



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



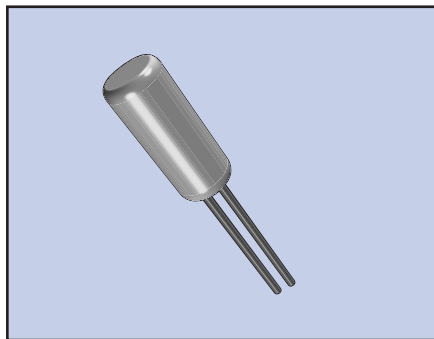
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These products represent our selection of miniature tubular high frequency crystals. They feature outstanding shock/vibration resistance and environmental characteristics.

FEATURES

- Cost effective
- Excellent aging
- Wide frequency range
- Excellent reliability

PART NUMBERING GUIDE "EXAMPLE"

		FREQUENCY		LOAD CAPACITANCE*		PACKAGE TYPE**
ECS	-	35	-	16	-	10
ECS	-	160	-	16	-	9

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

OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

PARAMETERS		ECS-3x10	ECS-3x9	CONDITIONS
FREQUENCY RANGE	f_0	3.5MHz ~ 4MHz	4MHz ~ 30MHz (fund), 30MHz ~ 70MHz (3rd OT)	
FREQUENCY TOLERANCE	$\Delta f/f_0$	±50 PPM		@ +25°C
FREQUENCY VS. TEMP. CHARAC.	$\Delta f/f_0$	±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)	$\Delta f/f_0$	±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.	
36MHz ~ 70MHz	80 Ω MAX.	3rd O/T

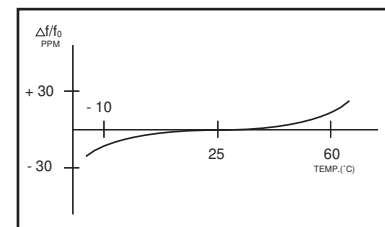


Figure 3) Frequency vs Temperature Curve

PACKAGE DIMENSIONS (mm)

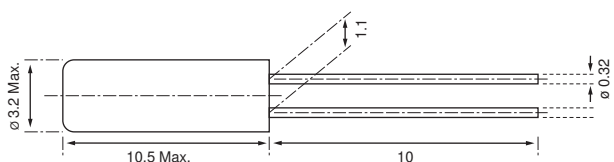


Figure 1) ECS-3x10

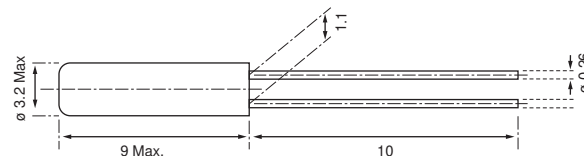


Figure 2) 3x9