

## Quartz Crystal Units

**7K** (MC-146)

[ 7.0×1.5×1.40 mm ]

**4K** (308C)

[ 8.0×3.8×2.50 mm ]

**6K /8K**

[ 6×2 /8×3 mm ]

**SMD / Thru-hole Type**
**32.768 kHz Crystals**

Frequency Tolerance Options

±5 ppm

±10 ppm

±20 ppm

### Features

- Small size tuning fork crystal unit, with 7.0×1.5×1.4 mm, 8.0×3.8×2.5 mm, 6.0×2.0 /8.0×3.0 mm
- Excellent heat resistance and environmental characteristics
- Excellent electric performance optimum for mobile communications, Office automation, Audiovisual application are exhibited
- RoHS compliant
- These can meet the requirements of re-flow profiling using lead-free soldering
- Applications: Small communications devices, Clock, Microcomputer, etc



### Standard Specifications

Item / Type	7K (MC-146)	4K (308C)	6K / 8K
Frequency range	32.768 kHz		32.768 kHz (30~350 kHz)
Package size (L×W×H)	7.0×1.5×1.40 mm	8.0×3.8×2.50 mm	6.0×2.0 / 8.0×3.0 mm
Shunt capacitance	0.8 pF typ.	1.3 pF typ.	1.5 pF typ.
Equivalent series resistance	65 KΩ max.	50 KΩ max.	50 KΩ max.
Parabolic coefficient	±0.04×10 <sup>-6</sup> /°C <sup>2</sup> max.		(-0.034±0.006)×10 <sup>-6</sup> /°C <sup>2</sup> max.
Drive Level	1 μW max.		
Operating Temperature Range	-20°C~+70°C		
Storage Temperature Range	-40°C~+85°C		
Crystal Cut	XT-Cut		
Load Capacitance	6 pF, 7 pF, 9pF, 12.5pF		
Frequency Tolerance	±5 ppm, ±10ppm, ±20ppm (max.) at 25°C		
Turning Temperature	+25°C±5°C		
Insulation resistance	500 MΩ max.		
Frequency Aging (25°C)	±3 ppm / Year max.		

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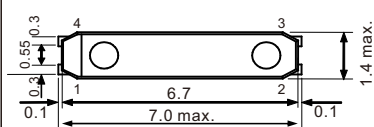
±5 ppm

±10 ppm

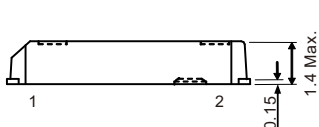
±20 ppm

### Outline Dimensions (Unit: mm)

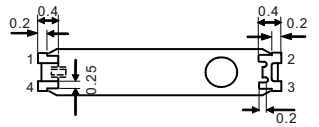
#### 7K (7.0×1.5×1.40 mm)



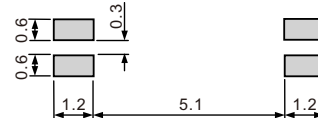
Top View



Side View

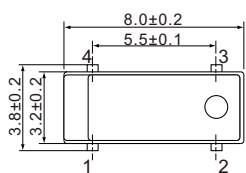


Bottom View / Internal Connection



Top View Suggested Layout

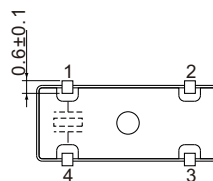
#### 4K (8.0×3.8×2.50 mm)



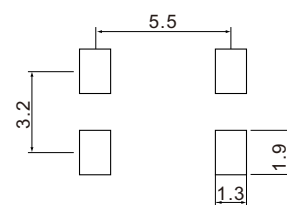
Top View



Side View

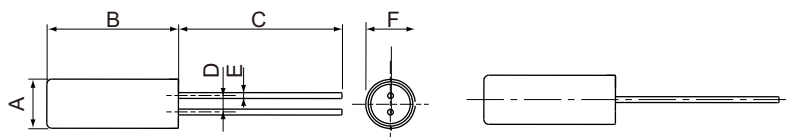


Bottom View / Internal Connection



Top View Suggested Layout

#### 6K / 8K (6.0×2.0 / 8.0×3.0 mm)



Side View

Bottom View

Side View

Size	A	B	C	D	E	F
2×6	∅2.0	6±0.3	7±0.3	0.7±0.2	0.2±0.1	∅2.0±0.1
3×8	∅3.0	8±0.3	10±0.3	1.1±0.2	0.3±0.1	∅3.0±0.1