

## 产 品 规 格 书

### SPECIFICATIONS FOR PRODUCT

产品类型 TYPE : SMD2016

产品规格 SPEC : 48MHz/2016/11.1PF/8PPM

产品型号 P/N : CJ16-4800011108C30

日期 DATE : 2021/05/06

<b>核准及签名</b>			<b>部门</b>
R&D APPR. SIGNATURED			DEPT.
<b>拟制</b>	<b>审核</b>	<b>批准</b>	频率器件事业部
ISSUE	CHECK	APPROVAL	
Ivan 2021/05/06	Abbey 2021/05/06	Ken 2021/05/06	

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**SMD2016 4 pads Crystal Resonator**

**CJ16-4800011108C30**

1. Scope:

- 1.1 This specification applies to the RoHS/SONY compliance quartz crystal unit with a frequency of 48MHz which will be used in crystal oscillator applications.

2. Construction:

- 2.1 Type of Quartz Resonator: SMD2016 4pads

3. Measure equipment:

S&A 250B

4. Electrical Characteristics

- 4.1 Nominal Frequency(f): 48.000MHz
- 4.2 Load Capacitance( $C_L$ ): 11.1pF
- 4.3 Frequency Tolerance( $\Delta f/f$ ):  $\pm 8$ ppm
- 4.4 Frequency Temperature Stability:  $\pm 30$ ppm(Ref. @25°C)
- 4.5 Resonance Resistance(ohm): 35ohms Max
- 4.6 Osc mode: Fundamental mode
- 4.7 Shunt Capacitance( $C_0$ ): <2pF
- 4.8 Drive Level( $D_L$ ): <100 $\mu$ W
- 4.9 Operating Temperature Range( $T_{OPR}$ ): -40 to + 105°C
- 4.10 Storage Temperature Range( $T_{STG}$ ): -55 to + 125°C
- 4.11 Insulation Resistance(IR): > 500 M ohms
- 4.12 Aging( $\Delta f_A$ ):  $\pm 3$ ppm/Year Max

## 5. Reliability Specifications

This is the quality control and quality assurance and reliability tests performance data for the RoHS/SONY compliance 48MHz SMD2016 4pads crystal resonators related to the specification and approval sheet provided by JSCJ .

Standard test condition (TEMP.: 20±5°C. Relative humidity: 65±20%)

For any discrepancy in GO/NG, test will be done at TEMP.25±2°C, R.H. 65±5%.

NO.	PROCESS	SPECIFICATION	TEST METHOD
5.1	Temperature Cycle (GB/T 2423.22-2002, Method Nb)	Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.	10 cycles from -55°C to 125°C. Measurement taken after DUT being left at room temperature for 24±2 hours.
5.2	Low Temperature Storage (GB/T 2423.1-2001, Method Aa)	Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.	Spending 72 hrs at -55°C±3°C constant temperature. Measurement taken after DUT being left at room temperature for 24±2 hours.
5.3	High Temperature Storage (GB/T 2423.2-2001, Method Ba)	Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.	Spending 72 hrs at 125°C±3°C constant temperature. Measurement taken after DUT being left at room temperature for 24±2 hours.
5.4	Humidity (GB/T 2423.3-2006, Method Cab)	Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.	Spending 96 hrs at 40 °C ± 3 °C, with 93 %R.H, Then keep the DUT in dry oven at 40 ± 5 °C for 24 hour. Measurement taken after DUT being left at room temperature for 1 to 2 hours.
5.5	Vibration (GB/T 2423.10-1995, Method Fc)	Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.	Apply 0.75mm vibration at sweep frequency 10~500 Hz, 10 cycles in each direction of 3 axis. Measurement taken after 1 hour.
5.6	Shock (GB/T 2423.5-1995, Method Ea)	Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms. and exhibit no visible damage.	Peak 1000m/s <sup>2</sup> , normal width 6ms half sine wave form, 3.7m/s, 3 perpendicular axis of samples, 3 cycles / direction, total 18 cycles. Measurement taken after 1 hour.
5.7	Drop (GB/T 2423.8-1995, Method Ed)	Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms. and exhibit no visible damage.	Free drop to the steel plate with thickness of 3 mm from 1.00 m heights for 3 times.
5.8	Solderability ( IEC60068-2-58, Test Td:)	Terminals shall be covered more then 95% with solder.	Passed through the re-flow oven under the following condition. Preheat 150 to 180°C for 60 to 120sec, and soldering time for 20s ± 5s at 235°C, peak soldering time for 10s ± 1s between 240 and 250°C. There is no need to do functional test. 8-12X magnifier.
5.9	Terminal Strength (JIS-C-6429 Method 1 & 2 )	No visible damage	Mount on a glass-epoxy board (100x50x1.6mm), then bend to 2mm displacement (velocity 1mm/sec) and keep for 5 seconds. or pulling force 1.8kg for at least 60 seconds.
5.10	Resistance to Soldering Heat (IEC60068-2-58, Test Td: Table 4)	Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.	Passed through the re-flow oven under the following condition. Preheat 150 to 180°C for 60 to 120sec, and sodering time for 60s max at 235°C, peak soldering time for 20s max at 265°C max. Measurement taken after DUT being left at room temperature for at least 2 hours.
5.11	OTHERS		

