

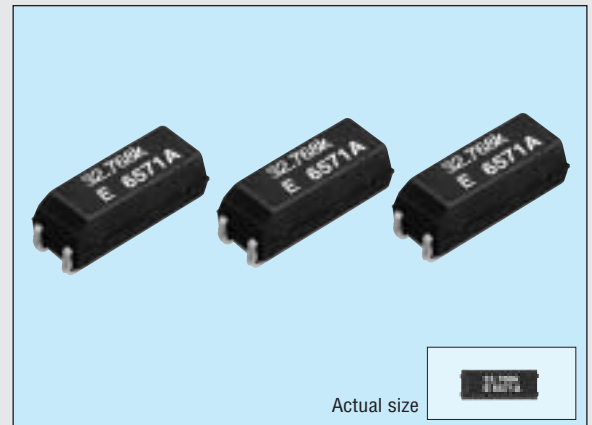
SMD LOW/MEDIUM-FREQUENCY CRYSTAL UNIT

# MC-405/406

Product number (please refer to page 1)

Q1xMC405xxxxx00  
Q1xMC406xxxxx00

- High-density mounting-type SMD.
- Photolithography finished allows uniform, stable performance.
- Excellent environmental capability.
- Capable of covering low-frequency range from 20 kHz to 165 kHz.
- Suitable for time keeping of clock and microcomputer.

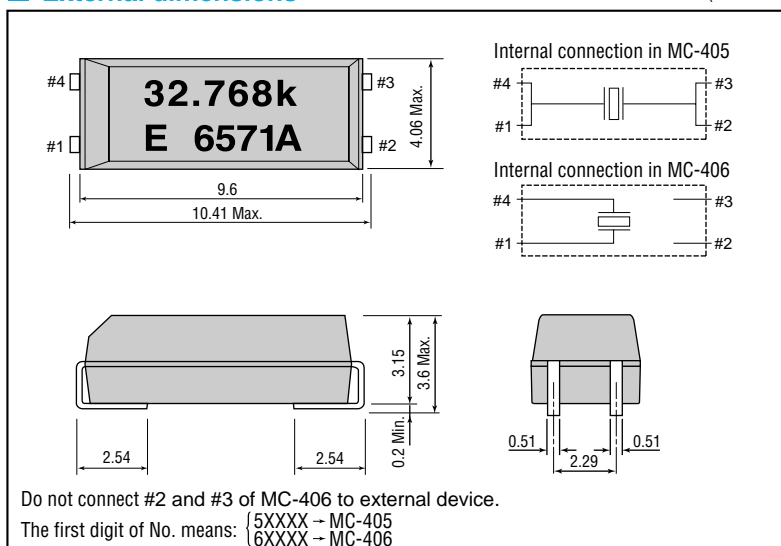


## Specifications (characteristics)

Item	Symbol	Specifications		Remarks
Nominal frequency range	f	32.768 kHz	20.000 kHz to 165.000 kHz	
Temperature range	Storage temperature	-55 °C to +125 °C		Stored as bare product after unpacking
	Operating temperature	-40 °C to +85 °C		
Maximum drive level	GL	1.0 μW Max.		
Frequency tolerance (standard)	Δf/f	±20 x 10 <sup>-6</sup> , ±50 x 10 <sup>-6</sup>	±50 x 10 <sup>-6</sup> , ±100 x 10 <sup>-6</sup>	Ta=+25 °C, DL=0.1 μW
Turnover temperature (frequency)	θT	+25 °C ±5 °C		
Temperature coefficient (frequency)	a	-0.04 x 10 <sup>-6</sup> / °C <sup>2</sup> Max.		
Load capacitance	CL	6 pF to ∞ (Standard : 12.5 pF)		Please specify
Series resistance	R <sub>1</sub>	50 kΩ Max.	55 kΩ to 10 kΩ	For details, refer to page 13
Motion capacitance	C <sub>1</sub>	2.0 fF Typ.	4.0 fF to 0.6 fF	
Shunt capacitance	C <sub>0</sub>	0.85 pF Typ.	2.0 pF to 0.6 pF	
Insulation resistance	IR	500 MΩ Min.		
Aging	fa	±3 x 10 <sup>-6</sup> /year Max.	±5 x 10 <sup>-6</sup> /year Max.	Ta=+25 °C±3 °C, first year
Shock resistance	S.R.	±5 x 10 <sup>-6</sup> Max.		Three drops on a hard board from 750 mm or excitation test with 29400 m/s <sup>2</sup> x 0.3 ms x 1/2 sine wave x 3 directions

## External dimensions

(Unit: mm)



## Recommended soldering pattern

(Unit: mm)

