

**1610**

[ 1.6×1.0×0.50 mm ]

**2012**

[ 2.0×1.2×0.60 mm ]

**3215**

[ 3.2×1.5×0.75 mm ]


**32.768 kHz SMD Crystals**

Frequency Tolerance Options

±5 ppm

±10 ppm

±20 ppm

### Features

- Ultra compact, thin, and light weight tuning fork crystal unit, with 1.6×1.0×0.5 mm, 2.0×1.2×0.6 mm, 3.2×1.5×0.75 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



### Standard Specifications

Item / Type	1610	2012	3215
Frequency range	32.768 kHz		
Package size (L×W×H)	1.6×1.0×0.50 mm	2.0×1.2×0.60 mm	3.2×1.5×0.75 mm
Shunt capacitance	1.0 pF typ.		1.3 pF typ.
Equivalent series resistance	90 KΩ max.		70 KΩ max.
Parabolic coefficient	±0.04×10 <sup>-6</sup> /°C <sup>2</sup> max.		
Drive Level	0.5 μW max.		1 μW max.
Operating Temperature Range	-40°C~+85°C		
Storage Temperature Range	-55°C~+125°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.		
Packing Unit	5000 pcs./reel	3000 pcs./reel	

**1610**

**2012**

**3215**

[ 1.6×1.0×0.50 mm ]

[ 2.0×1.2×0.60 mm ]

[ 3.2×1.5×0.75 mm ]



**32.768 kHz SMD Crystals**

Frequency Tolerance Options

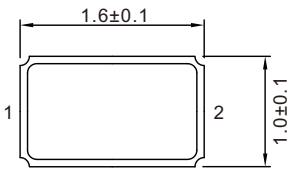
±5 ppm

±10 ppm

±20 ppm

### Outline Dimensions (Unit: mm)

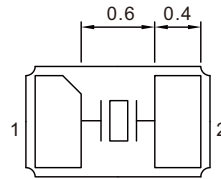
#### 1610 (1.6×1.0×0.50 mm)



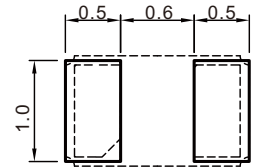
Top View



Side View

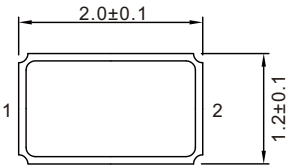


Bottom View

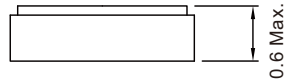


Top View Suggested Layout

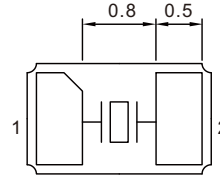
#### 2012 (2.0×1.2×0.60 mm)



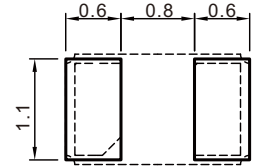
Top View



Side View

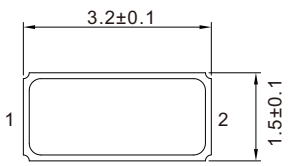


Bottom View

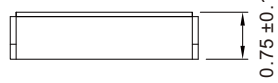


Top View Suggested Layout

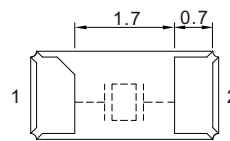
#### 3215 (3.2×1.5×0.75 mm)



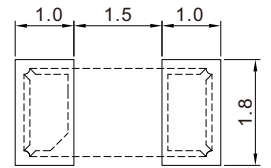
Top View



Side View



Bottom View



Top View Suggested Layout