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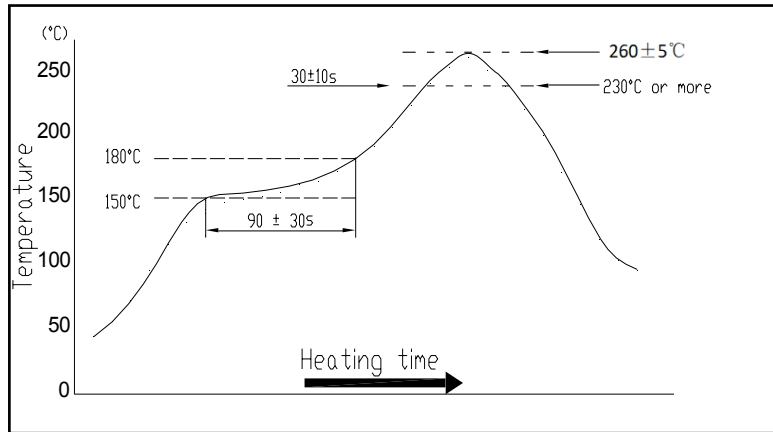
## Recommended Reflow soldering conditon

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### 6. Recommended Reflow soldering condition (SMD)

Solder profile

Peak:  $260 \pm 5^\circ\text{C}$  Soldering zone:  $230^\circ\text{C}$  or more,  $30 \pm 10\text{s}$ . Pre-heating zone 1:  $150 \sim 180^\circ\text{C}$ ,  $90 \pm 30\text{s}$

