16.0000MHz)	LOAD CAPACITANCE*	PACKAGE TYPE
-	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	$\mu$ W
FREQUENCY TOLERANCE	@ +25°C	-30		+30	PPM
EQUIVALENT SERIES RESISTANCE	$R_1$		See ESR TABLE		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)

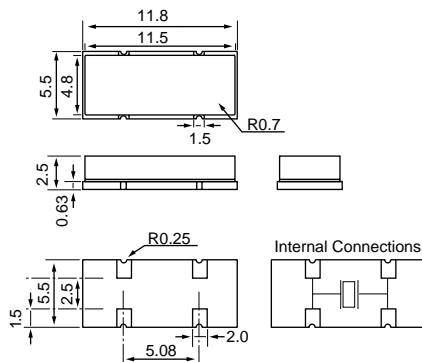


Figure 1) CSM-12 - Top, Side and Bottom views

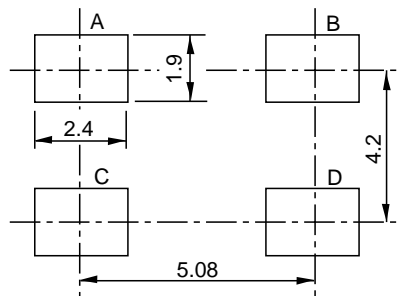


Figure 2) CSM-12 Land Pattern - Bottom view

EQUIVALENT SERIES RESISTANCE	
FREQUENCY MHz	( $\Omega$ 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

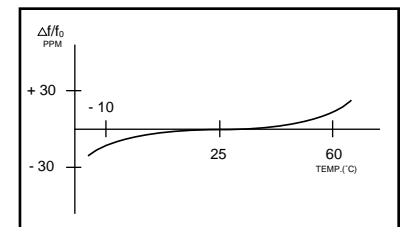


Figure 3) Frequency vs Temperature Curve