



**江苏长晶科技股份有限公司**  
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

## 产 品 规 格 书

### SPECIFICATIONS FOR PRODUCT

产品类型 TYPE : SMD3225

产品规格 SPEC : 10MHz/3225/12PF/10PPM AEC-Q200

产品型号 P/N : AD-CJ13-100001210D05

日期 DATE : 2022/03/31

|                      |                     |                   |                    |
|----------------------|---------------------|-------------------|--------------------|
| <b>核准及签名</b>         |                     |                   | <b>部门</b><br>DEPT. |
| R&D APPR. SIGNATURED |                     |                   |                    |
| <b>拟制</b>            | <b>审核</b>           | <b>批准</b>         | 频率器件事业部            |
| ISSUE                | CHECK               | APPROVAL          |                    |
| Ivan<br>2022/03/31   | Abbey<br>2022/03/31 | Ken<br>2022/03/31 |                    |

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**SMCE3225 4 pads Crystal Resonator**

**AD-CJ13-100001210D05**

1. Scope:

- 1.1 This specification applies to the RoHS/SONY compliance quartz crystal unit with a frequency of 10MHz which will be used in crystal oscillator applications.
- 1.2 AEC-Q200 qualified

2. Construction:

- 2.1 Type of Quartz Resonator: SMCE3225 4pads

3. Electrical Characteristics

- 3.1 Nominal Frequency(f): 10MHz
- 3.2 Load Capacitance( $C_L$ ): 12pF
- 3.3 Frequency Tolerance( $\Delta f/f$ ):  $\pm 10$ ppm
- 3.4 Frequency Temperature Stability:  $\pm 100$ ppm(Ref. @25°C)
- 3.5 Resonance Resistance(ohm): 200ohms Max
- 3.6 Osc mode: Fundamental mode
- 3.7 Shunt Capacitance( $C_0$ ): <2pF
- 3.8 Drive Level( $D_L$ ): <100 $\mu$ W
- 3.9 Operating Temperature Range( $T_{OPR}$ ): -40 to + 125
- 3.10 Storage Temperature Range( $T_{STG}$ ): -55 to + 125°C
- 3.11 Insulation Resistance(IR): >500 M ohms
- 3.12 Aging( $\Delta f_A$ ):  $\pm 3$ ppm per Year

## 4. Reliability Specifications

This is the quality control and quality assurance and reliability tests performance data for the RoHS/

AEC-Q200 compliance 10MHz SMCE3225 4pads crystal resonators

related to the specification and approval sheet provided by JSCJ .

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

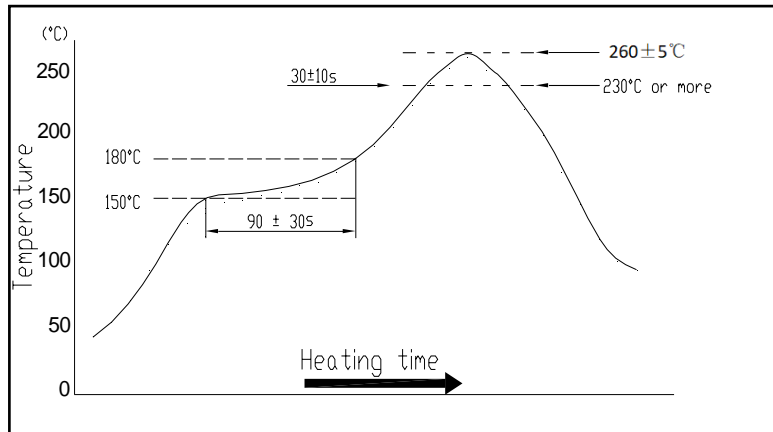
For any discrepancy in GO/NG, test will be done at TEMP.25±2°C, R.H. 65±5%.

