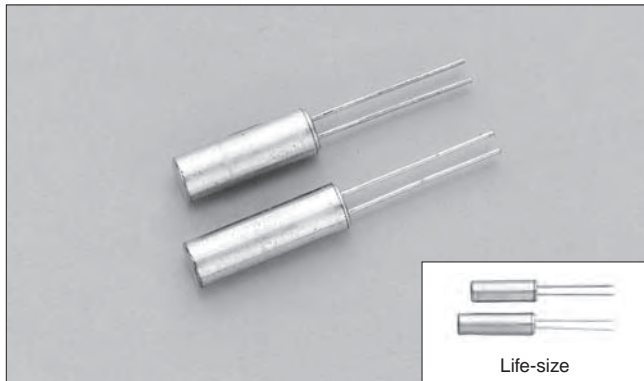


# AT-CUT CRYSTAL UNITS (Cylinder Type)

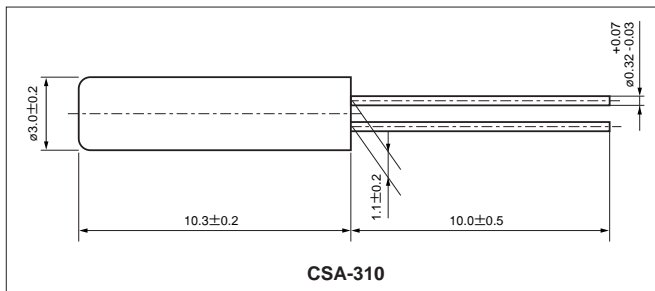
## CSA-310 · CSA-309



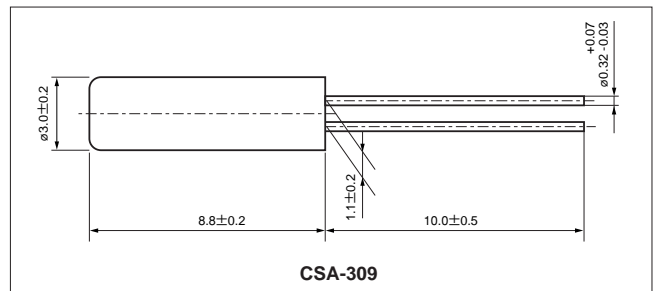
### FEATURES

- High performance miniature crystal units with Citizen's ultra-precise processing technology.
- High-stability assured with tight vacuum sealing.
- Suitable for various applications.

### DIMENSION [mm]



### SOLDER PAD LAYOUT [mm]



### STANDARD SPECIFICATIONS

Item	Model	CSA-310	CSA-309	Conditions
Nominal Frequency	$f_0$	3.5MHz~4.0MHz	4.001MHz~34.0MHz (Fundamental) 27.0MHz~70.0MHz (3rd Overtone)	Need to contact us for the available frequency
Frequency Tolerance	$\Delta f/f_0$	$\pm 30\text{ppm}$		at 25°C
Frequency Tolerance over Operating Temperature Range	$\Delta f/f_0$	below 6.0MHz: $\pm 50\text{ppm}$ above 6.0MHz: $\pm 30\text{ppm}$		-10°C ~ +60°C See figure 3 in P4
Operating Temperature Range	$T_{\text{OPR}}$	-20°C ~ +70°C		
Storage Temperature Range	$T_{\text{STR}}$	-40°C ~ +85°C		
Motional (series) resistance	$R_1$	Refer to the following table		at 25°C
Load capacitance	$C_L$	16.0pF, 18.0pF		Need to specify your requirement
Shunt capacitance	$C_0$	5.0pF Max.		
Level of drive	$D_L$	100 $\mu\text{W}$		
Insulation Resistance	$I_R$	500M $\Omega$ Min.		DC100V $\pm 15\text{V}$
Aging (first year)	$\Delta f/f_0$	$\pm 5\text{ppm}$ Max.		25°C $\pm 3^\circ\text{C}$

### MOTIONAL (SERIES) RESISTANCE ( $R_1$ )

Frequency Range	$3.5\text{MHz} \leq f_0 < 4.0\text{MHz}$	$4.0\text{MHz} \leq f_0 < 6.0\text{MHz}$	$6.0\text{MHz} \leq f_0 < 10\text{MHz}$	$10\text{MHz} \leq f_0 < 27\text{MHz}$	$27\text{MHz} \leq f_0 < 36\text{MHz}$	$36\text{MHz} \leq f_0 \leq 70\text{MHz}$
Mode	Fundamental	Fundamental	Fundamental	Fundamental	Fundamental 3rd Overtone	3rd Overtone
$R_1$	200 $\Omega$ Max.	150 $\Omega$ Max.	100 $\Omega$ Max.	50 $\Omega$ Max.	50 $\Omega$ Max. 100 $\Omega$ Max.	80 $\Omega$ Max.