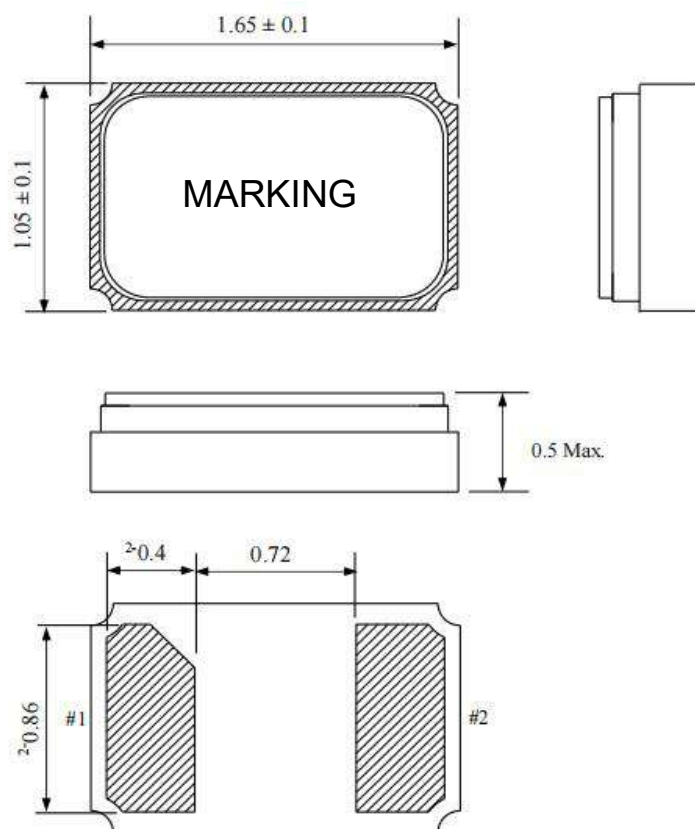


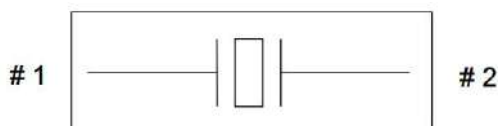
1. QUARTZ CRYSTAL UNIT SPECIFICATION

1.1 Frequency:	32.768KHz
1.2 Holder type :	SMD1610
1.3 Frequency tolerance:	±20ppm at 25°C
1.4 Equivalent resistance:	90Kohms Max (at CL=Series)
1.5 Operating temperature range:	-40°C To +85°C
1.6 Storage temperature range:	-55°C To +125°C
1.7 Turnover Temperature	+25°C ± 5°C
1.8 Temperature Coefficient	-0.04×10 ⁻⁶ / °C ² max
1.9 Loading capacitance (CL) :	6pF
1.10 Drive level:	0.1uW (0.5uW max)
1.11 Shunt Capacitance (C0):	1.3pF Typical
1.12 Motional Capacitance (C1):	6.4fF Typical
1.13 Insulation resistance :	More than 500M ohms
1.14 Aging:	±3 ppm/Year Max (+25°C First Year)
1.15 Isolation resistance:	200M ohms Min
1.16 Dimensions and marking:	Refer to page.2
1.17 Emboss carrier tape & reel:	Refer to page.3 and page.4
1.18 Note	

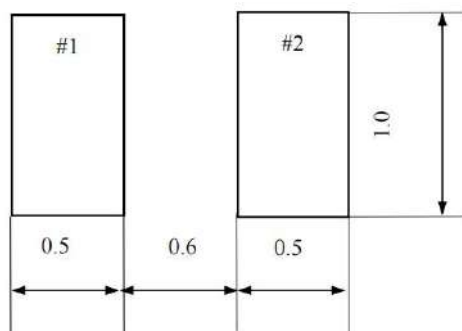
2. Dimensions (Unit: mm)



3. Internal Connection



4. Recommended soldering pattern



c.) Storage condition

Temperature: -55deg.C To +125deg.C

Relative Humidity: 80% Max.

d.) Standard packing quantity

5,000PCS / REEL

e.) Material of the tape

Tape	Material
Carrier tape	PS
Top tape	PET+PE

f.) Label contents

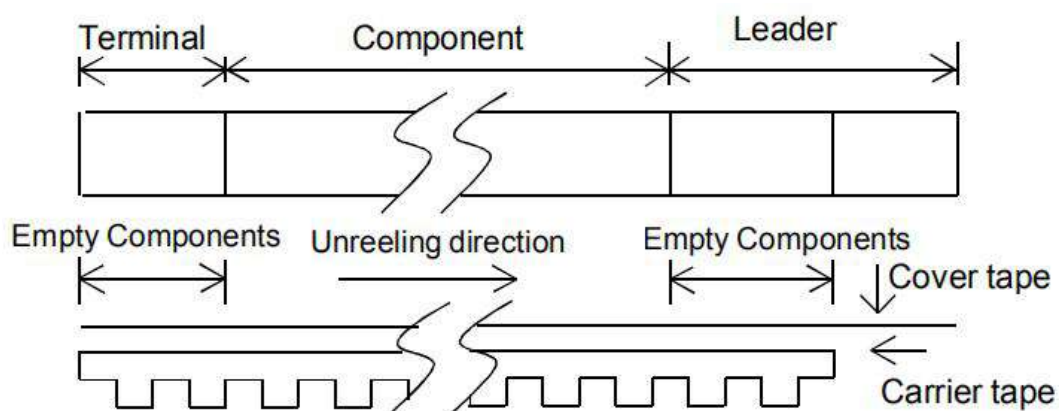
- .The type of product
- .Our specification No.
- .Your Part No.
- .Lot No.
- .Nominal Frequency
- .Quantity
- .Our Company Name

