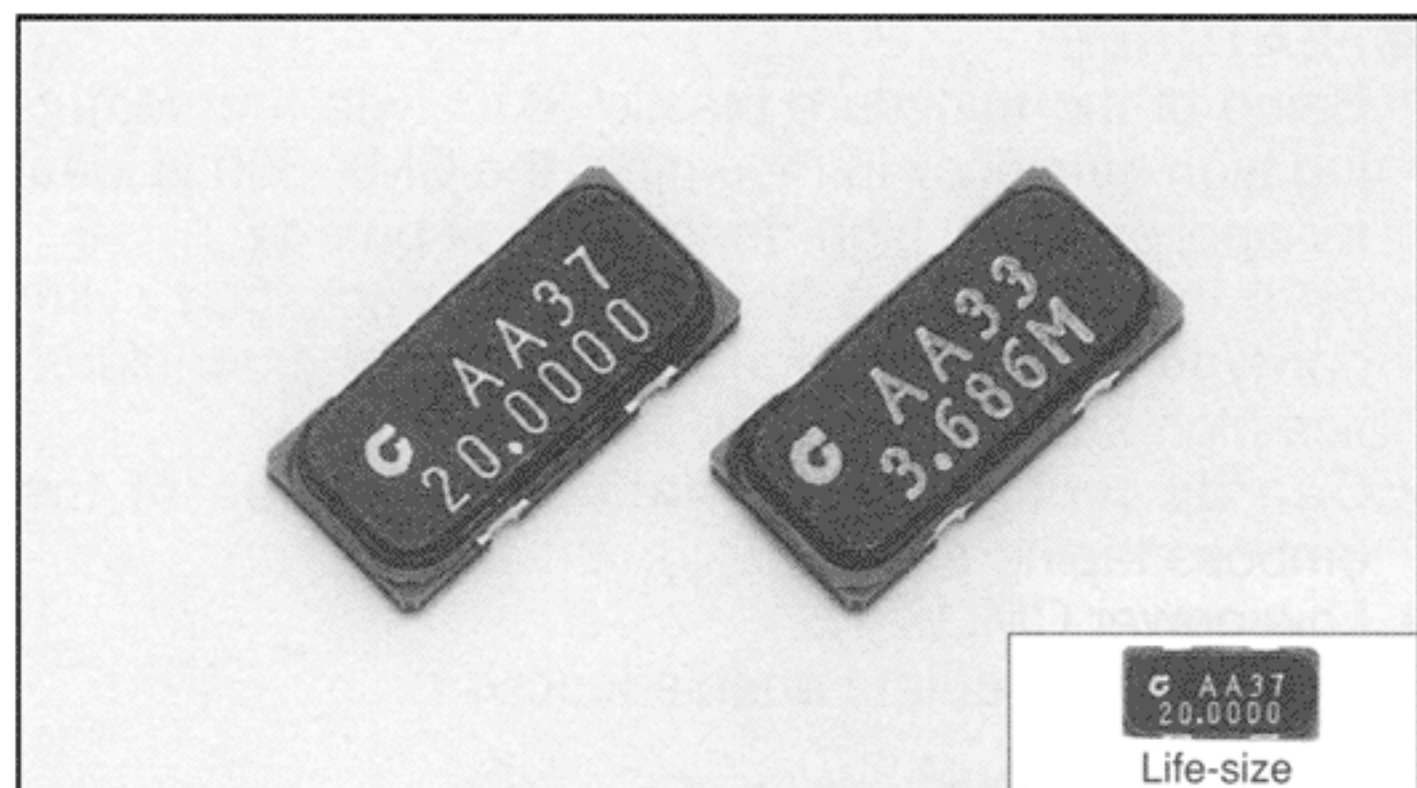


MHz RANGE CRYSTAL UNITS (CERAMIC SURFACE MOUNT TYPE)

