



**THE DATASHEET OF
ECS-49-20-18-TR**



The CSM-12 is a low profile SMD Crystal with a 11.8 x 5.5 mm footprint. This cost effective package offers a height of 2.5 mm.

CSM-12 SMD CRYSTAL

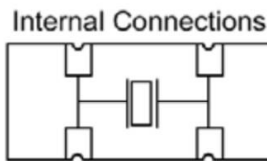
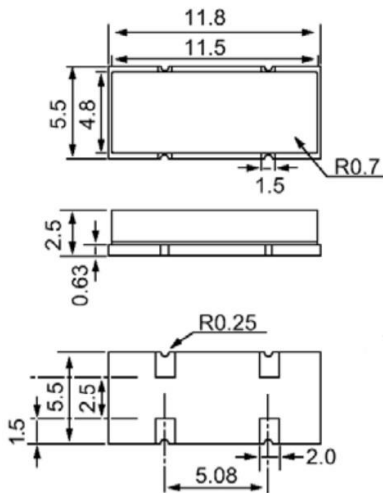


- Cost Effective
- Low Profile
- Industrial Temp. Range
- RoHS Compliant

OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

PARAMETERS	CONDITIONS	CSM-12			UNITS
		MIN	TYP	MAX	
Frequency		3.579		30.000	MHz
Mode of Oscillation	Fundamental				
Frequency Tolerance	@ +25°C			± 30	ppm
Frequency Stability	-10 ~ +70°C			± 50	ppm
	-40 ~ +85°C			±100	ppm
Shunt Capacitance	Co			7	pF
Load Capacitance	Specify in P/N	10	20	Series	pF
Drive Level	DL			100	µW
Operating Temperature*	T _{opr}	-40		+85	°C
Storage Temperature	T _{stg}	-55		+125	°C
Aging (First Year)	@ +25°C ±3°C			±5	ppm

DIMENSIONS (mm)



Frequency (MHz)	ESR Ω Max.
3.579 ~ 3.999	200
4.000 ~ 5.999	150
6.000 ~ 9.999	100
10.000 ~ 13.999	80
14.000 ~ 24.999	50
25.000 ~ 30.000	40

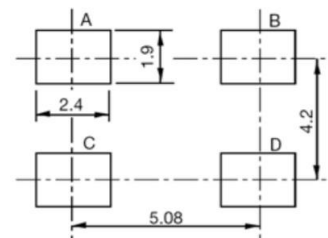


Figure 1) Top, Side, and Bottom

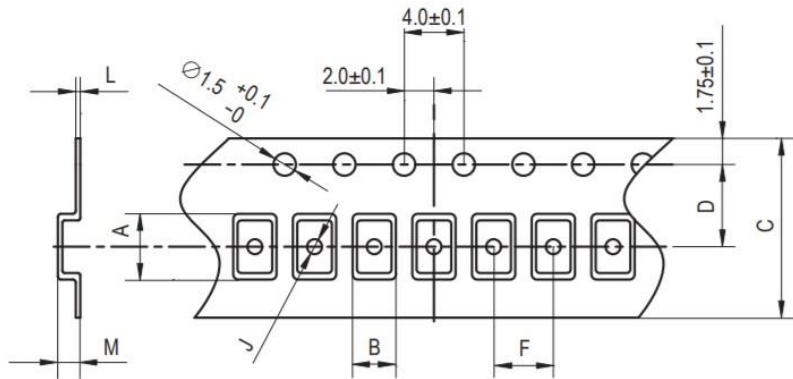
Figure 2) Suggested land

PART NUMBERING GUIDE: Example ECS-200-20-18-TR

ECS - FREQUENCY ABBREVIATION	LOAD CAPACITANCE	PACKAGE	PACKAGING
ECS	200 = 20.000 MHz See P/N Guide	20 = 20 pF S = Series	18 = CSM-12
			TR = Tape & Reel 1K/Reel

* Specify available options in P/N.

POCKET TAPE DIMENSIONS (mm)



A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
12.2	5.8	24.0	11.5	12.0	2.1	0.3	2.0	330	1000pcs

SOLDER PROFILE

Peak solder Temp +260°C Max 10 sec Max.
2 Cycles Max.
MSL 1, Lead Finish Au

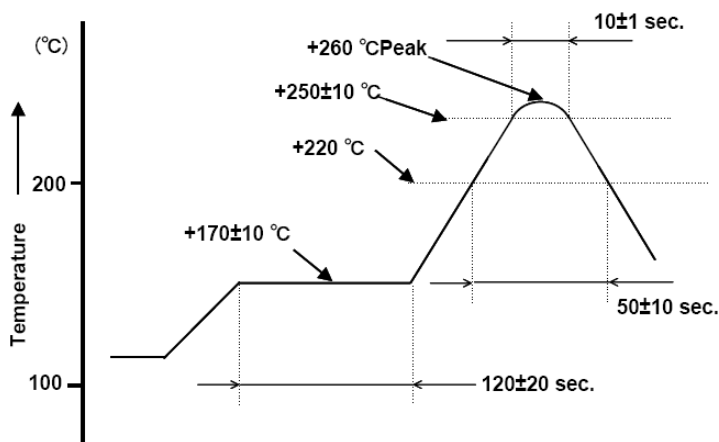



Figure 1) Suggested Reflow Profile

DEVELOPED FREQUENCIES	
Abbreviation	Frequency (MHZ)
035	3.579545
036	3.6864
040	4.000
041	4.096
049	4.9152
050	5.000
060	6.000
061	6.144
073	7.3728
080	8.000
098.3	9.8304
100	10.000
110.5	11.0592
120	12.000
122.8	12.288
143	14.31818
147.4	14.7456
160	16.000
184	18.432
196.6	19.6608
200	20.000
240	24.000
245.7	24.576
250	25.000
270	27.000

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