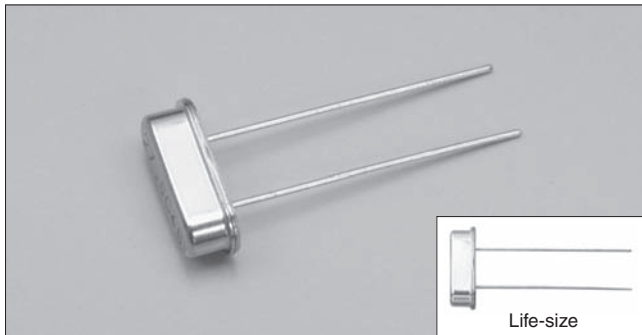


# AT-CUT CRYSTAL UNIT (Metal-can Type)

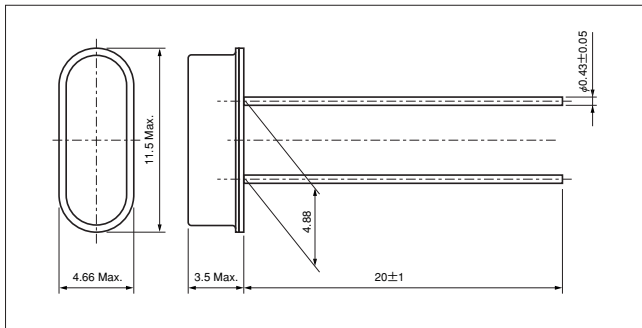
## HC-49/U-S



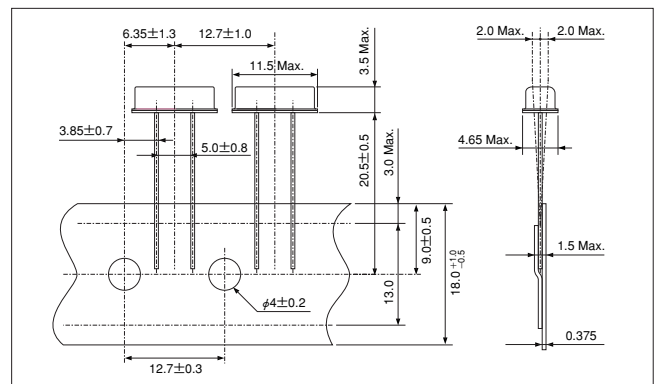
### FEATURES

- High performance miniature crystal units with Citizen's ultra-precise processing technology.
- Available in Tape and reel form.
- Suitable for various applications such as communication, AV, automotive and measurement devices.

### DIMENSION [mm]



### Taping dimension : 2000pcs/Ammo pack [mm]



### STANDARD SPECIFICATIONS

Item	Model	HC-49/U-S	Conditions
Nominal Frequency	f <sub>0</sub>	3.5MHz~30.0MHz (Fundamental)	Need to contact us for the available frequency
		30.0MHz~50.0MHz (3rd Overtone)	
Frequency Tolerance	Δ f/f <sub>0</sub>	±30ppm	at 25°C
Frequency Tolerance over Operating Temperature Range	Δ f/f <sub>0</sub>	below 6.0MHz: ±50ppm	-10°C ~ +60°C
		above 6.0MHz: ±30ppm	See figure 3 in P4
Operating Temperature Range	T <sub>OPR</sub>	-20°C ~ +70°C	
Storage Temperature Range	T <sub>STR</sub>	-40°C ~ +85°C	
Motional (series) resistance	R <sub>1</sub>	Refer to the following table	at 25°C
Load capacitance	C <sub>L</sub>	16.0pF, 18.0pF	Need to specify your requirement
Shunt capacitance	C <sub>0</sub>	7.0pF Max.	
Level of drive	D <sub>L</sub>	100 μW	
Insulation Resistance	I <sub>R</sub>	500MΩ Min.	DC100V±15V
Aging (first year)	Δ f/f <sub>0</sub>	±5ppm Max.	25°C ±3°C

### MOTIONAL (SERIES) RESISTANCE (R<sub>1</sub>)

Frequency Range	3.5MHz ≤ f <sub>0</sub> < 4.0MHz	4.0MHz ≤ f <sub>0</sub> < 6.0MHz	6.0MHz ≤ f <sub>0</sub> < 10MHz	10MHz ≤ f <sub>0</sub> < 14MHz	14MHz ≤ f <sub>0</sub> < 30MHz	30MHz ≤ f <sub>0</sub> < 36MHz	36MHz ≤ f <sub>0</sub> ≤ 50MHz
Mode	Fundamental	Fundamental	Fundamental	Fundamental	Fundamental	3rd Overtone	3rd Overtone
R <sub>1</sub>	200 Ω Max.	150 Ω Max.	100 Ω Max.	80 Ω Max.	50 Ω Max.	140 Ω Max.	100 Ω Max.

## AT-cut Crystal Units. Part Numbering System

- Example Part Number

**CS325 20 000 000 A A J T - XXX**

### Model

CSA-310  
CSA-309  
HC-49/U-S  
HCM49  
CM309S  
CS325

### Frequency

Please mention numeral of the frequency in Hz unit.

### Frequency deviation (at 25°C)

Standard specification shall differ subject to frequency.

A +/-30ppm (STD)  
B +/-50ppm  
C +/-100ppm (STD)  
D +/-20ppm  
E +/-10ppm  
F +/-15ppm  
G +/-25ppm  
H +/-5ppm  
Z others

### CTZ management code

It is a number to be assigned by CTZ after inquiry from a customer.

### Package specification

T Tape and Reel (Standard package unit)  
B Bulk (Without taping/ Bulk Package)

### Load capacitance (CL)

A Series	I	16.0pF	Q	10.0pF
B 6.0pF	J	18.0pF	R	50.0pF
C 9.0pF	K	20.0pF	S	11.0pF
D 9.5pF	L	22.0pF	T	14.0pF
E 12.0pF	M	25.0pF	U	17.0pF
F 12.5pF	N	30.0pF	V	8.0pF
G 13.0pF	O	32.0pF	Y	7.0pF
H 15.0pF	P	33.0pF	Z	others

### Frequency-temperature characteristic (at operating temperature range)

A +/-30ppm (-10 ~ +60°C) (STD)	M +/-60ppm (-40 ~ +85°C)
B +/-50ppm (-10 ~ +60°C) (STD)	N +/-80ppm (-40 ~ +85°C)
C +/-100ppm (-10 ~ +60°C)	O +/-30ppm (-20 ~ +70°C)
D +/-20ppm (-10 ~ +60°C)	P +/-40ppm (-20 ~ +70°C)
E +/-10ppm (-10 ~ +60°C)	Q +/-50ppm (-20 ~ +70°C)
F +/-30ppm (-40 ~ +85°C)	R +/-60ppm (-20 ~ +70°C)
G +/-50ppm (-40 ~ +85°C)	S +/-70ppm (-20 ~ +70°C)
H +/-100ppm (-40 ~ +85°C)	T +/-80ppm (-20 ~ +70°C)
I +/-20ppm (-40 ~ +85°C)	U +/-80ppm (-40 ~ +100°C)
J +/-10ppm (-40 ~ +85°C)	V +/-100ppm (-40 ~ +100°C)
K +/-150ppm (-40 ~ +85°C)	W +/-150ppm (-40 ~ +100°C)
L +/-200ppm (-40 ~ +85°C)	X +/-200ppm (-40 ~ +100°C)
	Z others

\*Shall not be available subject to the frequency.