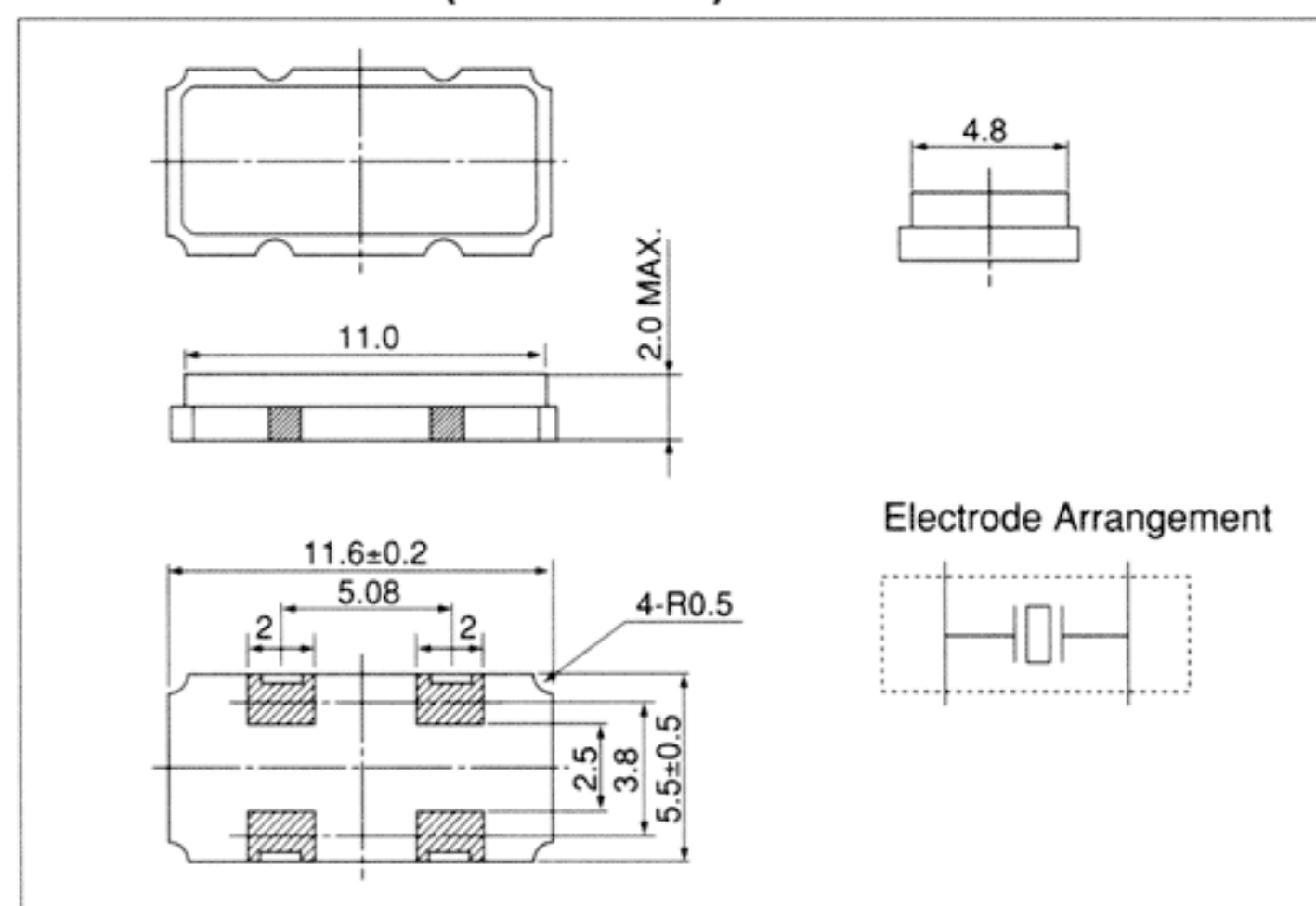
CITIZEN[®]

CS20

(2,000pcs/reel)



■ DIMENSIONS: (UNIT=mm)



