



# TAI-SAW TECHNOLOGY CO., LTD.

No.3, Industrial 2nd Rd., Ping-Chen Industrial District,  
Tao-Yuan, 324, Taiwan, R.O.C.

TEL: 886-3-4690038 FAX: 886-3-4697532

<http://www.taisaw.com>

## Approval Sheet For Product Specification

Issued Date: 04/01/2003

Product Name: SMD7x5 13.581641MHz Crystal Resonator

TST Part No.: TZ0191A

Customer Part No.: \_\_\_\_\_

Company: \_\_\_\_\_

Division: \_\_\_\_\_

Approved by : \_\_\_\_\_

Date: \_\_\_\_\_

Issued by: \_\_\_\_\_ Robert Chang

Approved by: \_\_\_\_\_ TF Yang

Date: \_\_\_\_\_ 04/01/2003



## SMD7x5 Crystal Resonator

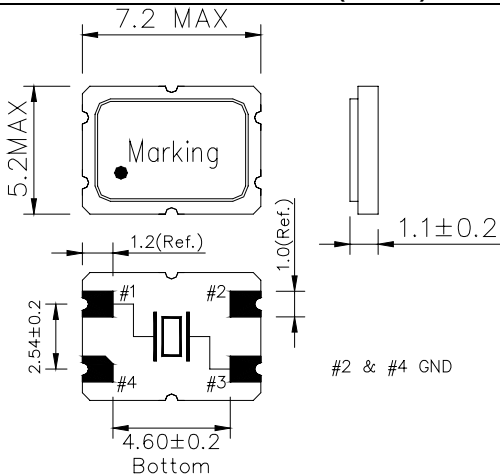
MODEL NO.: TZ0191A

REV. NO.: 1

RoHS Compliant  
Lead free  
Lead-free soldering

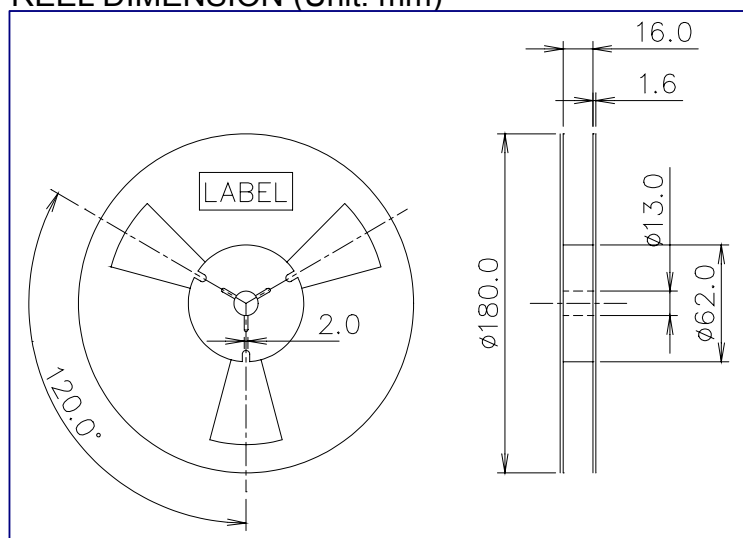
### Electrical Specifications:

|                                                | Specification                |
|------------------------------------------------|------------------------------|
| Nominal Frequency                              | 13.581641 MHz                |
| Mode of Vibration                              | Fundamental Mode             |
| Storage Temperature Range                      | -40°C to +85°C               |
| Operating Temperature Range                    | -20°C to +70°C               |
| Frequency Stability over Operating Temperature | +/-30 ppm                    |
| Frequency Make Tolerance                       | +/-20 ppm @ 25°C +/- 3°C     |
| Resonance Resistance(R)                        | 50 $\Omega$ max.             |
| Shunt Capacitance (Co)                         | 7 pF max                     |
| Drive Level                                    | 100 uW nominal               |
| Load Capacitance-CL                            | 12.0 pF                      |
| Aging                                          | +/-3.0 ppm/year @25°C        |
| Marking                                        | Laser marking                |
| Insulation Resistance                          | 500M $\Omega$ min at DC 100V |

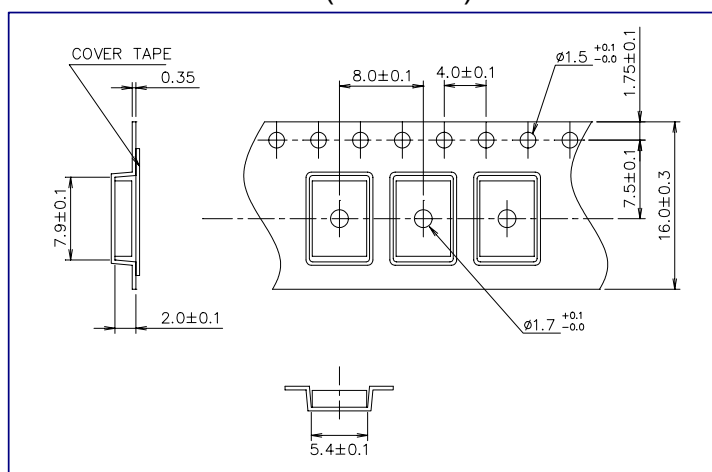
| Mechanical Dimensions (mm):                                                         | Marking:                                             |
|-------------------------------------------------------------------------------------|------------------------------------------------------|
|  | <div>13.581<br/>191ⓅZD</div> <p>“D” is date code</p> |

## PACKING:

### 1. REEL DIMENSION (Unit: mm)



### 2. TAPE DIMENSION (Unit: mm)



### 3. PACKING DIRECTION

The dot or the logo of marking should be close to the hole of tape.

## Product Code Table

| Year         | 2001<br>2005 | 2002<br>2006 | 2003<br>2007 | 2004<br>2008 |
|--------------|--------------|--------------|--------------|--------------|
| Product Code | Z            | z            | <u>Z</u>     | <u>z</u>     |

## Date Code Table

|      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| WK01 | WK02 | WK03 | WK04 | WK05 | WK06 | WK07 | WK08 | WK09 | WK10 | WK11 | WK12 | WK13 |
| A    | B    | C    | D    | E    | F    | G    | H    | I    | J    | K    | L    | M    |
| WK14 | WK15 | WK16 | WK17 | WK18 | WK19 | WK20 | WK21 | WK22 | WK23 | WK24 | WK25 | WK26 |
| N    | O    | P    | Q    | R    | S    | T    | U    | V    | W    | X    | Y    | Z    |
| WK27 | WK28 | WK29 | WK30 | WK31 | WK32 | WK33 | WK34 | WK35 | WK36 | WK37 | WK38 | WK39 |
| a    | b    | c    | d    | e    | f    | g    | h    | i    | j    | k    | l    | m    |
| WK40 | WK41 | WK42 | WK43 | WK44 | WK45 | WK46 | WK47 | WK48 | WK49 | WK50 | WK51 | WK52 |
| n    | o    | p    | q    | r    | s    | t    | u    | v    | w    | x    | y    | z    |