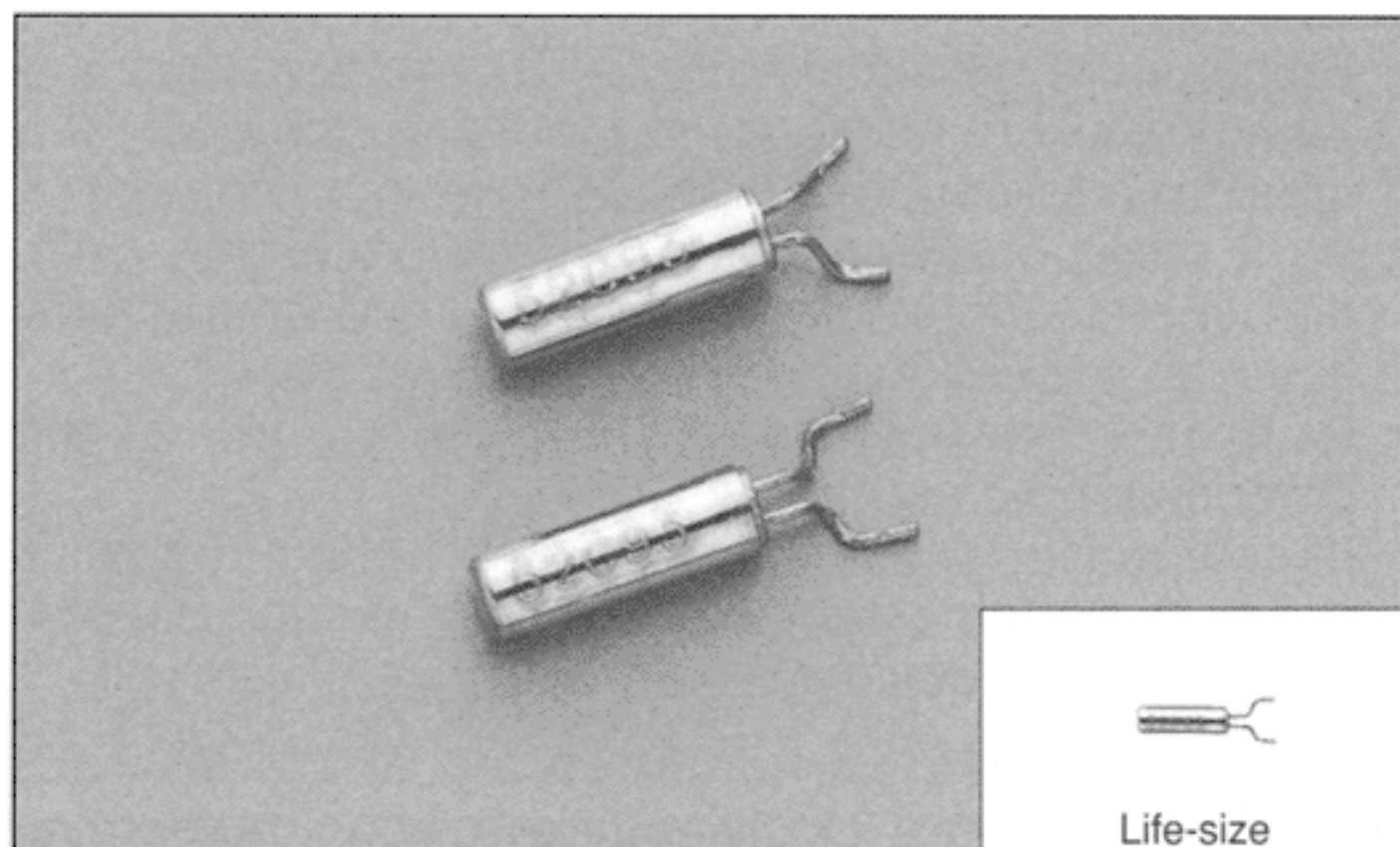# KHz RANGE CRYSTAL UNITS (CYLINDER SURFACE MOUNT TYPE)