| NO.  | PROCESS                      | SPECIFICATION   | TEST METHOD  |
|------|------------------------------|---|--|
| 4.1  | Temperature Cycle            | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 5$ ohms.                                | 1000 cycles from -40°C to 125°C. Measurement taken after DUT being left at room temperature for 24±2 hours.  |
| 4.2  | High Temperature Storage     | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 5$ ohms.                                | Spending 1000 hrs at 85°C±3°C constant temperature. Measurement taken after DUT being left at room temperature for 24±2 hours.   |
| 4.3  | Biased Humidity              | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 5$ ohms.                                | Spending 1000 hrs at 85 °C ± 3 °C, with 85%R.H. Then keep the DUT in dry oven at 25 ± 5 °C for 24 hour. Measurement taken after DUT being left at room temperature for 1 to 2 hours.   |
| 4.4  | Operational Life             | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 5$ ohms.                                | Spending 1000 hrs at 125°C±3°C constant temperature. Measurement taken after DUT being left at room temperature for 24±2 hours.  |
| 4.5  | Vibration                    | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 5$ ohms.                                | Apply 1.52mm vibration at sweep frequency 10~2000Hz, 5g's for 20min 12 cycles in each direction of 3 axis. Measurement taken after 1 hour.   |
| 4.6  | Mechanical Shock             | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 5$ ohms. and exhibit no visible damage. | Peak 100gal, normal width 6ms half sine wave form, 3.7m/s, 3 cycles / direction. Measurement taken after 1 hour.   |
| 4.7  | Solderability                | 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 5s ±0.5s between 240 and 250°C. There is no need to do functional test. 8-12X magnifier.             |
| 4.8  | Terminal Strength            | 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.  |
| 4.9  | Resistance to Soldering Heat | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 5$ 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 10s max at 265°C max. Measurement taken after DUT being left at room temperature for at least 2 hours. |
|      |                              |   |  |
|      |                              |   |  |
|      |                              |   |  |
|      |                              |   |  |
|      |                              |   |  |
| 4.10 | OTHERS                       |   |  |

5. 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:  $150 \sim 180^\circ\text{C}$ ,  $90 \pm 30\text{s}$

