

The CSM-7X is an excellent choice for the SMD version of the HC-49USX leaded crystal. The CSM-7X 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)
- PbFree/RoHS Compliant

PART NUMBERING GUIDE "EXAMPLE"

MANUFACTURER	FREQUENCY (16.0000 MHz)	LOAD CAPACITANCE*	PACKAGE TYPE**
ECS	160	20	5PX

* Load capacitance (xx=xx pF, S= series resonance), ** Package Type examples (-5PX= 4.3mm max. height, -5PLX= 3.2mm max. height)

For extended temp range of -40 to +85°C ad -DN suffix for example ECS-160-20-5PX-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)

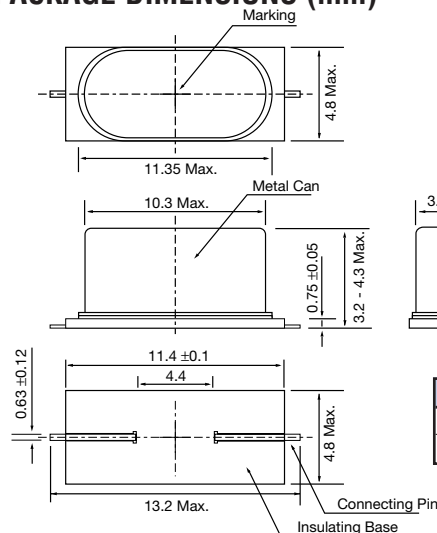


Figure 1) CSM-7X - Top, Side, Bottom and End views

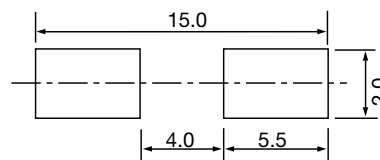


Figure 2) CSM-7X Land Pattern - Bottom view

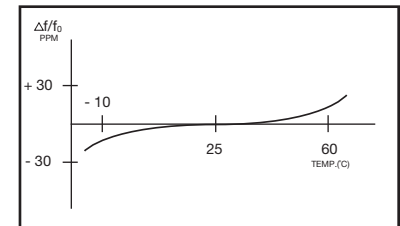
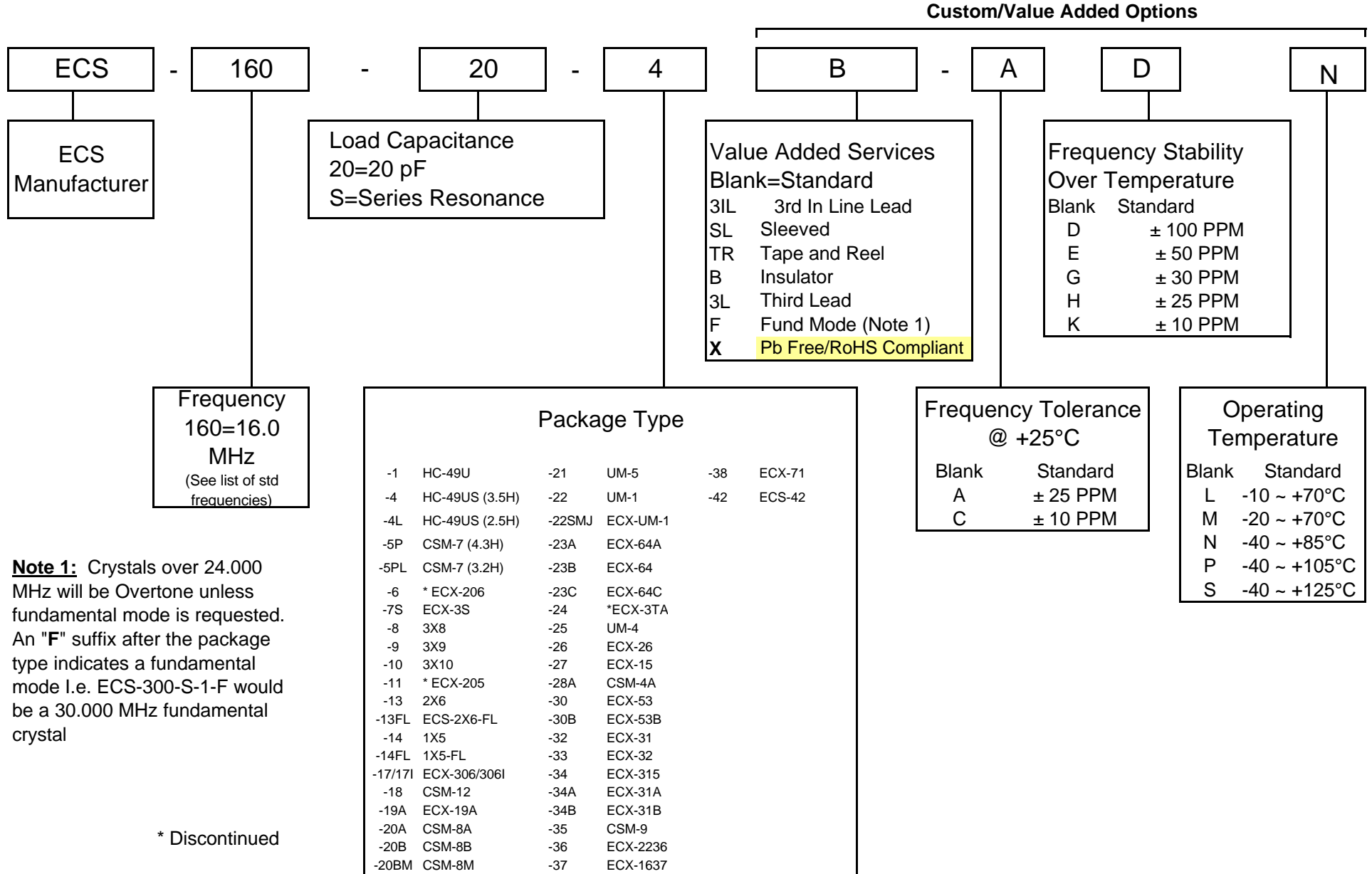


