



# PSE Technology Corporation

# SPECIFICATION FOR APPROVAL

## CUSTOMER

NOMINAL FREQUENCY

24.000000 MHz

HOLDER TYPE

### TYPE FK 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

SPEC. NO. ( P/N )

FK2400017

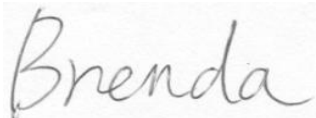
CUSTOMER P/N

ISSUE DATE

April 13, 2011

## VERSION

B

|                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| APPROVED                                                                            | PREPARED                                                                            | QA                                                                                    |
|  |  |  |
| APPROVED BY CUSTOMER :                                                              |                                                                                     | AVL Status                                                                            |
| Please return one copy with approval to PSE-TW                                      |                                                                                     |                                                                                       |

# PSE Technology Corporation

No.2, Tzu-Chiang 5th Rd, Chung Li Industrial Park,  
Chung Li City, Taoyuan County, Taiwan (R.O.C.)  
TEL: 886-3-451-8888  
FAX: 886-3-461-3865  
<http://www.saronix-ecera.com.tw>

\*Pb-free

\*RoHS Compliant

\*HF-Halogen Free

\*REACH Compliant

\*\*\* A company of  **PERICOM Semiconductor Corporation** \*\*\*

## TYPE FK 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

***FK2400017***

VER. B 13-Apr-11

## VERSION HISTORY

[illegible]

# TYPE FK 3.2x2.5 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

**FK2400017**

VER. B 13-Apr-11

## ELECTRICAL SPECIFICATIONS

**SRe Part Number : FK2400017**

| Item                            | Symbol                         | Specifications      | Units | Notes                                |
|---------------------------------|--------------------------------|---------------------|-------|--------------------------------------|
| Nominal Frequency               | Fo                             | 24.000000           | MHz   |                                      |
| Frequency Stability             | FT                             | ± 25                | ppm   | **See note                           |
| Operating Temperature Range     | TR                             | -40 to +85          | °C    |                                      |
| Supply Voltage                  | V <sub>DD</sub>                | +3.3 ± 5.0%         | V     |                                      |
| Logic Type                      | LT                             | LVC MOS             |       |                                      |
| Supply Current, Output Enabled  | I <sub>DD</sub> /OE            | 10                  | mA    | Max.                                 |
| Supply Current, Output Disabled | I <sub>DD</sub> /OD            | 10                  | µA    | Max.                                 |
| Duty Cycle (Symmetry)           | DC/SY                          | 45 / 55             | %     | Measured 50% of Waveform             |
| Rise / Fall Time                | T <sub>R</sub> /T <sub>F</sub> | 5                   | ns    | Max. measured 10/90% of Waveform     |
| Output Voltage "0" Level        | V <sub>OL</sub>                | 10% V <sub>DD</sub> | V     | Max at I <sub>OL</sub> = 4.0mA Min.  |
| Output Voltage "1" Level        | V <sub>OH</sub>                | 90% V <sub>DD</sub> | V     | Min at I <sub>OH</sub> = -4.0mA Max. |
| Output Load                     | CL                             | 15                  | pF    | Max.                                 |
| Start Up Time                   |                                | 10                  | ms    | Max.                                 |
| Storage Temperature Range       |                                | -55°C to +125°C     | °C    |                                      |

※ This product doesn't include harmful substance that stipulated by SONY SS-00259 Level 1 and S-AT2-001 Level 1 standard. RoHS Compliant (Pb - Free).

**\*\*Stability includes all combinations of Operating Temperature, Load changes, rated Input (Supply) Voltage changes, Initial Calibration Tolerance (25°C), Aging (1 year at 25°C Average Effective Ambient Temperature), Shock and Vibration.**

### Output Enable / Disable Function

| Parameter                                                | Min.               | Typ. | Max.               | Units | Notes          |
|----------------------------------------------------------|--------------------|------|--------------------|-------|----------------|
| Input Voltage (Pin1), Output Enable                      | 0.7V <sub>DD</sub> |      |                    | V     | Or Open        |
| Input Voltage (Pin1), Output Disable (low power standby) |                    |      | 0.3V <sub>DD</sub> | V     | Output is Hi-Z |
| Internal Pullup Resistance                               | 30                 |      |                    | KΩ    |                |
| Output Disable Delay                                     |                    |      | 50                 | ns    |                |