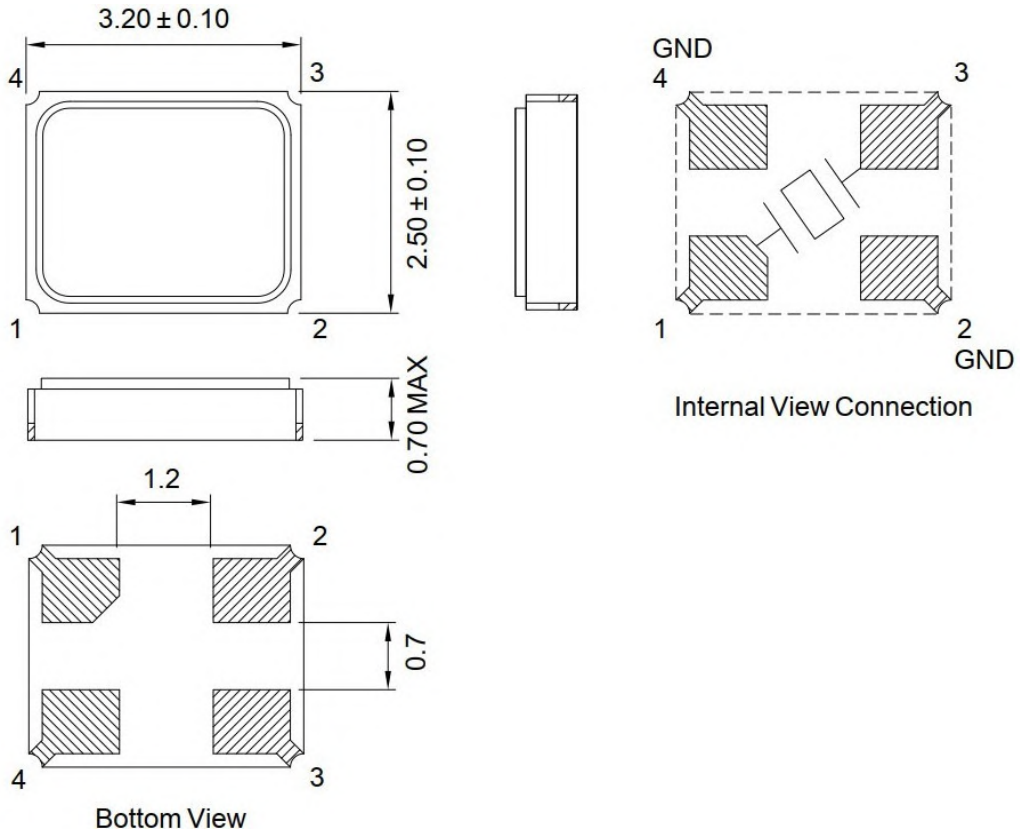


Temperature profile for reflow soldering

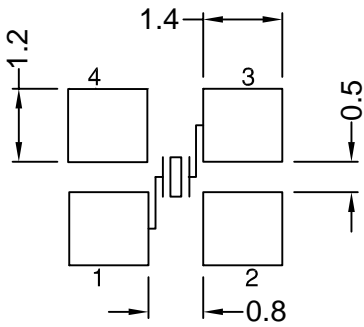
6. Soldering iron method

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

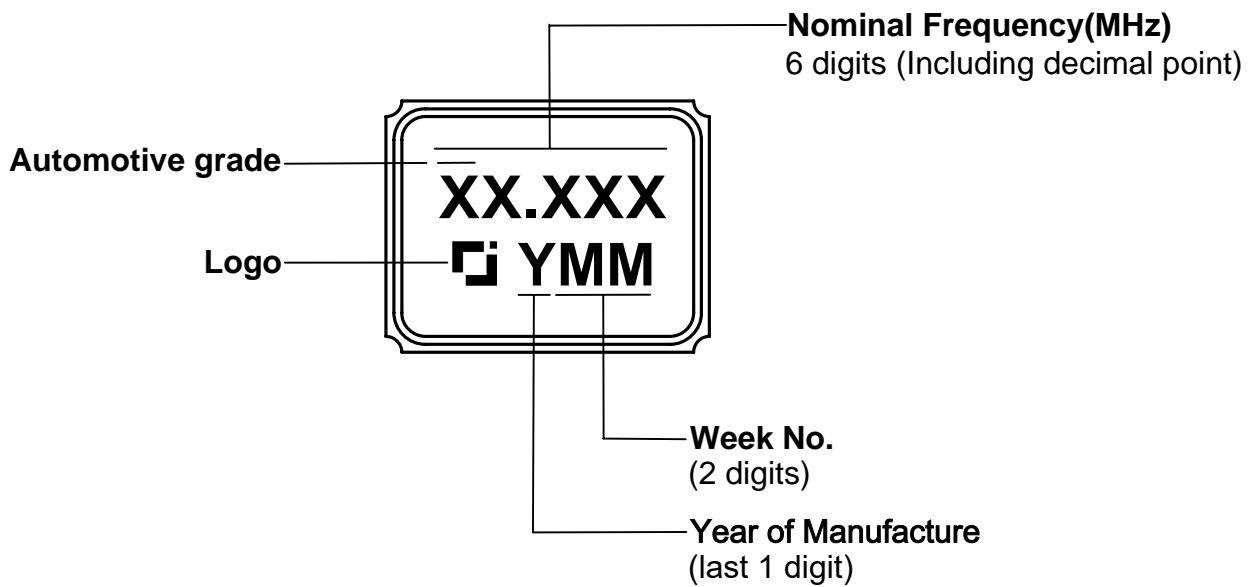


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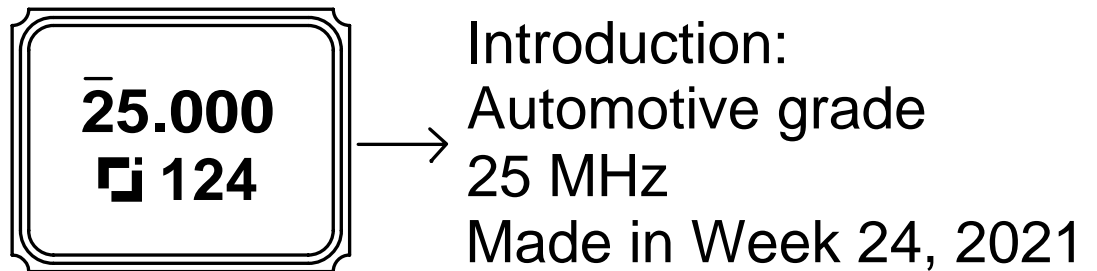
## Marking