CITIZEN

CMR200T, CMR250T (2,000pcs/reel)
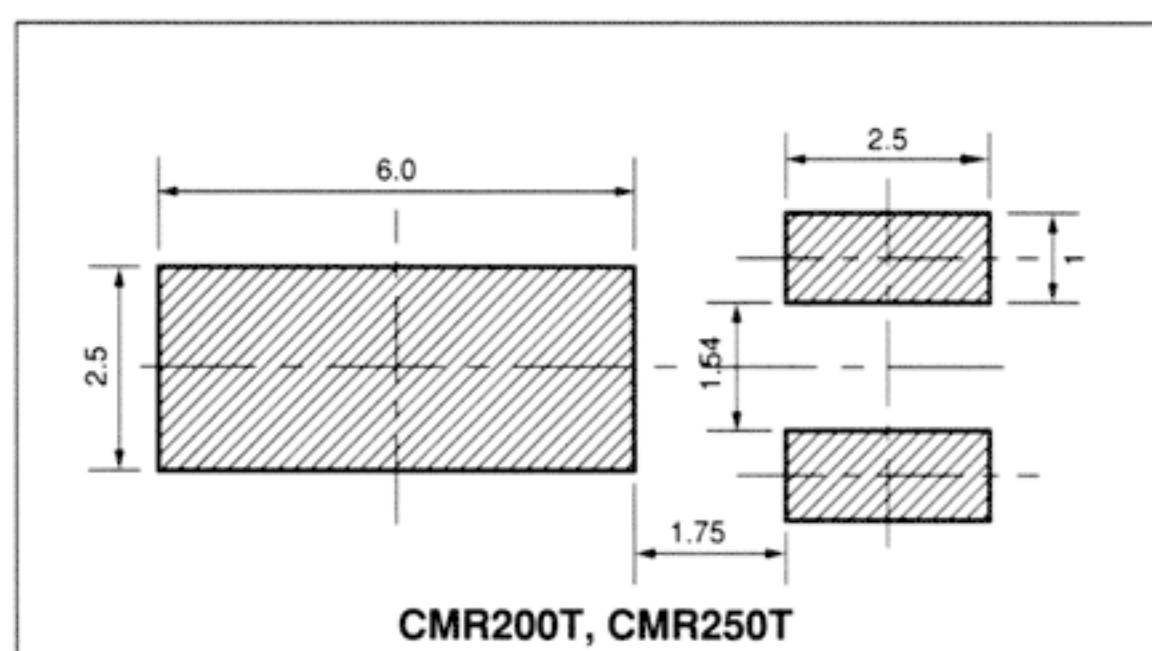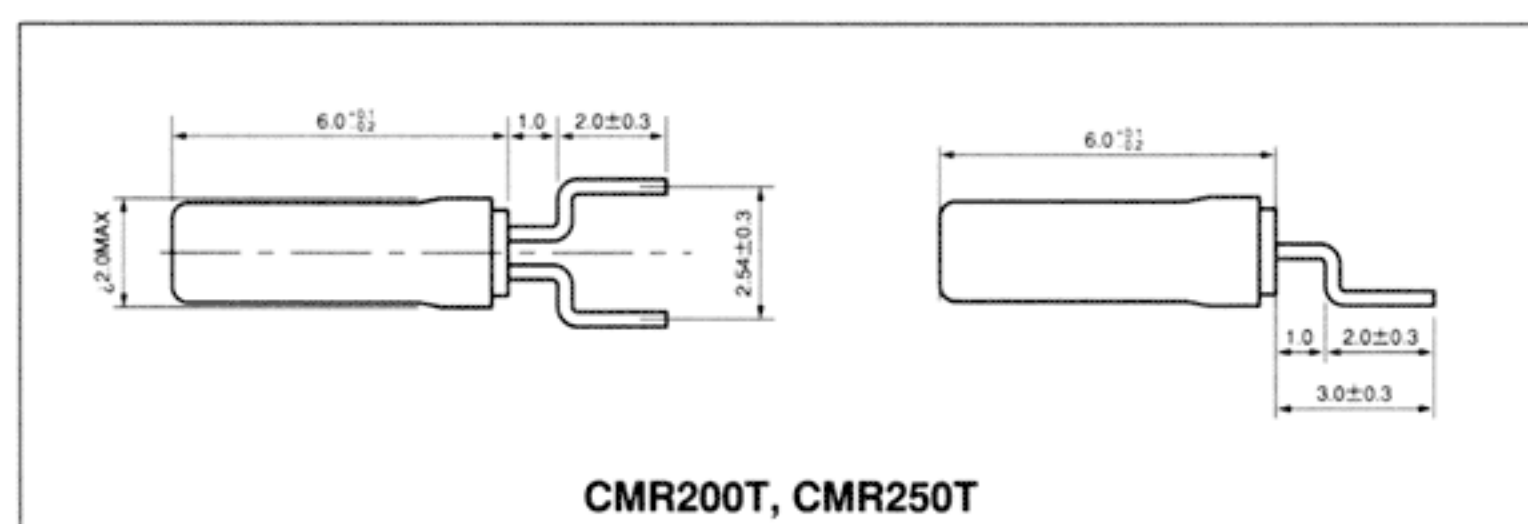

Life-size

■FEATURES:
- Because of their excellent shock resistance and low power consumption, the units are ideal for portable equipment.
- Features superior characteristics indigenous to tuning fork-type quartz crystal units.
- Ideal for low cost SMD applications.
- Provided in Tape and Reel.

■APPLICATIONS:
- Permits use as a clock source for communication equipment, AV equipment, OA equipment, measuring instruments and various types of clocks.

■RECOMMENDED SOLDERING PATTERN: (UNIT=mm)

CMR200T, CMR250T

■DIMENSIONS: (UNIT=mm)

CMR200T, CMR250T

■STANDARD SPECIFICATIONS

Item	Model	CMR200T	CMR250T	Conditions
Nominal frequency	f_0	32.768KHz	30KHz~100KHz	Please contact us for changes in frequency.
Frequency tolerance	$\triangle f/f_0$	±20ppm	±30ppm	At 25°C
Frequency vs. Temperature characteristics	$\triangle f/f_0$	See drawing		−10°C~+60°C
Turnover temperature	T_m	25°C ±5°		
Temperature coefficient	β	−0.034 ±0.006ppm/°C^2		
Operating temperature range	T_{OPR}	−40°C~+85°C		
Storage temperature range	T_{STG}	−55°C~+125°C		
Equivalent series resistance	R_1	35kΩ MAX.	50kΩ MAX.	At 25°C
Load capacitance	C_L	12.5pF TYP.		Please specify
Motional capacitance	C_1	3.0fF TYP.	1.0~4.0fF TYP.	Varies depending on frequency.
Shunt capacitance	C_0	1.35pF TYP.	0.8~1.7pF TYP.	
Capacitance ratio	γ	450 TYP.	425~800 TYP.	
Drive level	DL	1μW MAX.		
Insulation resistance	IR	500MΩ MIN.		DC100V±15V
Aging (First year)	$\triangle f/f_0$	±3ppm MAX.	±5ppm MAX.	25°C ±3°C
Sealing		1 x 10^{-2}μPa·m^3/s MAX.		
Shock resistance		±5ppm 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 frequency.

FREQUENCY vs TEMPERATURE CURVE