



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

| | |
|-------------------|--|
| CUSTOMER | _____ |
| NOMINAL FREQUENCY | 22.118400 MHz |
| PRODUCT TYPE | TYPE FX 6.0x3.5 SEAM SEALED CRYSTAL |
| PART NUMBER | FX2210007 |
| CUSTOMER P/N | _____ |
| ISSUE DATE | May 14, 2018 |
| VERSION | B |

| APPROVED | PREPARED | QA |
|------------|--------------|-----------|
| Brenda Kuo | Claire Cheng | Dony Yang |

Diodes Incorporated

No.2, Ziqiang 5th Rd., Zhongli Industrial Park,
Zhongli Dist., Taoyuan City 32063, Taiwan (R.O.C.)
TEL:886-3-451-8888
FAX:886-3-461-3865
<https://www.diodes.com>

- *Pb-free
- *RoHS Compliant
- *HF-Halogen Free
- *REACH Compliant

TYPE FX 6.0x3.5 SEAM SEALED CRYSTAL

FX2210007

VER.B 12-MAY-18

ELECTRICAL SPECIFICATIONS

| Item | Symbol | Specifications | Units | Notes |
|---|--------|--------------------|---------------|------------------------------------|
| Nominal Frequency | Fn | 22.118400 | MHz | |
| Mode of Oscillation | MO | AT Cut-Fundamental | | |
| Calibration Load Capacitance | CL | 20 | pF | |
| Calibration Tolerance | FL | ± 30 | ppm | at 25°C $\pm 3^{\circ}\text{C}$ |
| Operating Temperature Range | TR | -20 to +70 | °C | |
| Frequency Stability(Frequency Deviation over the Operating Temperature Range) | F/T | ± 30 | ppm | Reference to the Frequency at 25°C |
| Operating Drive Level | | 10 | μW | |
| Equivalent Series Resistance | ESR | 40 | Ω | Max. |
| Shunt Capacitance | C0 | 5 | pF | Max. |
| Aging at 25°C | | ± 3 | ppm | Max, 1st year |
| Storage Temperature | | -55 to +125 | °C | |
| Insulation Resistance | | 500 | M Ω | Min |

** 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).

TYPE FX 6.0x3.5 SEAM SEALED CRYSTAL

FX2210007

VER.B 12-MAY-18

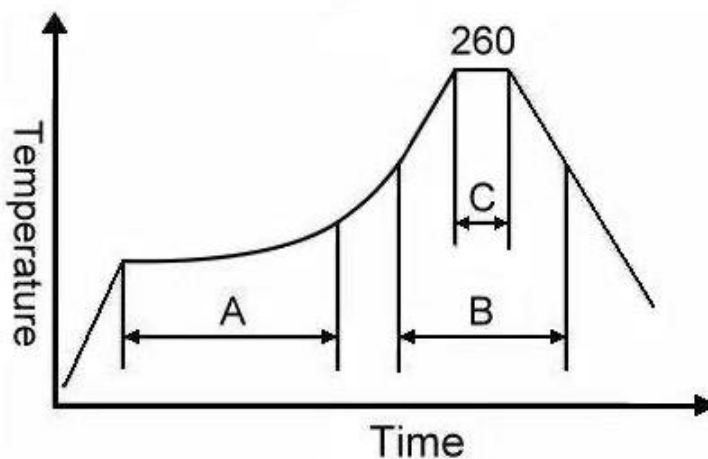
RELIABILITY SPECIFICATIONS

MECHANICAL AND ENVIRONMENTAL RATINGS:

- a) FINE LEAK TEST: JESD22-A109 (Condition 1A)
- b) GROSS LEAK TEST: JESD22-A109 (Condition C)
- c) MOISTURE RESISTANCE: JESD22-A113
- d) SHOCK: JESD22-B104 (Condition B)
- e) SOLDERABILITY : (RoHS version): J-STD-002
- f) VIBRATION: JESD22-B103
- g) SOLVENT RESISTANCE: JESD22-B107
- h) RESISTANCE TO SOLDERING HEAT (RoHS version): J-STD-020D Table 5.2 Pb free devices (3 cycles max)