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### Procedure: Laser



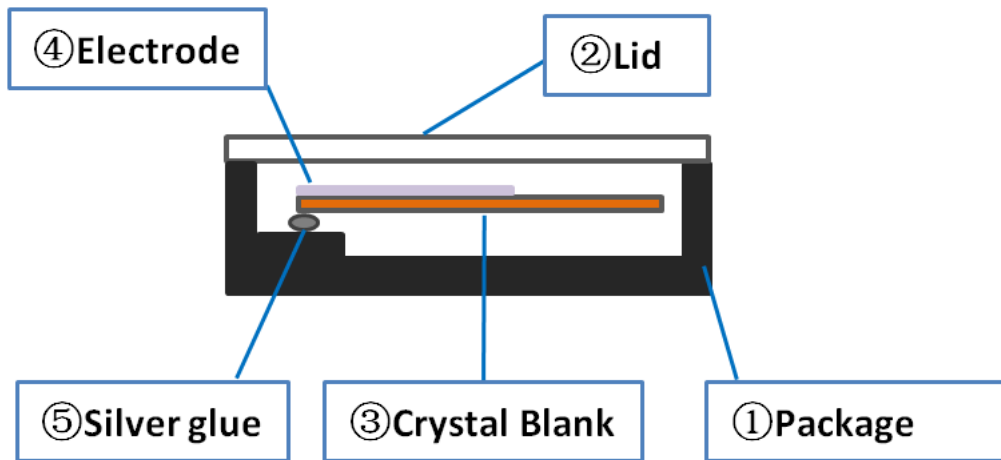
For example:



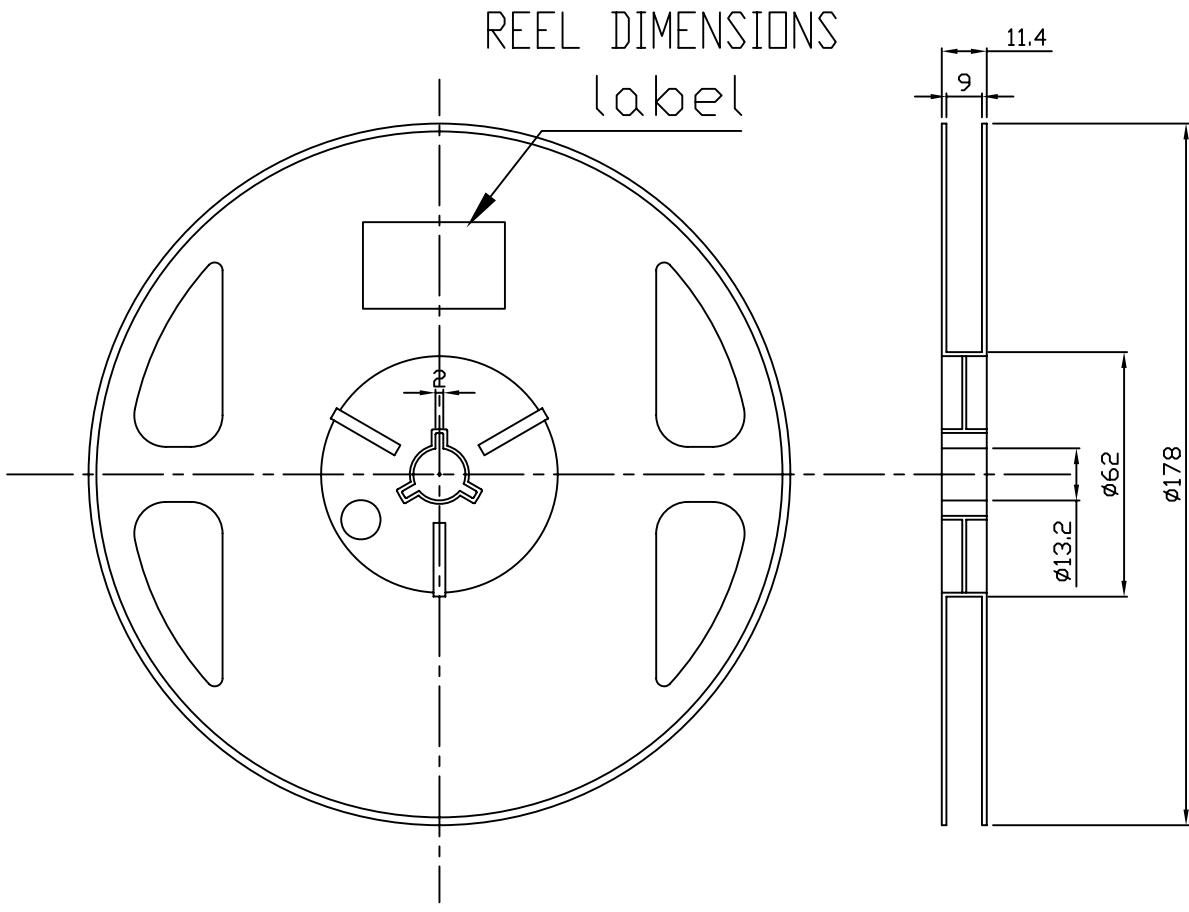
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## Inside Structure

