

The miniature ECX-26 and the sub-miniature ECX-15 are compact, cost effective SMD tuning fork crystals. The slimline molded package requires less space than other SMD tuning fork crystals.

FEATURES

- Cost effective
- Low profile
- Long term stability
- Tape & Reel packaging

PART NUMBERING GUIDE "EXAMPLE"

MANUFACTURER	FREQUENCY (32.768 MHz)	LOAD CAPACITANCE*	PACKAGE TYPE
ECS	- .327	- 12.5	- 26

* Package type examples (26=ECX-26, 27=ECX-15) Sample Part Number: ECS-.327-12.5-26

OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

PARAMETERS	CONDITIONS	ECX-26			ECX-15			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
FREQUENCY RANGE	F ₀		32.768			32.768		KHz
FREQUENCY TOLERANCE	Δf/f ₀			±20			±20	PPM
LOAD CAPACITANCE	Optional CL available		12.5			12.5		pF
DRIVE LEVEL	DL			1.0			1.0	μW
EQUIV. SERIES RESISTANCE	R ₁			50K			55K	Ω
Q-FACTOR	Q		70K			70K		Q
TURNOVER TEMPERATURE		+20	+25	+30	+20	+25	+30	°C
TEMPERATURE COEFFICIENT	β		-0.35	-0.04		-0.35	-0.04	PPM/°C ²
SHUNT CAPACITANCE	C ₀		0.9			0.95		pF
CAPACITANCE RATIO			360			380		
OPERATING TEMP RANGE	T _{OPR}	-20		+70	-20		+70	°C
STORAGE TEMP RANGE	T _{STG}	-40		+125	-40		+125	°C
INSULATION RESISTANCE	@ 100V DC ±15V	500M			500M			Ω
AGING (FIRST YEAR)	@ +25°C ±3°C			±3			±3	PPM
MOTION CAPACITANCE	C ₁		0.0025			+0.0025		PF

PACKAGE DIMENSIONS (mm)

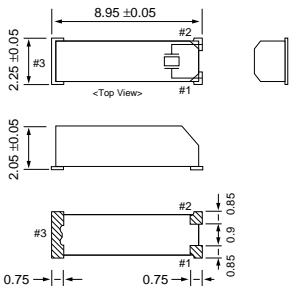


Figure 1) ECX-26 Top, Side Bottom & End views

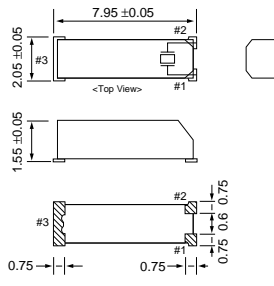


Figure 3) ECX-15 Top, Side Bottom & End views

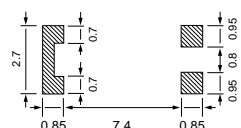


Figure 2) ECX-26 Land Pattern

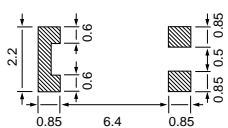
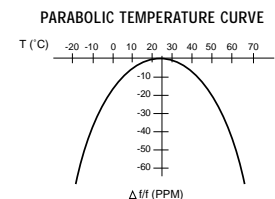
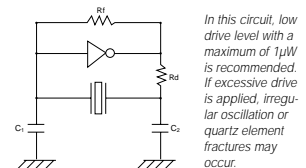


Figure 4) ECX-15 Land Pattern



To determine frequency stability use parabolic curvature. For example: What is the stability at 45°C?
 1) Change in T (°C) = 45 - 25 = 20°C
 2) Change in frequency = -0.04 PPM x (ΔT)²
 = -0.04 PPM x (20)²
 = -16.0 PPM

RECOMMENDED OSCILLATION CIRCUIT



ELECTRICAL CHARACTERISTICS

IC: TC 4069P, R_f: 10MΩ
 R_d: 330KΩ (As required)
 C₁ = 22pF, C₂ = 22pF, V_{DD} = 3.0V