



The CSM-8 Series is a very cost effective, low profile SMD quartz crystal. The glass sealed ceramic package is available in three optional land pad configurations. It is ideal for PCMCIA, ethernet and fax modem card applications.

## FEATURES

- Glass sealed ceramic package
- Tight stability / high reliability
- Wide frequency range
- High frequency fundamental available
- RoHS Compliant (Note 7 Exemption)
- Tape & Reel (1,000 pcs)

## PART NUMBERING GUIDE "EXAMPLE"

ECS	FREQUENCY (16.000MHz)	LOAD CAPACITANCE*	PACKAGE TYPE**
-	160	- 20	- 20A

\* Load capacitance (xx=xx pF, S= series resonance), \*\* Package Type examples (20A = CSM-8A, 20B = CSM-8B)  
 Note: See Product Selection Guide for additional options.

## OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

PARAMETERS	CONDITIONS	MINIMUM	TYPICAL	MAXIMUM	UNITS
FREQUENCY RANGE	$f_0$	9.8		100.0	MHz
CALIBRATION TOLERANCE	@ +25°C	-30		+30	PPM
FREQUENCY STABILITY, ref @ 25°C	-10 ~ +70°C	-50		+50	PPM
SHUNT CAPACITANCE	$C_0$			5.0	pF
LOAD CAPACITANCE ( $C_L$ )	(Customer Specified)	10.0	20.0 standard	Series	pF
DRIVE LEVEL ( $D_L$ )	9.8 ~ 100.0MHz			0.5	mW
OPERATING TEMPERATURE	$T_{OPR}$	-10		+70	°C
STORAGE TEMPERATURE	$T_{STG}$	-40		+85	°C
AGING (FIRST YEAR)	@ +25°C	-5.0		+5.0	PPM

## EQUIVALENT SERIES RESISTANCE / MODE OF OSCILLATION

FREQUENCY RANGE (MHz)	MODE	MAX ESR $\Omega$	FREQUENCY RANGE (MHz)	MODE	MAX ESR $\Omega$
9.800 ~ 15.999	Fundamental	60	28.000 ~ 34.999	3rd O/T	80
16.000 ~ 42.000	Fundamental	40	35.000 ~ 100.000	3rd O/T	60

## PACKAGE DIMENSIONS (mm)

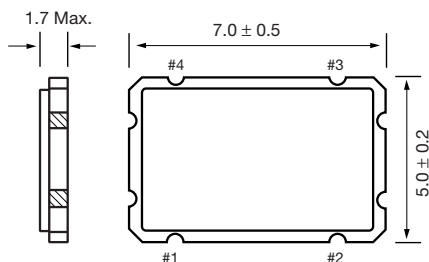


Figure 1) CSM-8 – Side and Top view

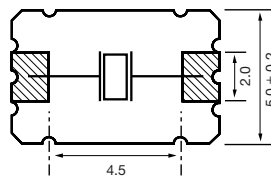


Figure 2) CSM-8A – Pad Configuration Bottom view

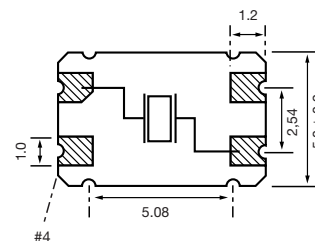


Figure 3) CSM-8B – Pad Configuration Bottom view

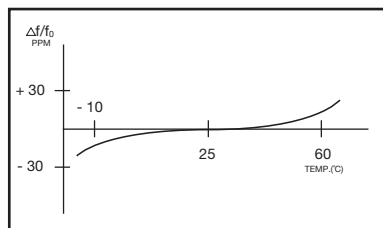


Figure 4) Frequency vs Temperature Curve

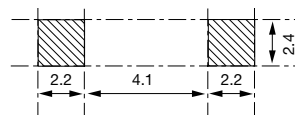


Figure 5) CSM-8A – Recommended Solder Pad Layout Top view

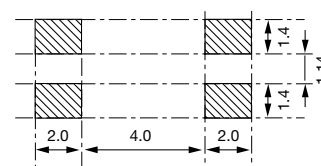


Figure 6) CSM-8B – Recommended Solder Pad Layout Top view