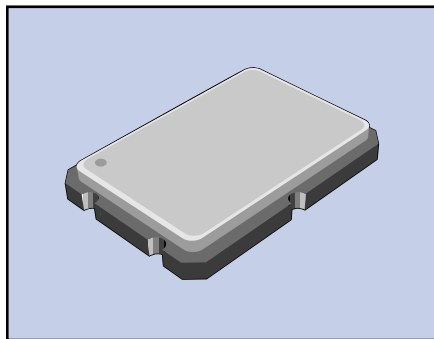




ECS delivers pure filtering versatility with the ECX-96SMF Series monolithic crystal filter. This low profile SMD filter addresses a broad range of applications including wide/narrow band filters for mobile, UHF and cordless telephone applications.

FEATURES

- Low profile of 1.5 mm maximum height
- Industry standard footprint
- Sharp cut-off characteristics
- Long term stability
- Tape & Reel (1,000 pcs)

PART NUMBERING GUIDE

PART NUMBER	FREQUENCY
ECX-96SMF21A15	21.40000 MHz
ECX-96SMF29A20	29.25000 MHz
ECX-96SMF45A30	45.00000 MHz
ECX-96SMF109A24	109.65000 MHz

OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

PARAMETERS	ECX-96SMF21A15	ECX-96SMF29A20	ECX-96SMF45A30	ECX-96SMF109A24	UNITS
NOMINAL FREQUENCY	21.40000	29.25000	45.00000	109.65000	MHz
OSCILLATION MODE	Fundamental	Fundamental	Fundamental	3rd Overtone	
3 db PASSBAND WIDTH	$\pm 7.5\text{KHz min.}$	$\pm 10\text{KHz min.}$	$\pm 15\text{KHz min.}$	$\pm 12\text{KHz min.}$	KHz
STOPBAND WIDTH	$\pm 25\text{KHz max./10db}$	$\pm 25\text{KHz max./10db}$	$\pm 60\text{KHz max./15db}$	$\pm 60\text{KHz max./18db}$	KHz/db
RIPPLE	1.0db max.	1.0db max.	1.0db max.	1.0db max.	db
INSERTION LOSS	2.5db max.	1.5db max.	3.0db max.	3.0db max.	db
ATTENUATION GUAR. (fo-910KHz)	65db min.	70db min.	70db min.	65db min.	db
SPURIOUS RESPONSES	10db min.	10db min.	10db min.	10db min.	db
GROUP DELAY DISTORTION	5 $\mu\text{s max. (fo } \pm 10\text{KHz)}$	5 $\mu\text{s max. (fo } \pm 10\text{KHz)}$	5 $\mu\text{s max. (fo } \pm 10\text{KHz)}$	5 $\mu\text{s max. (fo } \pm 10\text{KHz)}$	μs
TERMINATING IMPEDANCE	1500 Ω //2.5pF	1800 Ω //1.5pF	1100 Ω //0pF	1500 Ω //1.2pF	Ω //pF
OPERATING TEMP. RANGE	-30 ~ +85	-30 ~ +85	-30 ~ +85	-30 ~ +85	$^{\circ}\text{C}$
NUMBER OF POLES	2	2	2	2	

PACKAGE DIMENSIONS (mm)

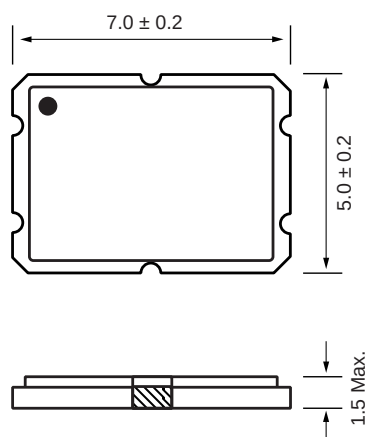


Figure 1) ECX-96SMF - Top and Side views

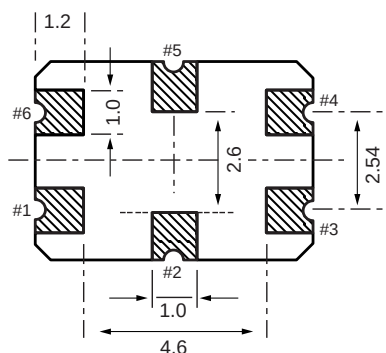


Figure 2) ECX-96SMF Pad Layout - Bottom view

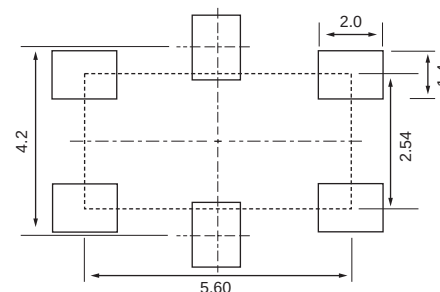


Figure 3) ECX-96SMF Land Pattern - Bottom view

PIN CONNECTIONS	
#1	IN/OUT
#2	GND
#3	GND
#4	OUT/IN
#5	GND
#6	GND