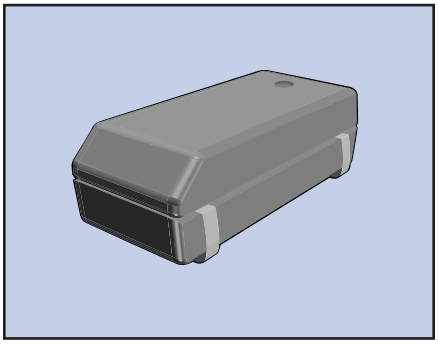
ECX-306X/306IX SMD TUNING FORK CRYSTAL



Housing for the ECX-306X/306IX crystal is made from the same thermoplastic that is industry standard for integrated circuits. This ruggedized molded package is excellent for SMD applications.

FEATURES

- Low profile
- Long term stability
- Industry standard footprint
- Excellent shock resistance
- Excellent environmental characteristics
- Tape and Reel (3,000 pcs)
- RoHS Compliant w/ Exemption for High Temp Solder

PART NUMBERING GUIDE "EXAMPLE"

MANUFACTURER		FREQUENCY		LOAD CAPACITANCE		PACKAGE TYPE**
ECS	–	.327	–	12.5	–	17X

** Package Type examples (-17X= ECX-306,X 17IX= ECX-306IX)

OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

PARAMETERS		ECX-306/306I	UNITS
NOMINAL FREQUENCY	Fo	32.768	KHz
LOAD CAPACITANCE	C_L	12.5 Standard (6.0 Optional)	pF
DRIVE LEVEL	D_L	1 max.	µW
CALIBRATION TOLERANCE	@ 25˚C	±20	PPM
EQUIVALENT SERIES RESISTANCE	R_1	50 max.	KΩ
TEMPERATURE COEFFICIENT		-0.040 PPM/˚C^2 max.	PPM/(ΔC˚)
OPERATING TEMPERATURE RANGE	T_{OPR}	-10 ~ +60	˚C
MAX. OPERATING TEMPERATURE RANGE		-40 ~ +85	°C
Q FACTOR	Q	50,000 min.	
TURNOVER TEMPERATURE	T_O	+25 ± 5	°C
STORAGE TEMPERATURE RANGE	T_{STG}	-55 ~ +125	°C
INSULATION RESISTANCE	IR	500MΩ min./ DC 100V	MΩ
SHUNT CAPACITANCE	C_o	1.35 typical	pF
MOTIONAL CAPACITANCE	C_1	0.003 pF typical	pF
AGING (FIRST YEAR)	Δf/fo	±3 PPM max. @ +25˚C	PPM

PACKAGE DIMENSIONS (mm)

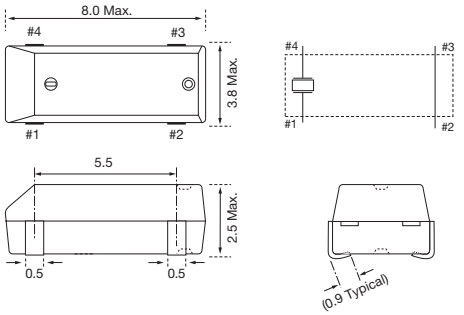


Figure 1) ECX-306 - Top, Side and End views with pin connections

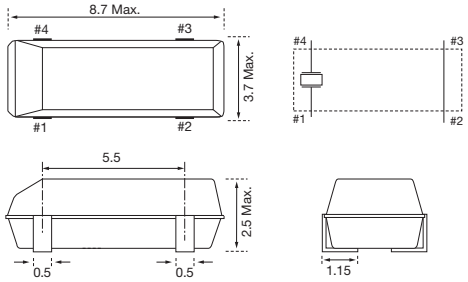


Figure 2) ECX-306I - Top, Side and End views with pin connections

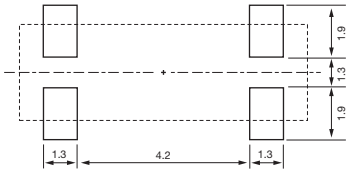
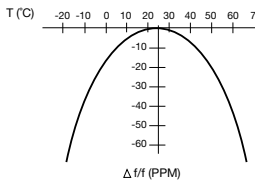


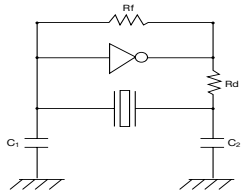
Figure 3) ECX-306/306I Land Pattern - Top view

PARABOLIC TEMPERATURE CURVE



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 $(\Delta T)^2$
= -0.04 PPM x $(20)^2$
= -16.0 PPM

RECOMMENDED OSCILLATION CIRCUIT



ELECTRICAL CHARACTERISTICS

IC: TC 4069P
Rf: 10MΩ
Rd: 330KΩ (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