

## KHz RANGE CRYSTAL UNIT FOR AUTOMOTIVE APPLICATIONS



Product Number (please contact us)  
Q13MC30A1xxx00

# MC-30A

- Frequency range : 32.768 kHz (20 kHz to 165 kHz)
- Thickness : 2.54 mm Max.
- Overtone order : Fundamental
- Applications : Accessories and ECU sub clock
- Conforms to AEC-Q200



Actual size



### Specifications (characteristics)

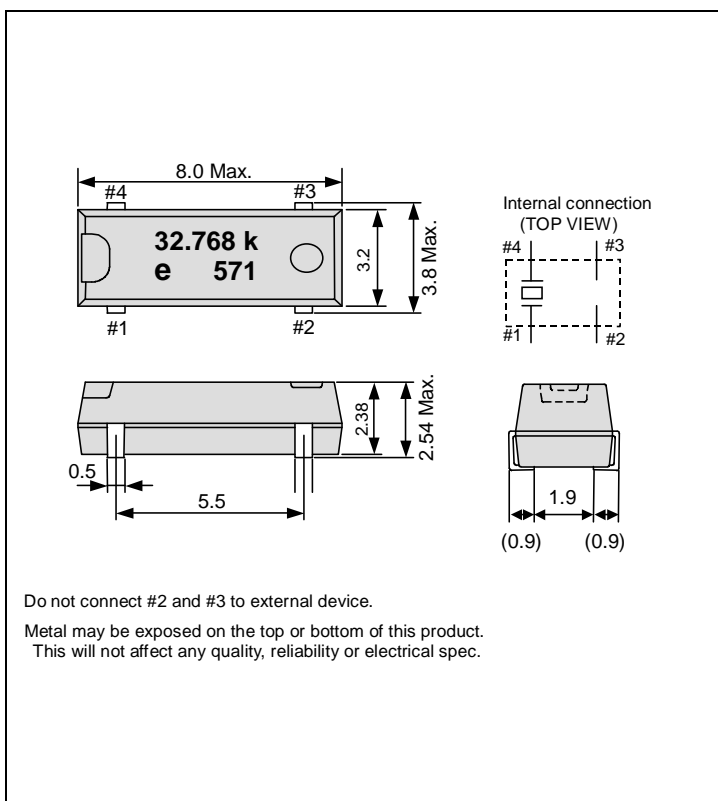
Item		Symbol	Specifications		Remarks
Nominal frequency range		f_nom	32.768 kHz	20 kHz to 165 kHz	Please contact us regarding available frequencies
Temperature range	Storage temperature	T_stg	-55 °C to +125 °C		Store as bare product after unpacking
	Operating temperature	T_use	-40 °C to +85 °C		
Level of drive		DL	1.0 μW Max.		
Frequency tolerance (standard)		f_tol	$\pm 20 \times 10^{-6}$ , $\pm 50 \times 10^{-6}$	$\pm 50 \times 10^{-6}$ , $\pm 100 \times 10^{-6}$	+25 °C, DL=0.1 μW
Turnover temperature		Ti	+25 °C $\pm 5$ °C		
Parabolic coefficient		B	$-0.04 \times 10^{-6}$ / °C <sup>2</sup> Max.		
Load capacitance		CL	6 pF to $\infty$ (standard : 12.5 pF)		Please specify
Motional resistance (ESR)		R <sub>1</sub>	50 kΩ Max.	55 kΩ to 10 kΩ	As per below table
Motional capacitance		C <sub>1</sub>	1.8 fF Typ.	4.0 fF to 0.6 fF	
Shunt capacitance		C <sub>0</sub>	0.9 pF Typ.	2.0 pF to 0.6 pF	
Frequency aging		f_age	$\pm 3 \times 10^{-6}$ / year Max.	$\pm 5 \times 10^{-6}$ / year Max.	+25 °C, First year

### Motional resistance (ESR)

Frequency	20 kHz ≤ f <sub>nom</sub> < 31.2 kHz	31.2 kHz ≤ f <sub>nom</sub> < 40 kHz	40 kHz ≤ f <sub>nom</sub> < 90 kHz	90 kHz ≤ f <sub>nom</sub> < 130 kHz	130 kHz ≤ f <sub>nom</sub> ≤ 165 kHz
Motional resistance	55 kΩ Max.	35 kΩ Max.	20 kΩ Max.	12 kΩ Max.	10 kΩ Max.

### External dimensions

(Unit:mm)



### Footprint (Recommended)

(Unit:mm)