PART NUMBER	
PO NO	
PR. NO:	
HOLDER TYPE	
FREQUENCY	
REMAKS	
QUANTITY	

Sticks label for every reel.

e.) Taping dimension

Leader	Cover-tape	The length of cover-tape in the leader is more than 400 mm including empty embossed area.
	Carrier-tape	After all products were packaged, must remain more than twenty pieces or 400 mm empty area, which should be sealed by cover-tape.
Terminal	Cover-tape	The tip of cover-tape shall be fixed temporary by paper tape and roll around the core of reel one round.
	Carrier-tape	The empty embossed area which are sealed by top cover-tape must remain more the 40 mm.



f.) Joint of tape

The carrier-tape and top cover-tape should not be jointed.

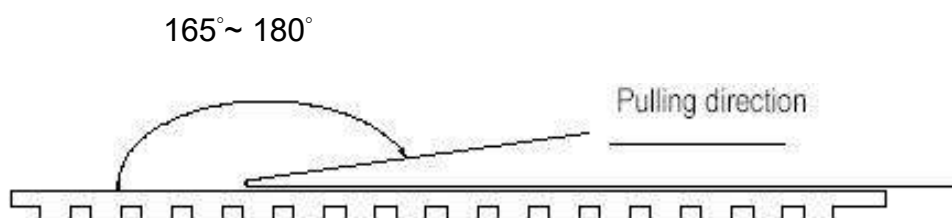
g.) Release strength of cover tape

It has to between 0.1N to 0.7N under following condition.

Pulling direction 165° to 180°

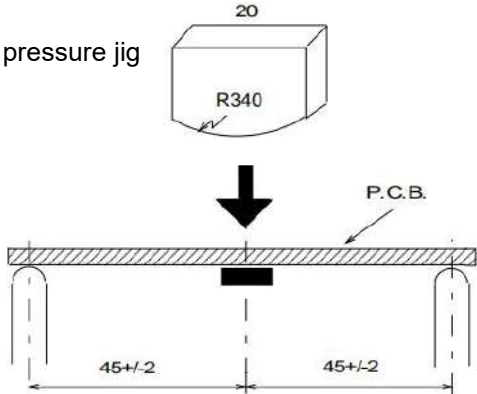
Speed 300mm/min.

Otherwise unless specified.



Other standards shall be based on JIS C 0806-1990.

4. Mechanical Endurance: Provided that measurement shall be carried out after letting it alone in the room temperature for 1 hour.

	Test Item	Condition of Test	Performance Requirements
4.1	Mechanical Shock	100 g dummy, Natural drop from 1500 mm height on to the concrete. 3 directions 10 times	No visible damage, measured Values shall meet Table 2.
4.2	Vibration	10 Hz to 55 Hz amplitude 0.75 mm 55 Hz to 500 Hz acceleration 98 m/s ² 10 Hz 500 Hz 10 Hz 15 min/cycle 6 h (2 hours , 3 directions)	No visible damage, measured Values shall meet Table 1.
4.3	Substrate Bending	Mount the specimen on substrate. Apply the following pressure Direction : see Fig.-9 Speed : 1mm/s Hours : 5sec Amount of substrate: 3mm max. 	measured Values shall meet Table 1. and no abnormality shall be observed in external appearance and sealing tightness and others shall be based on ET-7403 of EIAJ.
4.4	Seal	Fluorinert tests	Less than 1.0×10^{-9} Pa*m ³ /s by Helium leak detector.
4.5	Solder ability	Dip into methyl alcohol solution of rosin for 3s at $+ 235 \pm 5^{\circ}\text{C}$	More than 95% of lead shall be covered by new solder.
4.6	Resistance to Soldering Heat (Reflow Solder)	For convention reflow soldering furnace (3 times)	No visible damage, measured Values shall meet Table 1.

5. Environmental Endurance: Provided that measurement shall be carried out after letting it alone in the room temperature for 2 hours.

	Test Item	Condition of Test	Performance Requirements
5.1	High temperature storage	1000h, +85±2°C	No visible damage, measured Values shall meet Table 1.
5.2	Low temperature storage	1000h, -55±2°C	No visible damage, measured Values shall meet Table 2.
5.3	High Temperature and Humidity	1000h, +85±2°C, relative humidity 85%RH.	measured Values shall meet Table1.
5.4	Temperature Cycling	-55 C ---- +125°C 30 minutes at each temperature, 100 cycles	measured Values shall meet Table2.

Table 1

Test Item	Specification	Note
Frequency change ($\Delta f/f_0$)	±10ppm	Reference to the initial value
Equivalent Resistance	±25 % or ±10kΩ max. (Use larger specification)	Reference to the initial value

Table2

Test Item	Specification	Note
Frequency change ($\Delta f/f_0$)	±30ppm	Reference to the initial value
Equivalent Resistance	±25 % or ±10kΩ max. (Use larger specification)	Reference to the initial value