

Similar to the ECS-31 Series, the ECS-1X5-1.0 features the same characteristics as only tuning fork crystals offer. It also has outstanding shock and vibration characteristics

FEATURES

- Cost effective
- Excellent aging
- Miniature size
- Long term stability
- Excellent shock and vibration characteristics

PART NUMBERING GUIDE *"EXAMPLE"*

	FREQUENCY	LOAD CAPACITANCE	PACKAGE TYPE*
ECS	- 10	- 8	- 14

* Package type examples (14=1x5)

OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

PARAMETERS		MINIMUM	TYPICAL	MAXIMUM	UNITS
NOMINAL FREQUENCY	f_0		1.0		MHz
MODE OF OSCILLATION			Fundamental		
LOAD CAPACITANCE	C_L		8.0		pF
DRIVE LEVEL	D_L			1.0	μ W
FREQUENCY TOLERANCE	@ +25°C		± 3000		PPM
FREQUENCY STABILITY	$\Delta f/f_0$		$-0.034 \text{ PPM}/^\circ\text{C}^2$		PPM
OPERATING TEMP. RANGE	T_{OPR}	-10		+60	°C
STORAGE TEMP. RANGE	T_{STG}	-30		+70	°C
AGING (FIRST YEAR @ +25°C $\pm 3^\circ\text{C}$)	$\Delta f/f_0$	-5		+5	PPM
INSULATION RESISTANCE	IR	500			M Ω
EQUIVALENT SERIES RESISTANCE	R_1			3	K Ω
SHUNT CAPACITANCE	C_0		0.4		pF
SHOCK RESISTANCE		-5		+5	PPM
MOTIONAL CAPACITANCE	C_1		1.0		fF

PACKAGE DIMENSIONS (mm)

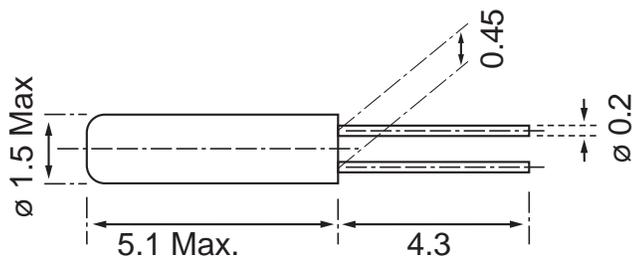
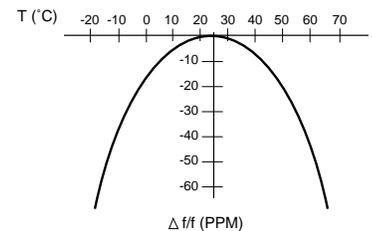


Figure 1) ECS-1x5-1.0

PARABOLIC TEMPERATURE CURVE



To determine frequency stability, use parabolic curvature. For example: What is the stability at 45°C?

- 1) Change in T ($^\circ\text{C}$) = $45 - 25 = 20^\circ\text{C}$
- 2) Change in frequency = $-0.04 \text{ PPM} \times (\Delta T)^2$
 $= -0.04 \text{ PPM} \times (20)^2$
 $= -16.0 \text{ PPM}$