Figure 3) Frequency vs Temperature Curve

Height "H" (max.)	
-5PX	4.3 mm
-5PLX	3.2 mm

Crystal Part Numbering Guide

Example: P/N ECS-160-20-4-B-ADN (Custom P/N)



Crystal Part Numbering Guide

Standard Frequency Abbreviations

Abbreviation	Frequency	Abbreviation	Frequency	Abbreviation	Frequency
10	1.000000	73	7.372800	150	15.000000
18	1.843200	76.8	7.680000	153.6	15.360000
20	2.000000	80	8.000000	160	16.000000
20.48	2.048000	81.92	8.192000	160.003	16.000312
24	2.457600	85	8.500000	162.5	16.257000
25	2.500000	90	9.000000	169.344	16.934400
25.6	2.560000	92.1	9.216000	180	18.000000
29	2.949120	95.4	9.545000	184	18.432000
30	3.000000	98.3	9.830400	196.6	19.660800
32	3.276800	100	10.000000	200	20.000000
35	3.579545	107.3	10.738635	214.7	21.477270
36	3.686400	110	11.000000	221	22.118400
36.4	3.640000	110.4	11.046000	240	24.000000
37	3.700000	110.5	11.059200	240.001	24.000140
39	3.932160	112.2	11.228000	300	30.000000
40	4.000000	115.2	11.520000	320	32.000000
40.3	4.032000	119.8	11.981350	330	33.000000
41	4.096000	120	12.000000	338	33.868800
42	4.194304	120.003	12.000393	352.5	35.251200
44	4.433618	121	12.096000	360	36.000000
49	4.915200	122.8	12.288000	380.005	38.000530
50	5.000000	129.6	12.960000	400	40.000000
51	5.068800	135	13.516800	403.2	40.320000
52	5.185000	143	14.318180	480	48.000000
60	6.000000	146	14.690000	498.6	49.860000
61	6.144000	147.4	14.745600		