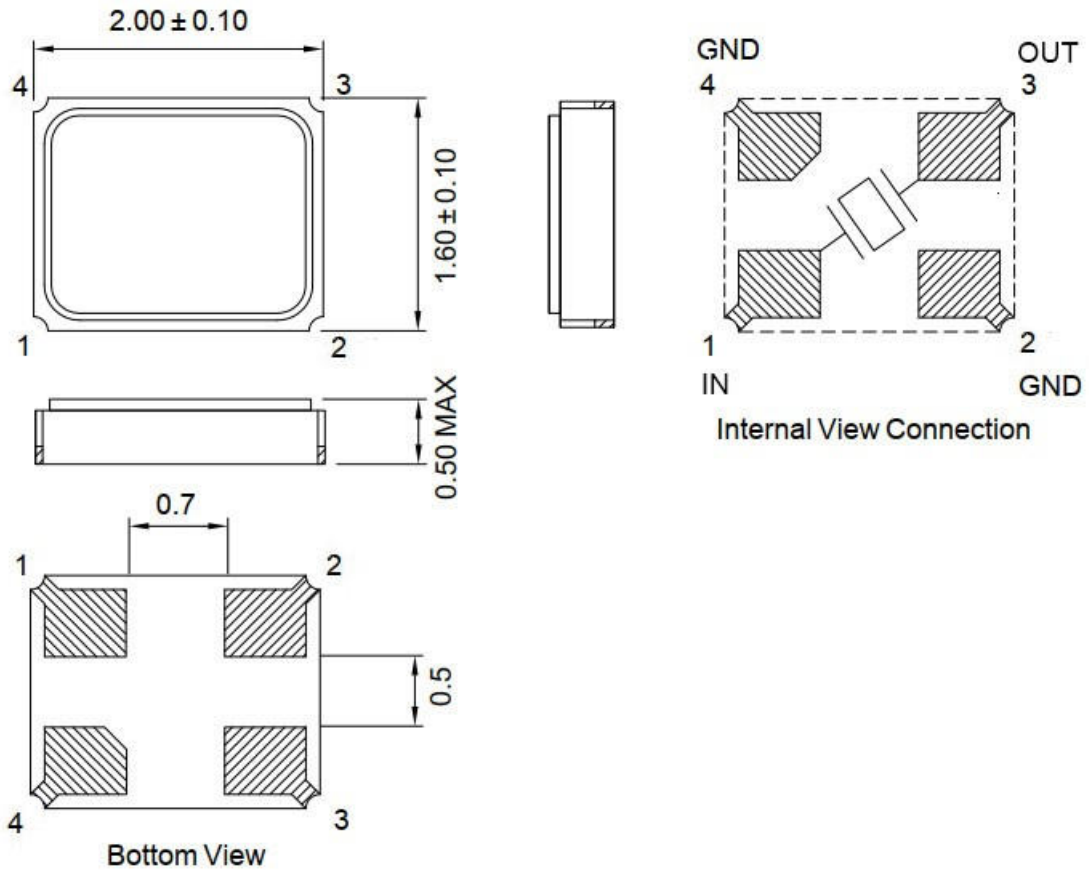


Temperature profile for reflow soldering

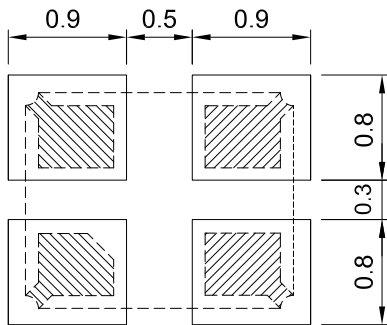
### 7. Soldering iron method

Bit temperature:  $350 \pm 10^\circ\text{C}$  Application time of soldering iron:  $3+1\text{ s}$ . For other procedures, refer to IEC 60068-2-20.