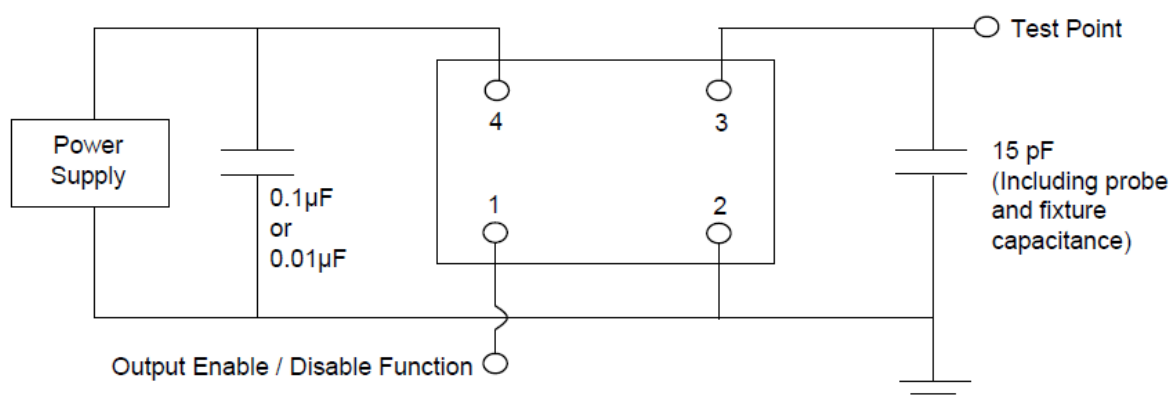


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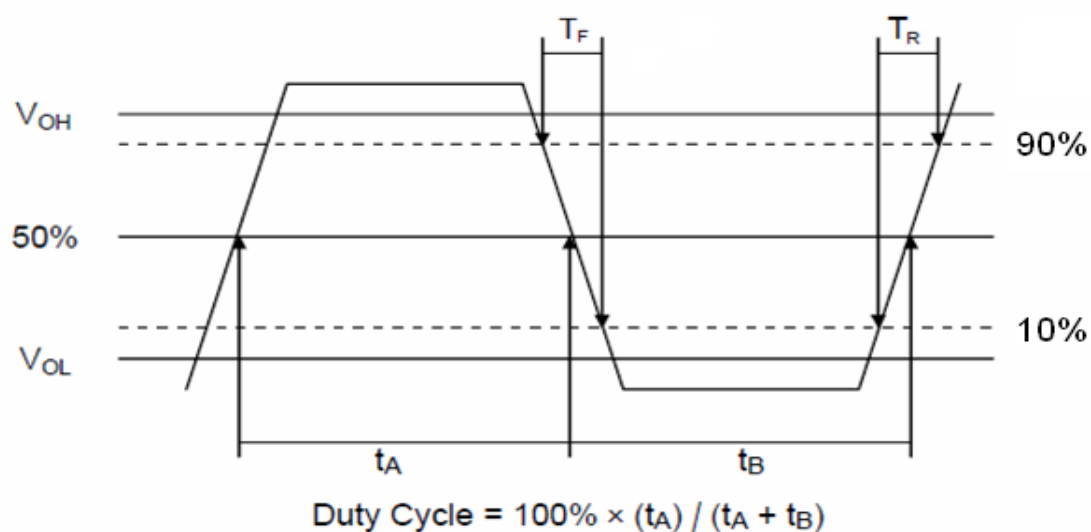
**FK2400017**

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## TEST CIRCUIT



## OUTPUT WAVEFORM



### RELIABILITY SPECIFICATIONS

#### ENVIRONMENTAL:

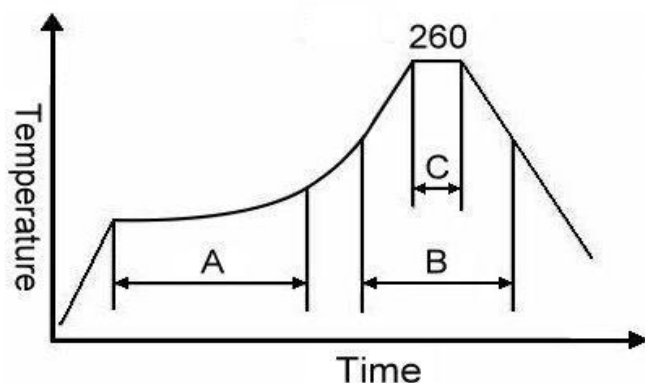
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices  
(except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS Compliant.

