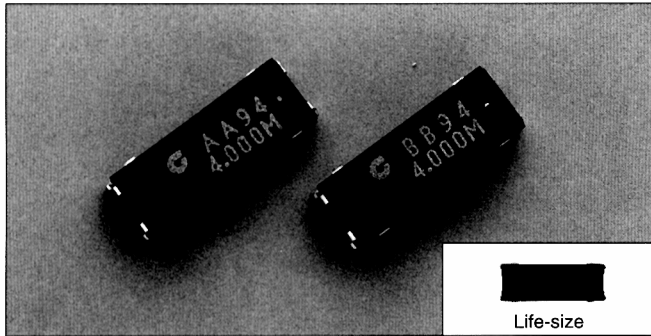
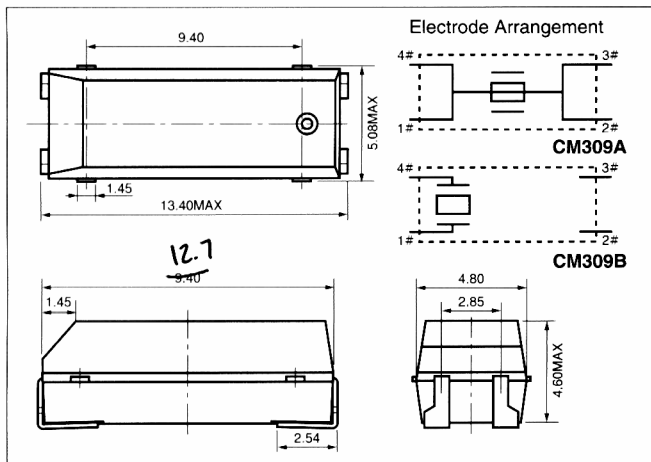


# MHz RANGE CRYSTAL UNITS (PLASTIC SURFACE MOUNT TYPE)

## CM309A/CM309B (1,000pcs/reel)



### ■ DIMENSIONS: (UNIT=mm)



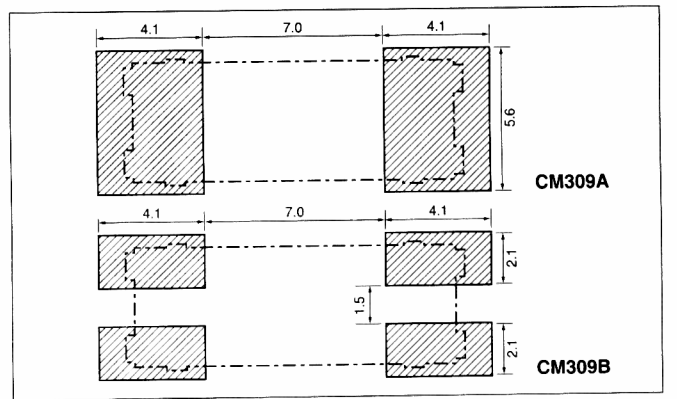
### ■ FEATURES:

- Being of the miniature SMD type and featuring high efficiency in mounting, the CM309S is ideal for application to high-density circuit boards.
- As it incorporates a heat-resisting packaged cylinder-type crystal, this crystal makes best use of the superb characteristic AT-cut crystals have, and permits reflow soldering.
- Enables automatic mounting, due to the adoption of the emboss taping packaging.

### ■ APPLICATIONS:

- Can be used for a wide range of applications including use in communication equipment, AV equipment, OA equipment and measuring instruments.

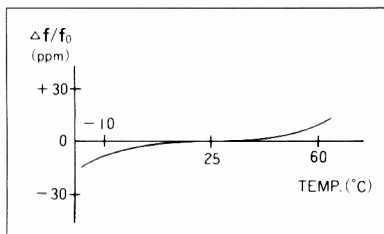
### ■ RECOMMENDED SOLDERING PATTERN: (UNIT=mm)



### ■ STANDARD SPECIFICATIONS

Item	Model	CM309A/CM309B	Conditions
Nominal frequency	$f_0$	3.5MHz~32MHz (fund), 30MHz~70MHz (3rd OT)	Please contact us for changes in frequency.
Frequency tolerance	$\Delta f/f_0$	$\pm 30$ ppm or $\pm 50$ ppm	At 25°C
Frequency vs. Temperature characteristics	$\Delta f/f_0$	$\pm 50$ ppm ( $\pm 30$ ppm)	-10°C~+60°C
Operating temperature range	$T_{ORP}$	-40°C~+85°C	
Storage temperature range	$T_{STG}$	-55°C~+125°C	
Equivalent series resistance	$R_1$	See drawing	At 25°C
Load capacitance	$C_L$	16pFTYP	Please specify
Shunt capacitance	$C_0$	7.0pF MAX.	
Drive level	DL	50 $\mu$ W~100 $\mu$ W	
Insulation resistance	IR	500M $\Omega$ MIN.	DC100V $\pm$ 15V
Aging (First year)	$\Delta f/f_0$	$\pm 5$ ppm MAX.	25°C $\pm$ 3°C
Sealing		1 x 10 <sup>-2</sup> $\mu$ Pa·m <sup>3</sup> /s MAX.	
Shock resistance		$\pm 5$ ppm MAX. Drop test of 3 times on a hard board from 75cm height or shock test of 3000G x 0.3ms x 1/2 sin wave x 3 directions	Conditions will vary depending on the frequency.

### FREQUENCY vs TEMPERATURE CURVE



### EQUIVALENT SERIES RESISTANCE (ESR, R<sub>1</sub>)

Frequency	Equivalent series resistance	Mode
3.5MHz $\leq$ $f_0$ < 4MHz	200	fundamental
4MHz $\leq$ $f_0$ < 6MHz	150	
6MHz $\leq$ $f_0$ < 10MHz	100	
10MHz $\leq$ $f_0$ $\leq$ 32MHz	50	
30MHz < $f_0$ < 36MHz	100	3rd OT
36MHz $\leq$ $f_0$ < 70MHz	80	

( $\Omega$  MAX.)