## Package Outline Dimensions



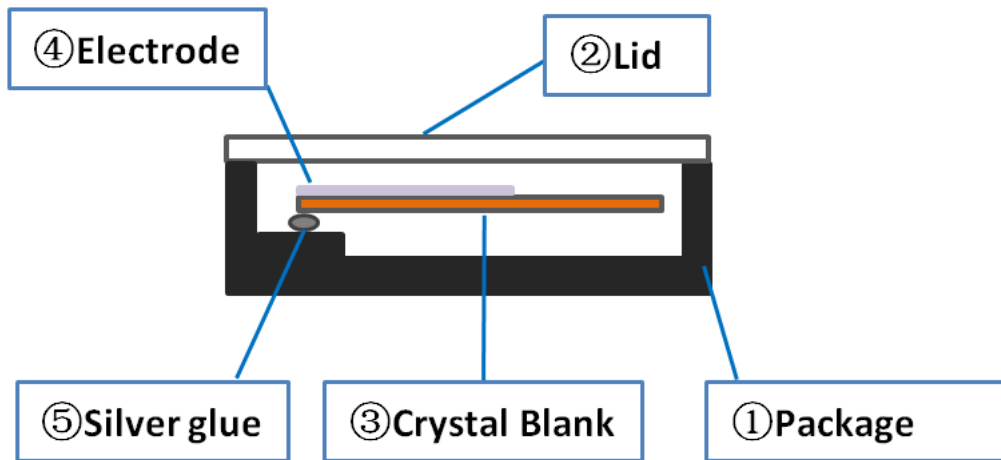
## Suggested Pad Layout



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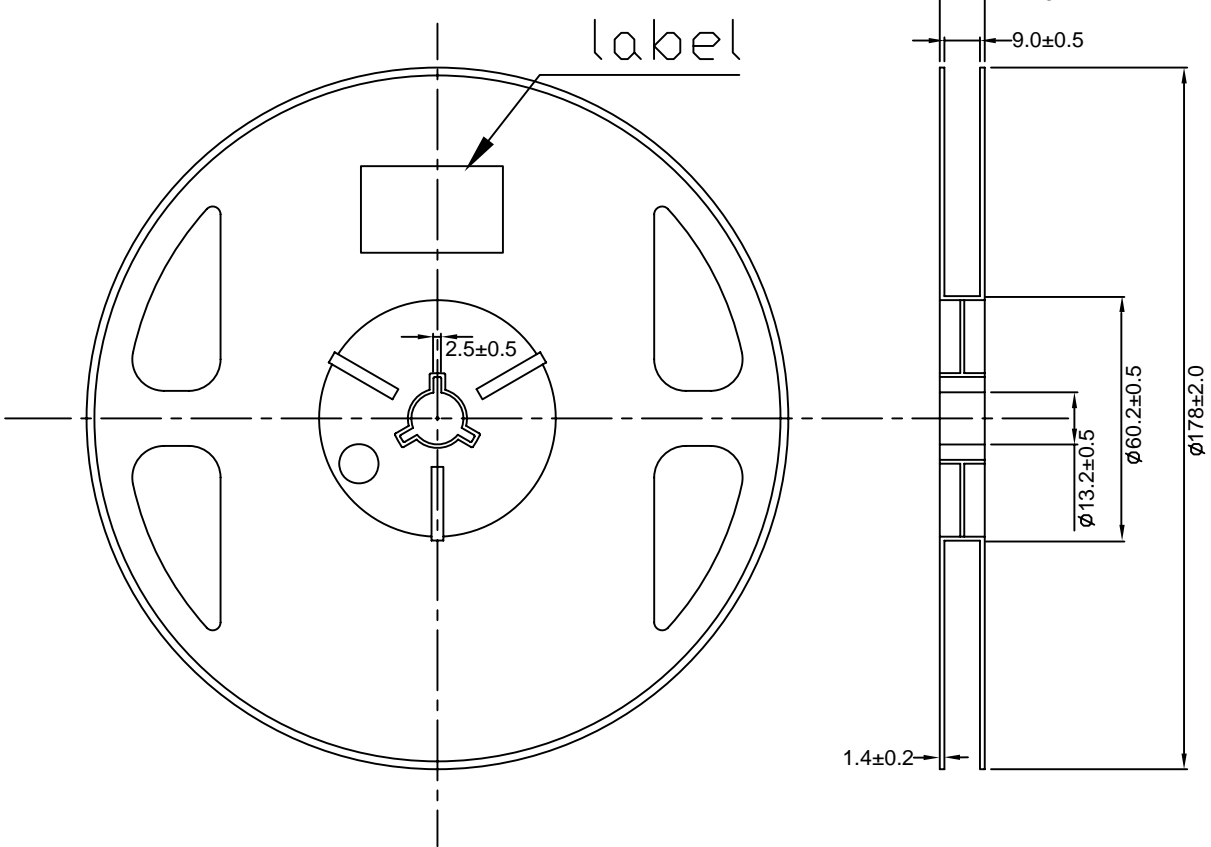
## Inside Structure