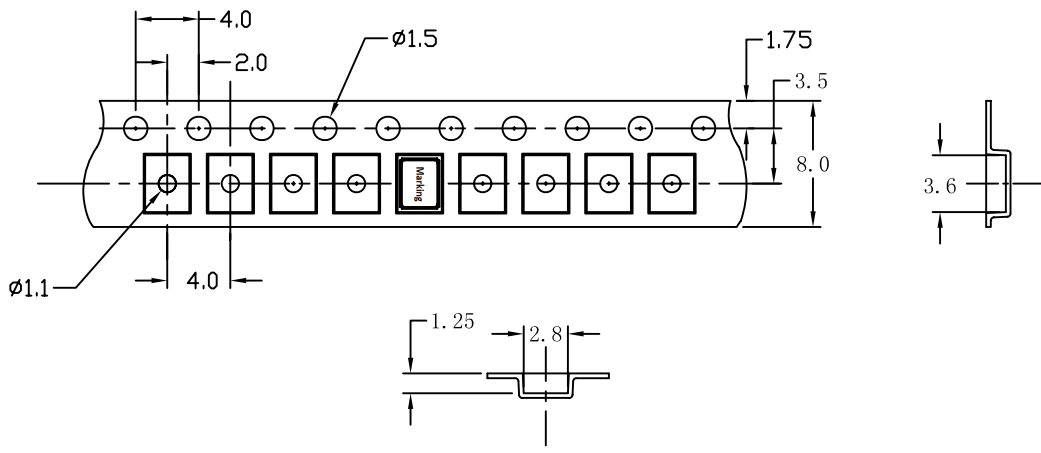
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| No. | Components    | Materials                                   |
|-----|---------------|---|
| 1   | Package       | Ceramic( $\text{Al}_2\text{O}_3$ )          |
| 2   | Lid           | KV(Fe/Ni/Co)                                |
| 3   | Crystal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