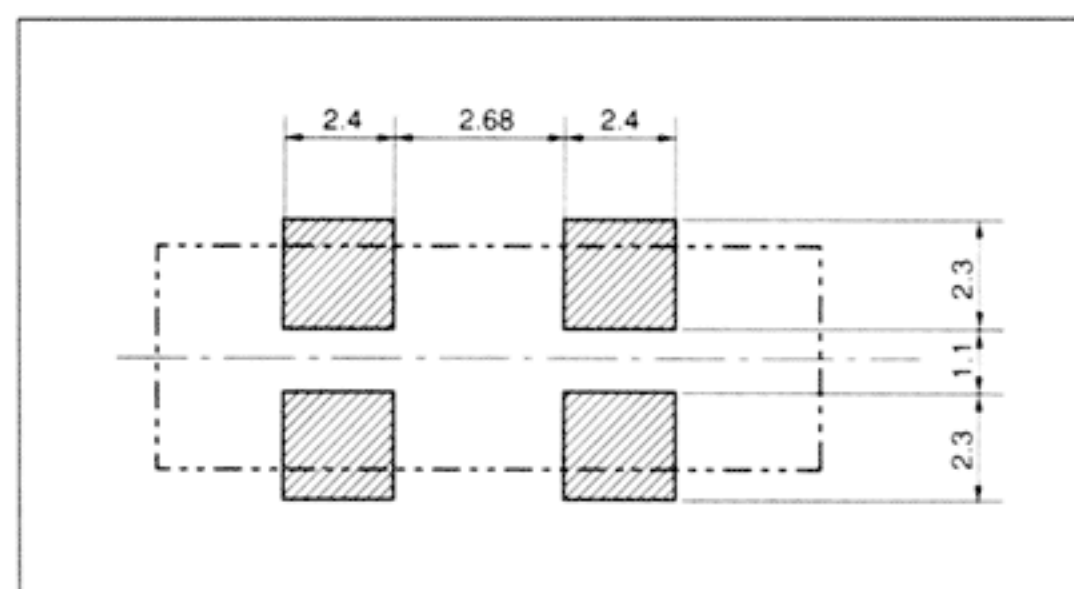
■ FEATURES:

- Being of the small and slim size SMD type and featuring high efficiency in mounting, the CS 20 is ideal for application to high-density circuit boards.
- Excellent environmental and heat-resisting characteristics have been gained, due to the use of the highly reliable ceramic package.
- 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.

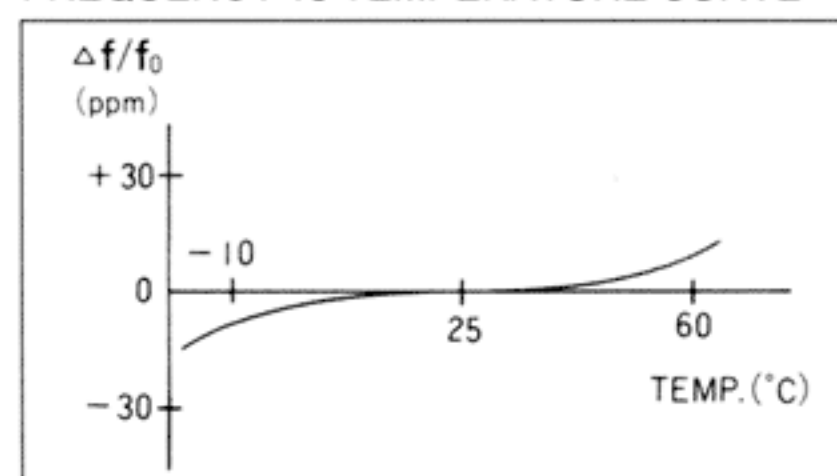
■ RECOMMENDED SOLDERING PATTERN: (UNIT=mm)



■ STANDARD SPECIFICATIONS

Item	Model	CS20	Conditions
Nominal frequency	f_0	3.5MHz~30MHz (Fund)	Please contact us for changes in frequency.
Frequency tolerance	$\Delta f/f_0$	$\pm 30\text{ppm}$ or $\pm 50\text{ppm}$	At 25°C
Frequency vs. Temperature characteristics	$\Delta f/f_0$	$\pm 50\text{ppm}$ ($\pm 30\text{ppm}$)	-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	16.0pF TYP.	Please specify
Shunt capacitance	C_0	7.0pF MAX.	
Drive level	DL	100μW	
Insulation resistance	IR	500MΩ MIN.	
Aging (First year)	$\Delta f/f_0$	$\pm 5\text{ppm}$ MAX.	25°C±3°C
Sealing		$1 \times 10^{-2} \mu\text{Pa} \cdot \text{m}^3/\text{s}$ MAX.	
Shock resistance		$\pm 5\text{ppm}$ 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_1)

Frequency	Equivalent series resistance
3.5MHz $\leq f_0 < 4.0$ MHz	200
4.0MHz $\leq f_0 < 6.0$ MHz	150
6.0MHz $\leq f_0 < 10.0$ MHz	100
10.0MHz $\leq f_0 < 14.0$ MHz	80
14.0MHz $\leq f_0 \leq 30.0$ MHz	50

(Ω MAX.)