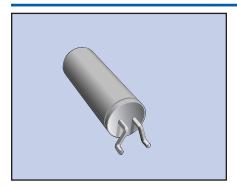
### SMD TUNING FORK CRYSTAL





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	

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

## OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

DADAMETERS	CONDITIONS	ECX-2X6-FLX				LINUTC		
PARAMETERS		MIN	TYP	MAX	MIN	TYP	MAX	UNITS
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	Со		1.35			0.8		pF
TEMPERATURE COEFFICIENT				-0.04			-0.04	ppm/°C2
Q FACTOR		50K	70K			80K		
LOAD CAPACITANCE	CL		12.5			12.5		pF
MOTIONAL CAPACITANCE	C1		0.003			0.0019		pF

# PACKAGE DIMENSIONS (mm)

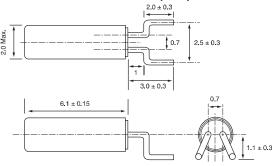


Figure 1) ECS-2X6-FLX - Top, Side and End views

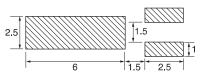
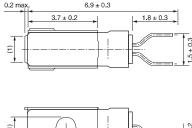


Figure 2) ECS-2X6-FLX Land Pattern - Top view



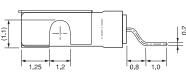


Figure 1) ECS-1X5-FLX - Top, Side and End views

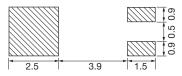
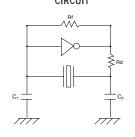


Figure 4) ECS-1X5-FLX Land Pattern - Top view

# RECOMMENDED OSCILLATION CIRCUIT



#### **ELECTRICAL CHARACTERISTICS**

IC: TC 4069P Rf:  $10M\Omega$ Rd:  $330K\Omega$  (As required)  $C_1 = 22pF$ ,  $C_2 = 22pF$  $V_{DD} = 3.0V$ 

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.

ECS. INC. INTERNATIONAL 1105 S. RIDGEVIEW, OLATHE, KS 66062 • 913-782-7787 • 800-237-1041 • FAX 913-782-6991 • WWW.ECSXTAL.COM