EMBOSSED TYPE DIMENSIONS



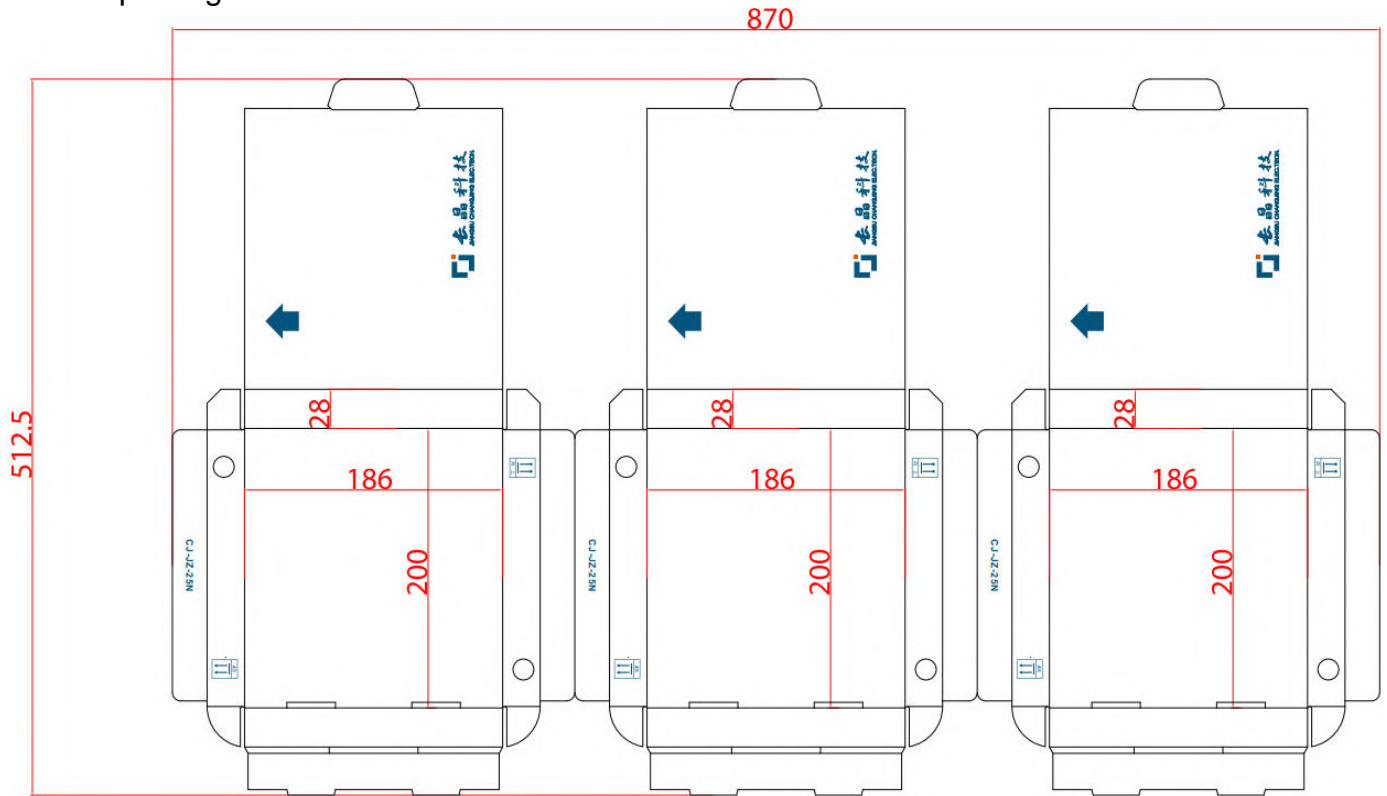
USER FEED DIRECTION



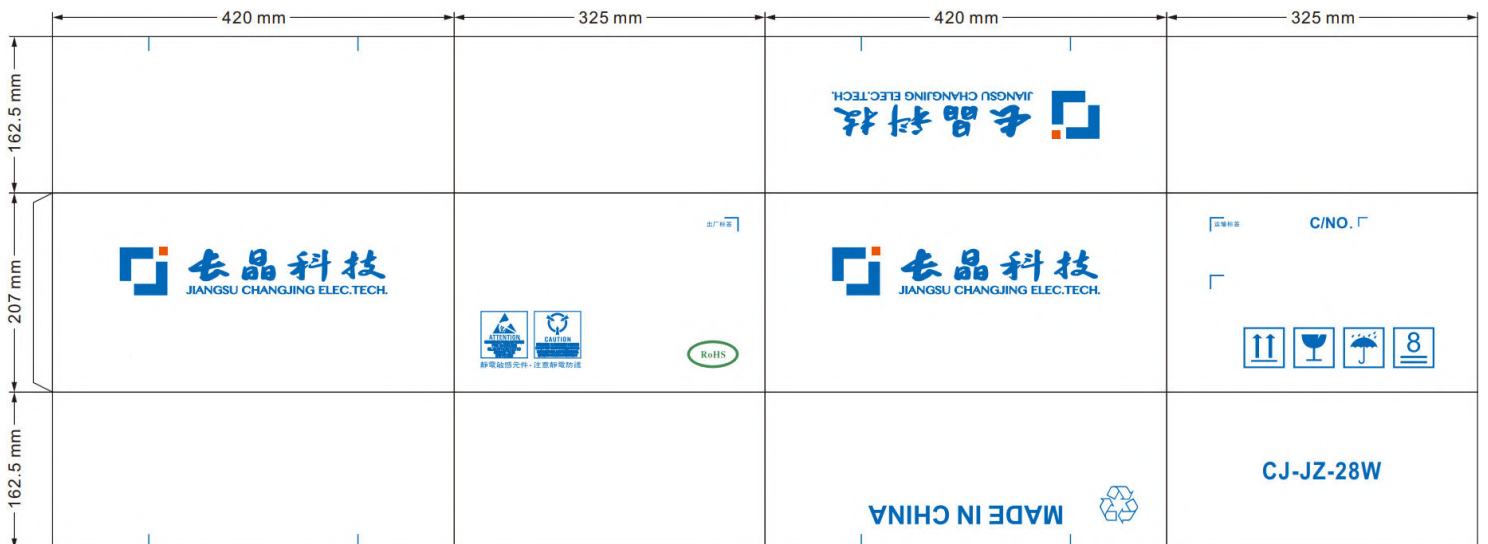


# Package

## Inside package



## Outside package



### NOTICE

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