#### MECHANICAL:

- a) SHOCK: MIL-STD-883, Method 2002, Condition B
- b) SOLDERABILITY: JESD22-B102-D Method 2 (Preconditioning E)
- c) TERMINAL STRENGTH: MIL-STD-883, Method 2004, Test Condition D
- d) GROSS LEAK: MIL-STD-883, Method 1014, Condition C
- e) FINE LEAK: MIL-STD-883, Method 1014, Condition A2,  $R1=2 \times 10^{-8}$  atm cc/s
- f) SOLVENT RESISTANCE: MIL-STD-202, Method 215

### SUGGESTED IR REFLOW PROFILE

\*As per IPC-JEDEC J-STD-020D



Note:

|   | Stage        | Temperature | Time       |
|---|--------------|-------------|------------|
| A | Preheat      | 150~200°C   | 60~120 Sec |
| B | Primary Heat | 217°C       | 60~150 Sec |
| C | Peak         | 260°C       | 10 Sec     |

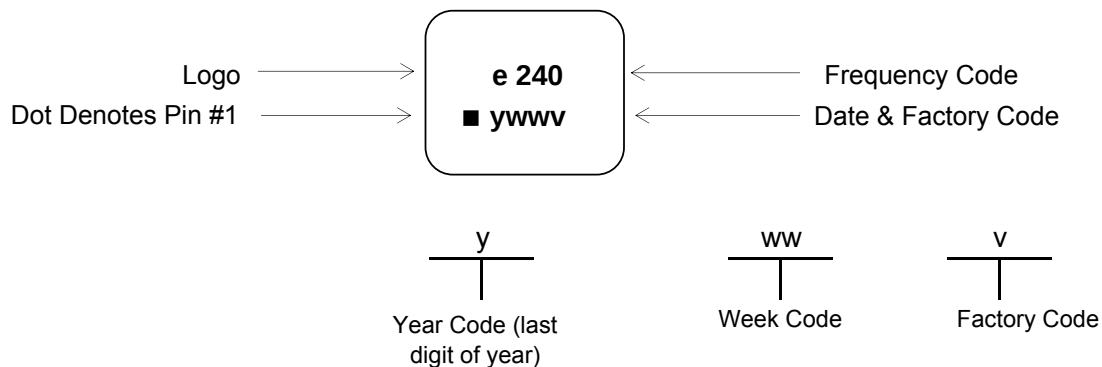
For soldering reflow profile and reliability test ratings go to: <http://www.pericom.com/pdf/sre/reflow.pdf>

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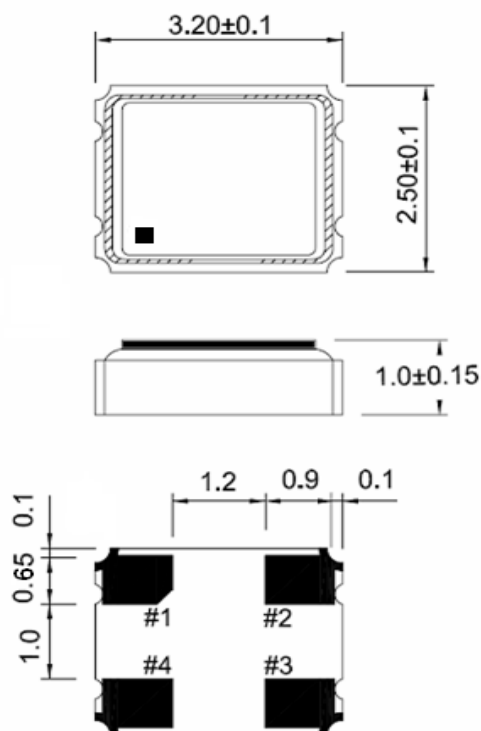
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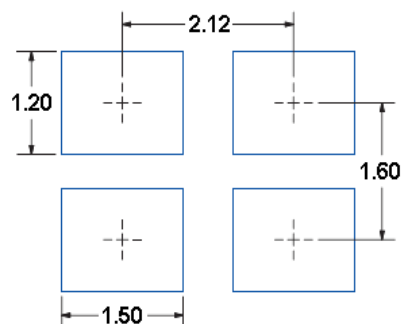
## MARKING



## MECHANICAL DRAWINGS ( Scale: None. Dimensions are in mm.)



### Recommended Land Pattern\*



\*External high-frequency power decoupling is recommended.(see test circuit for minimum recommendation). To ensure optimal performance, do not route traces beneath the package.

