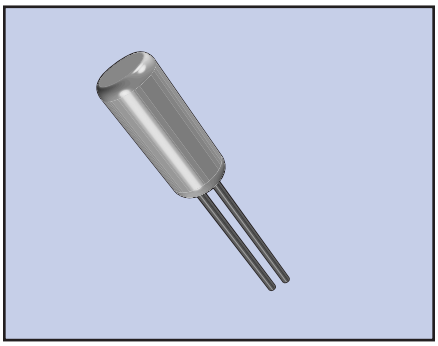
ECS-3X10X, 3X9X HIGH FREQUENCY MINIATURE QUARTZ CRYSTALS



These products represent our selection of miniature tubular high frequency crystals. They feature outstanding shock/vibration resistance and environmental characteristics.

FEATURES

- Cost effective
- Excellent aging
- Wide frequency range
- Excellent reliability
- PbFree/RoHS Compliant

PART NUMBERING GUIDE "EXAMPLE"

MANUFACTURER		FREQUENCY		LOAD CAPACITANCE*		PACKAGE TYPE**
ECS	–	35	–	16	–	10X
ECS	–	160	–	16	–	9X

** Load capacitance (xx=xx pF, S= series resonance), ** Package Type examples (10X = 3x10, 9X = 3x9)*

OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

PARAMETERS		ECS-3X10X	ECS-3X9X	CONDITIONS
FREQUENCY RANGE	f_O	3.5MHz ~ 4MHz	4MHz ~ 30MHz (fund), 30MHz ~ 70MHz (3rd OT)	
FREQUENCY TOLERANCE	$\Delta f/f_O$	±50 PPM		@ +25˚C
FREQUENCY VS. TEMP. CHARAC.	$\Delta f/f_O$	±50 PPM		-10˚C ~ +60˚C
OPERATING TEMPERATURE RANGE	T_{OPR}	-10 ~ +60		˚C
STORAGE TEMP. RANGE	T_{STG}	-40 ~ +85		˚C
EQUIVALENT SERIES RESISTANCE	R_1	See table		
LOAD CAPACITANCE	C_L	16.0 pF typ. (Customer Specified)		pF
SHUNT CAPACITANCE	C_0	5.0 max.		pF
DRIVE LEVEL	D_L	50µW ~ 100µW		µW
INSULATION RESISTANCE	IR	500MΩ min.		DC 100V ±15V
AGING (FIRST YEAR)	$\Delta f/f_O$	±5 PPM max.		25˚C ±3˚C
SHOCK RESISTANCE		±5 PPM Drop test of 3 times on a hard board from 75 cm height or shock test of 3000G x 0.3ms x 1/2 sin wave x 3 directions		Conditions will vary depending on frequency

EQUIVALENT SERIES RESISTANCE/ MODE OF OSCILLATION

FREQUENCY MHz	EQUIVALENT SERIES RESISTANCE	MODE
3.5MHZ ~ 4MHz	200 Ω MAX.	Fundamental
4MHZ ~ 6MHz	150 Ω MAX.	
6MHZ ~ 10MHz	100 Ω MAX.	
10MHZ ~ 30MHz	50 Ω MAX.	
30MHZ ~ 36MHz	100 Ω MAX.	3rd O/T
36MHZ ~ 70MHz	80 Ω MAX.	

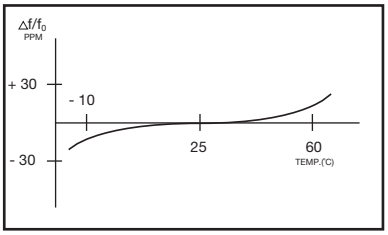


Figure 3) Frequency vs Temperature Curve

PACKAGE DIMENSIONS (mm)

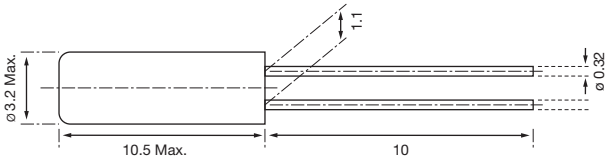


Figure 1) ECS-3x10X

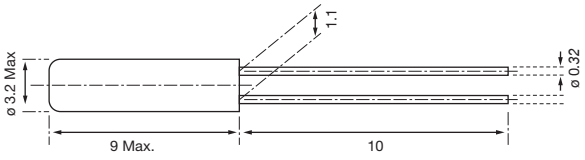


Figure 2) 3x9X