SUGGESTED IR REFLOW PROFILE

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



Note:

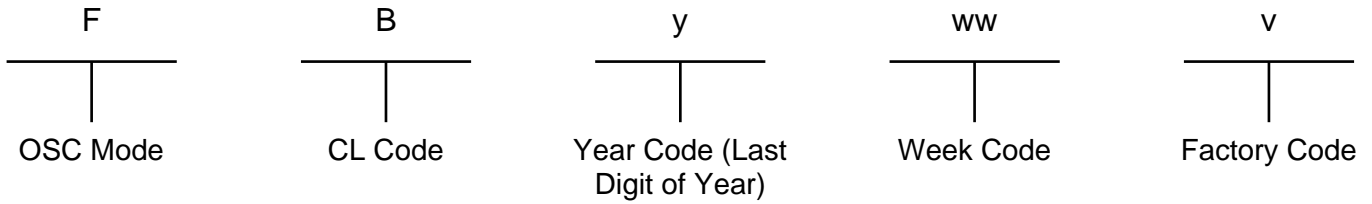
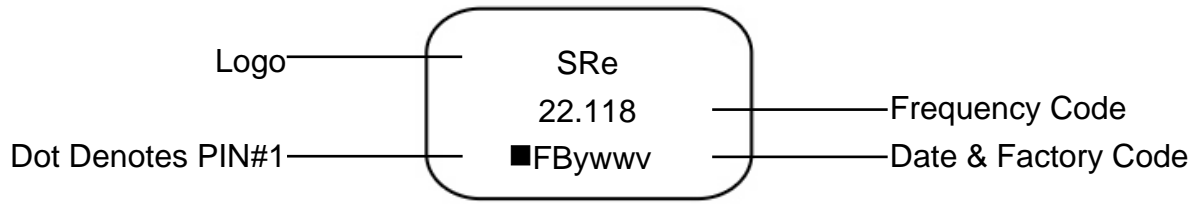
| | Stage | Temperature | Time |
|---|--------------|-------------|------------|
| A | Preheat | 150~200°C | 60~120 Sec |
| B | Primary Heat | 217°C | 60~150 Sec |
| C | Peak | 260°C | 10 Sec |