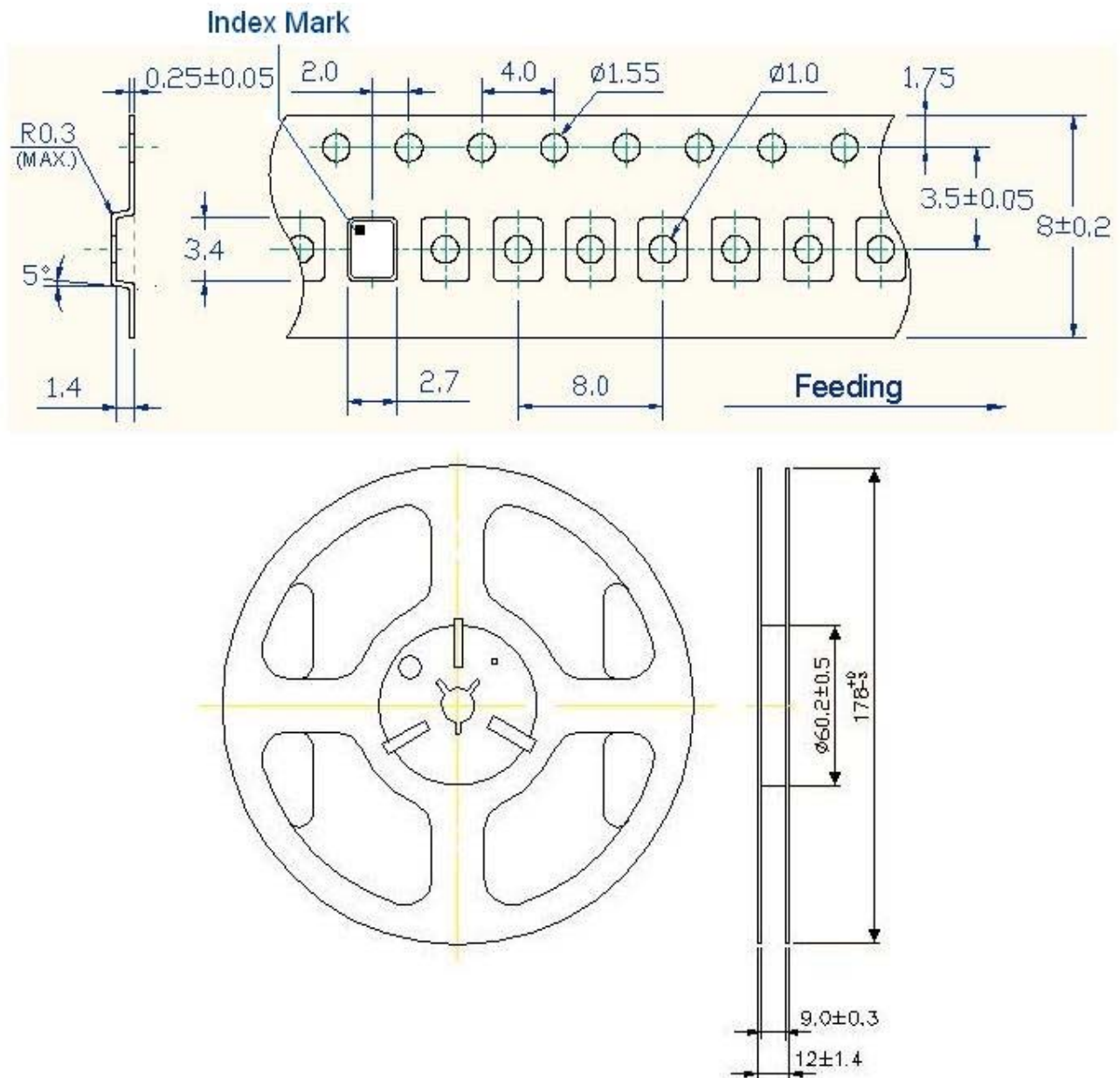
| Pin | Function        |
|-----|-----------------|
| 1   | OE              |
| 2   | Ground          |
| 3   | Clock Output    |
| 4   | V <sub>DD</sub> |

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## TAPE&REEL



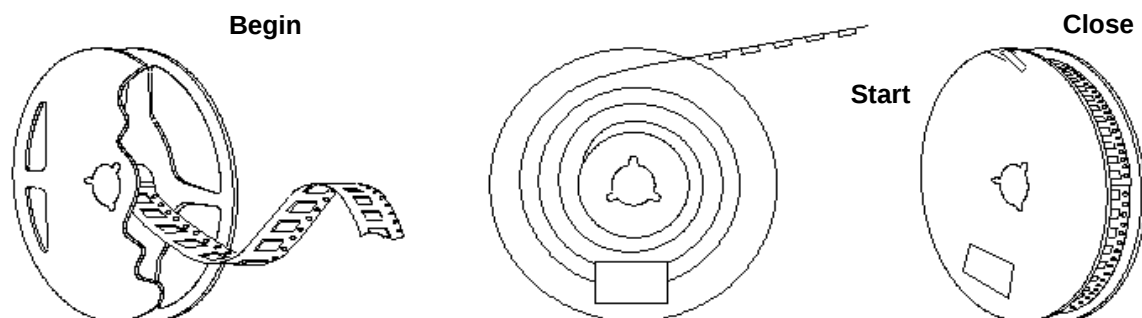
1. 230mm minimum leader which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