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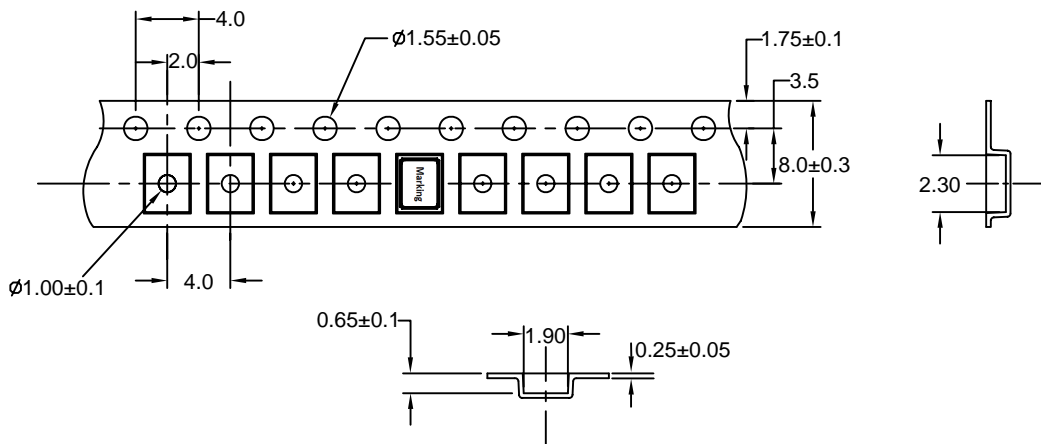


No.	Components	Materials
1	Package	Ceramic( $\text{Al}_2\text{O}_3$ )
2	Lid	KV(Fe/Ni/Co)
3	Crystal blank	$\text{SiO}_2$
4	Electrode	Ag, Cr
5	Silver glue	Ag, $\text{CH}_3\text{OH}$ , $\text{SiO}_2$