TYPE FX 6.0x3.5 SEAM SEALED CRYSTAL

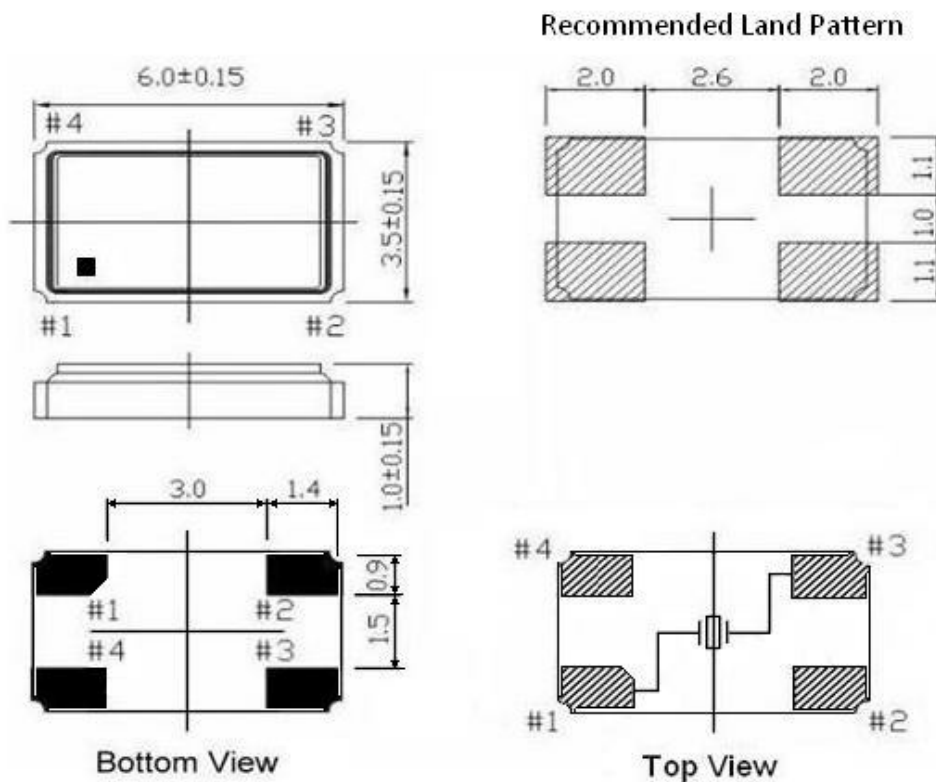
FX2210007

VER.B 12-MAY-18

MARKING



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



** Recommended - Pin 1 & 3 : CRYSTAL
Pin 2 & 4 : GND

Notes:

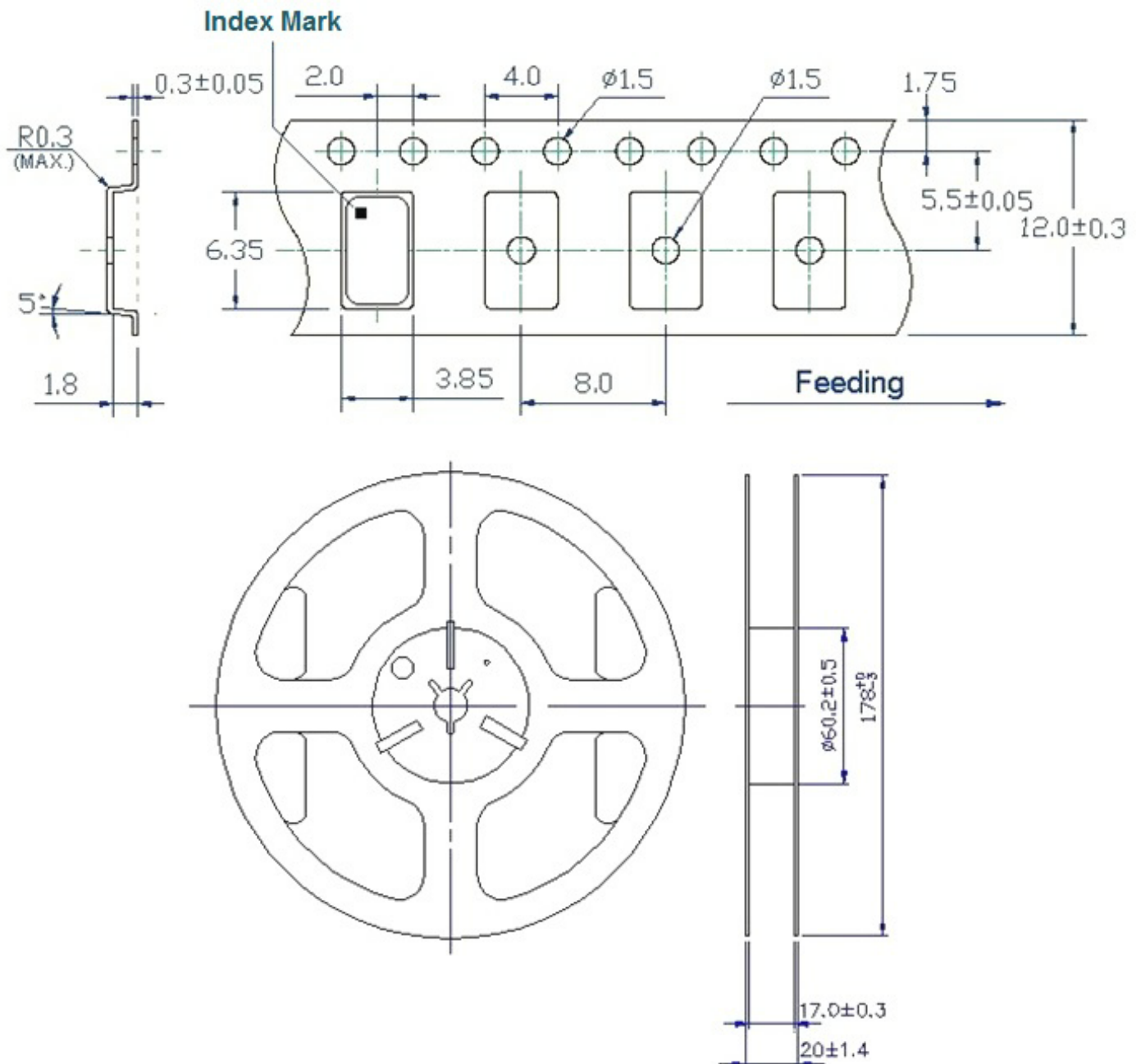
1. Package drawings are for reference only, and the appearances of objects may vary. Actual packages are based on the real product.
2. The marking dot denotes Pin#1.
3. The position and shape of the chamfer pin may vary and are based on the real product.

