

The ECS-2X6-FLX and ECS-1X5-FLX are pre-formed lead configured crystals for use in surface mount requirements. Both packages offer a cost effective solution over other SMD versions.

## FEATURES

- Long term stability
- Cost effective
- SMD version
- Pb Free RoHS Compliant



## PART NUMBERING GUIDE "EXAMPLE"

	FREQUENCY	LOAD CAPACITANCE	PACKAGE TYPE*
ECS	- .327	- 12.5	- 13 FLX
ECS	- .327	- 12.5	- 14 FLX

\* Package Type examples (-13FLX= 2x6-FLX, -14FLX= 1x5-FLX)

## OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

PARAMETERS	CONDITIONS	ECX-2X6-FLX			ECX-1X5-FLX			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
NORMAL FREQUENCY	Fo		32.768			32.768		KHz
FREQUENCY TOLERANCE				±20			±20	PPM
TURNOVER TEMPERATURE		+20	+25	+30	+20	+25	+30	°C
OPERATING TEMP RANGE	Topr	-40		+85	-40		+85	°C
STORAGE TEMP RANGE	Tstg	-55		+125	-55		+125	°C
EQUIVALENT SERIES RESISTANCE	ESR			50			55	KΩ
INSULATION RESISTANCE	100 V DC ± 15 V	500M			500M			Ω
DRIVE LEVEL	DL			1.0			1.0	μW
AGING (FIRST YEAR)	25°C ± 3°C			±5			±3	PPM
VIBRATION RESISTANCE				±5			±10	PPM
SHOCK RESISTANCE				±5			±10	PPM
CAPACITANCE RATIO	Co/C1		450			420		
SHUNT CAPACITANCE	Co		1.35			0.8		pF
TEMPERATURE COEFFICIENT				-0.04			-0.04	ppm/°C <sup>2</sup>
Q FACTOR		50K	70K			80K		
LOAD CAPACITANCE	CL		12.5			12.5		pF
MOTIONAL CAPACITANCE	C1		0.003			0.0019		pF

## PACKAGE DIMENSIONS (mm)

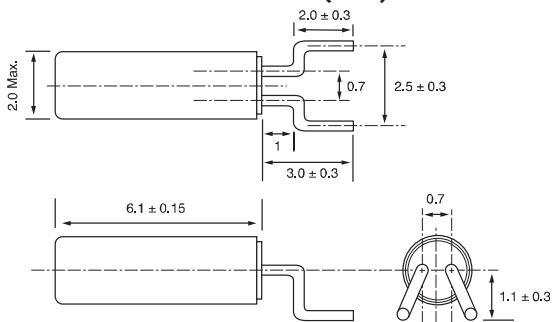


Figure 1) ECS-2X6-FLX - Top, Side and End views

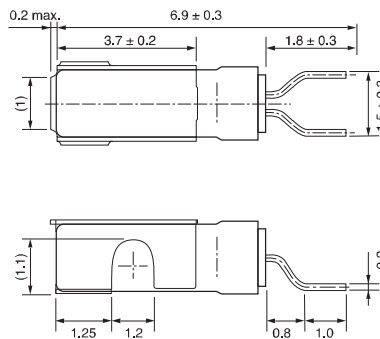


Figure 1) ECS-1X5-FLX - Top, Side and End views

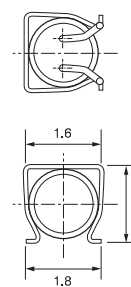


Figure 2) ECS-2X6-FLX Land Pattern - Top view

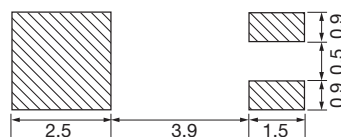
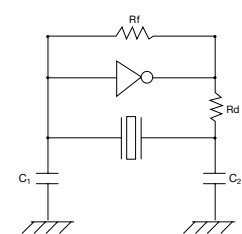


Figure 4) ECS-1X5-FLX Land Pattern - Top view

## RECOMMENDED OSCILLATION CIRCUIT



## ELECTRICAL CHARACTERISTICS

IC: TC 4069P

Rf: 10MΩ

Rd: 330KΩ (As required)

C<sub>1</sub> = 22pF, C<sub>2</sub> = 22pF

V<sub>DD</sub> = 3.0V

In this circuit, low drive level with a maximum of 1μW is recommended. If excessive drive is applied, irregular oscillation or quartz element fractures may occur.