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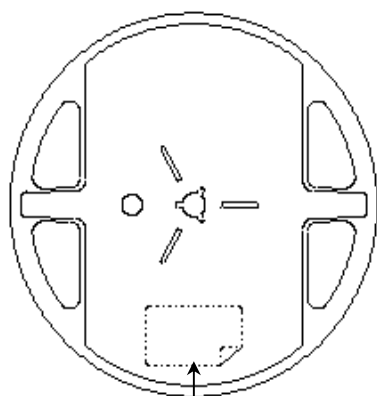
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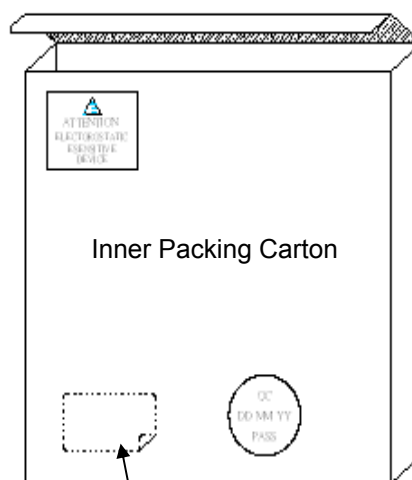
## PACKING



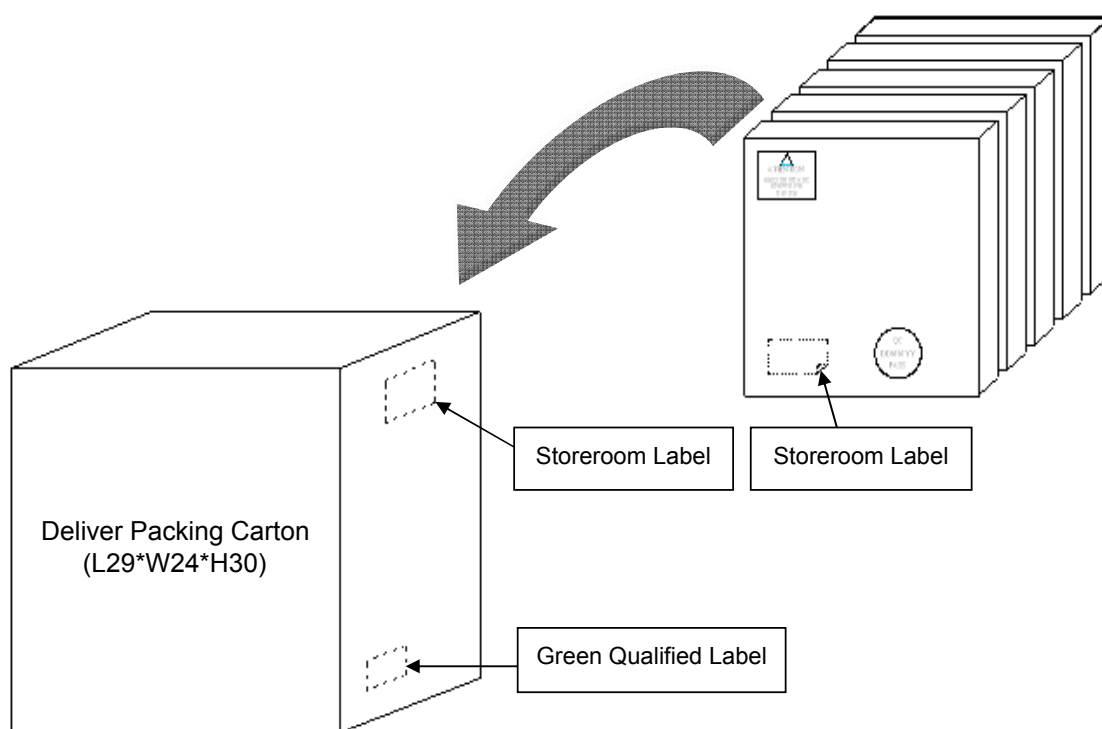
3000pcs-Product Tape



Blue Qualified Label



Storeroom Label



Storeroom Label

Storeroom Label

Green Qualified Label

Deliver Packing Carton  
(L29\*W24\*H30)