TYPE FX 6.0x3.5 SEAM SEALED CRYSTAL

FX2210007

VER.B 12-MAY-18

Tape & Reel



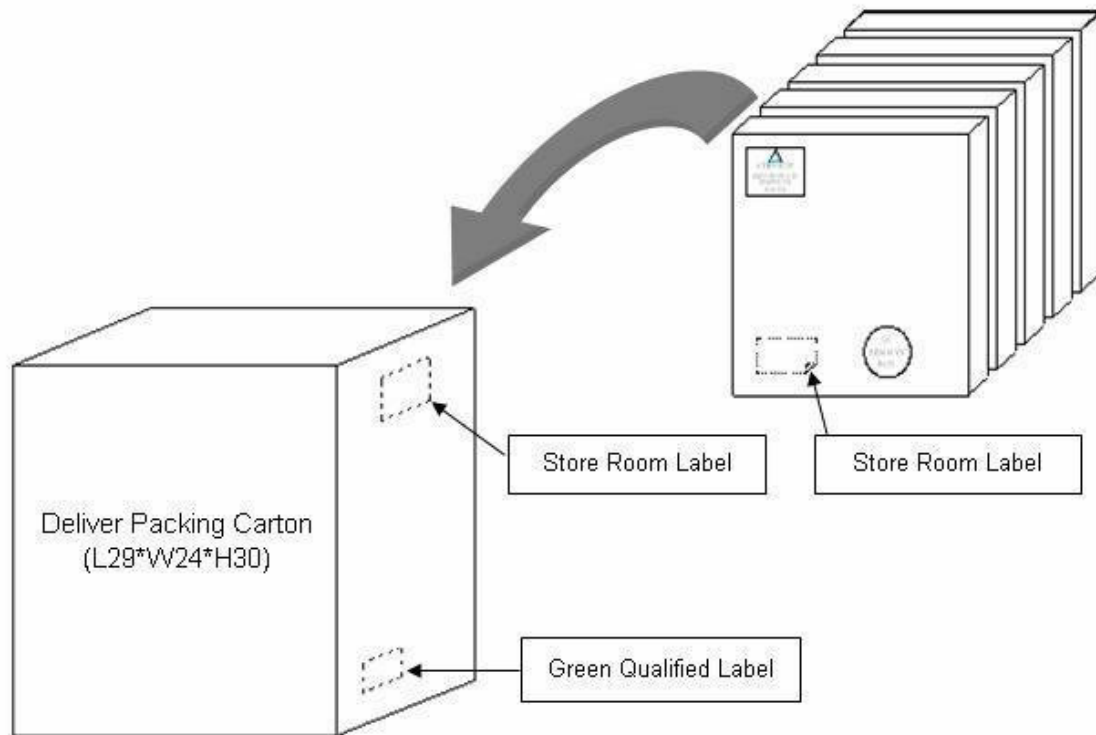
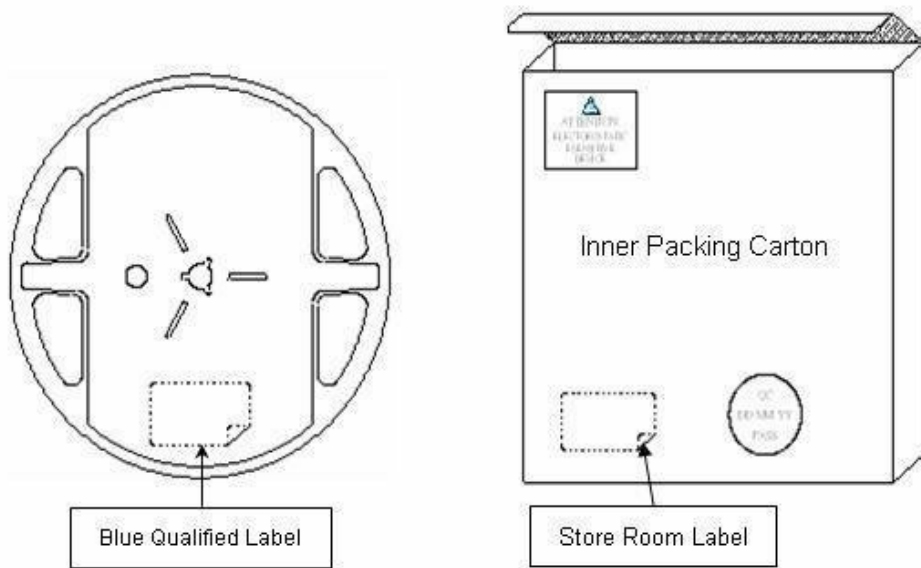
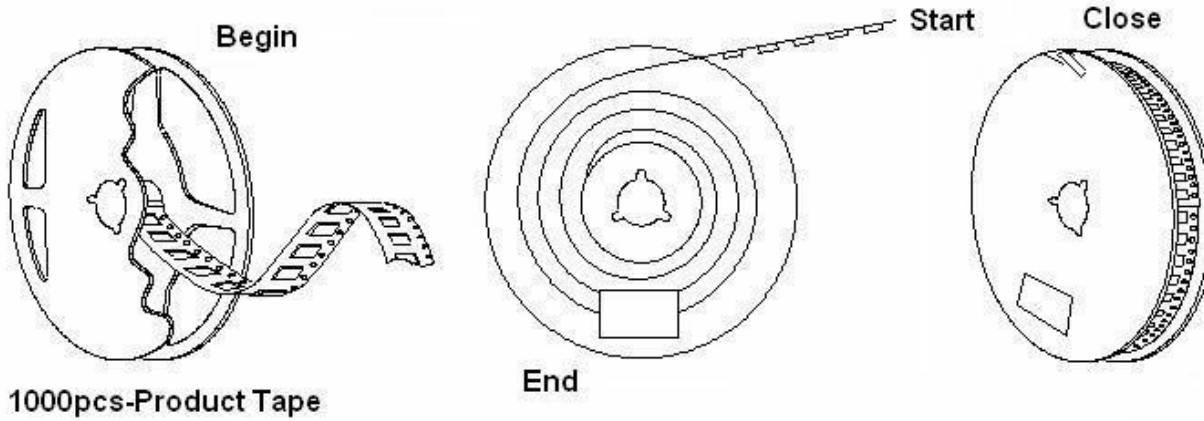
1. 230mm minimum leader which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

TYPE FX 6.0x3.5 SEAM SEALED CRYSTAL

FX2210007

VER.B 12-MAY-18

PACKING



TYPE FX 6.0x3.5 SEAM SEALED CRYSTAL

FX2210007

VER.B 12-MAY-18

VERSION HISTORY

| Version No. | Version Date | Description | Notes |
|-------------|---------------|-----------------|-------|
| A | Dec. 25, 2013 | Initial Release | |
| B | May. 12, 2018 | Updated Logo | |