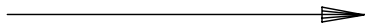
REEL DIMENSIONS



EMBOSSED TYPE DIMENSIONS

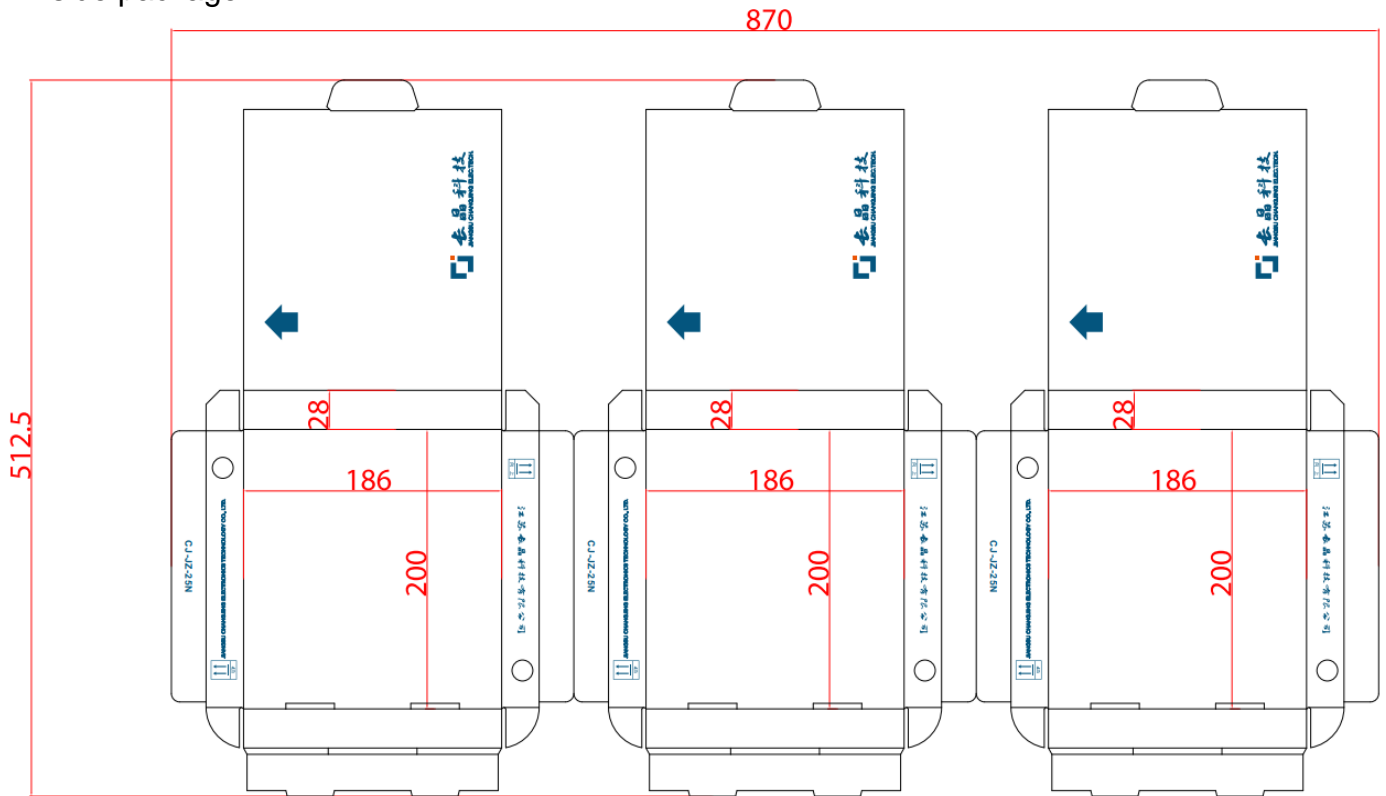


USER FEED DIRECTION

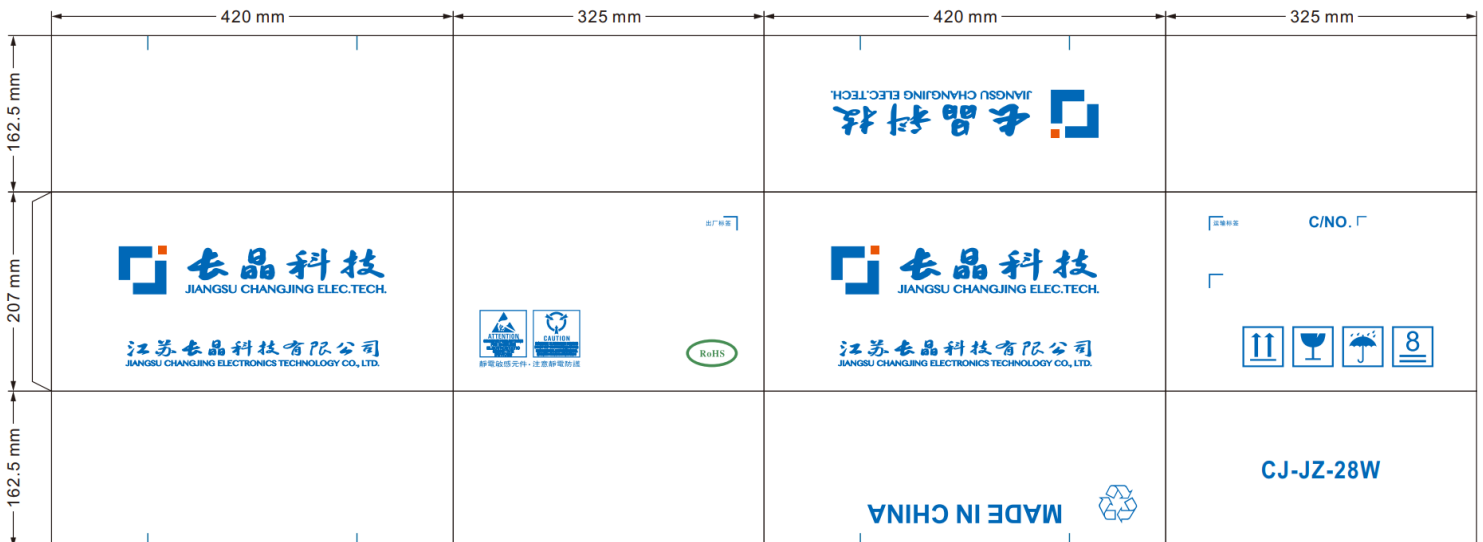


# Package

## Inside package



## Outside package



### NOTICE

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