



# TAI-SAW TECHNOLOGY CO., LTD.

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

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## Approval Sheet For Product Specification

Issued Date: 03/25/2009 (REV. NO: 2.0)

Product Name: SMD 6.0x3.5 27MHz Crystal Unit

TST Parts No.: TZ1132A

Customer Parts No. : \_\_\_\_\_

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

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

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

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

Checked by: \_\_\_\_\_ Quinton Lo

Approval by: \_\_\_\_\_ Robert Chang

Date: \_\_\_\_\_ 03/25/2009



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## SMD 6.0x3.5 27MHz Crystal Unit

MODEL NO.: TZ1132A

REV. NO.: 2.0

### Features:

- Surface Mount Seam Weld Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature

RoHS Compliant  
Lead free  
Lead-free soldering

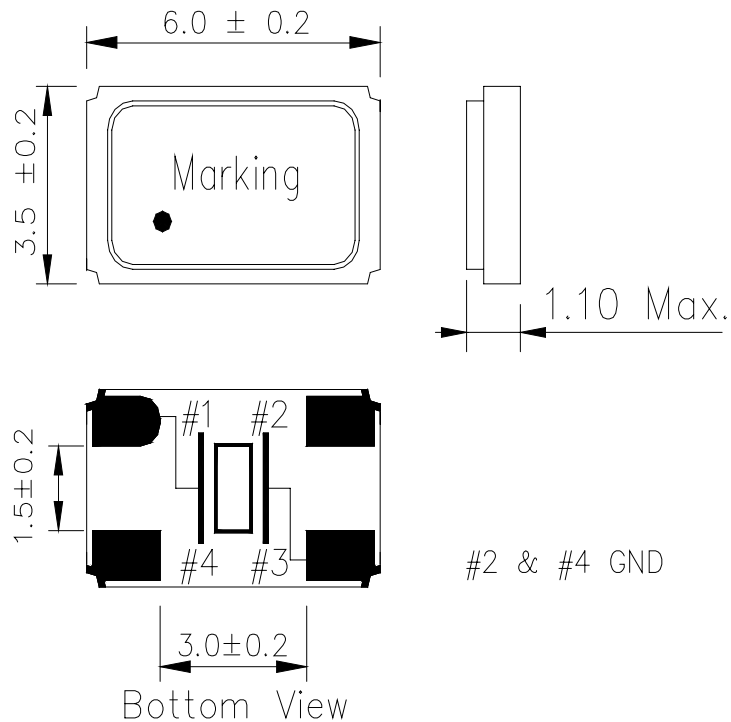
### Description and Applications:

Surface mount 6.0mmx3.5mm crystal unit for use in wireless telecommunications devices.

### Electrical Specifications:

| TZ1132A                                              | Specification                              |
|------------------------------------------------------|--------------------------------------------|
| Nominal Frequency                                    | 27.000 MHz                                 |
| Mode of Oscillation                                  | Fundamental                                |
| Storage Temperature Range                            | -30°C to +85°C                             |
| Operating Temperature Range                          | -10°C to +70°C                             |
| Frequency Stability over Operating Temperature Range | +/- 10 ppm (referred to the value at 25°C) |
| Frequency Make Tolerance (FL)                        | +/- 10 ppm @ 25°C +/- 3°C                  |
| Equivalent Series Resistance (ESR)                   | 50 $\Omega$ max                            |
| Nominal Drive Level                                  | 10 $\mu$ W                                 |
| Shunt Capacitance (Co)                               | 5 pF max                                   |
| Load Capacitance (CL)                                | 18 pF                                      |
| Aging                                                | +/-2.0 ppm/year @25°C                      |
| Insulation Resistance                                | 500 M $\Omega$ min./DC 100V                |
| Marking                                              | Laser marking                              |

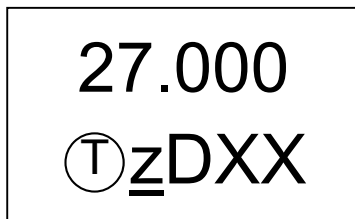
## Mechanical Dimensions (mm):



## Marking:

Line 1: Frequency (27.000)

Line 2: TST Logo + Crystal Product Code + Date Code + Traceability Code(XX)



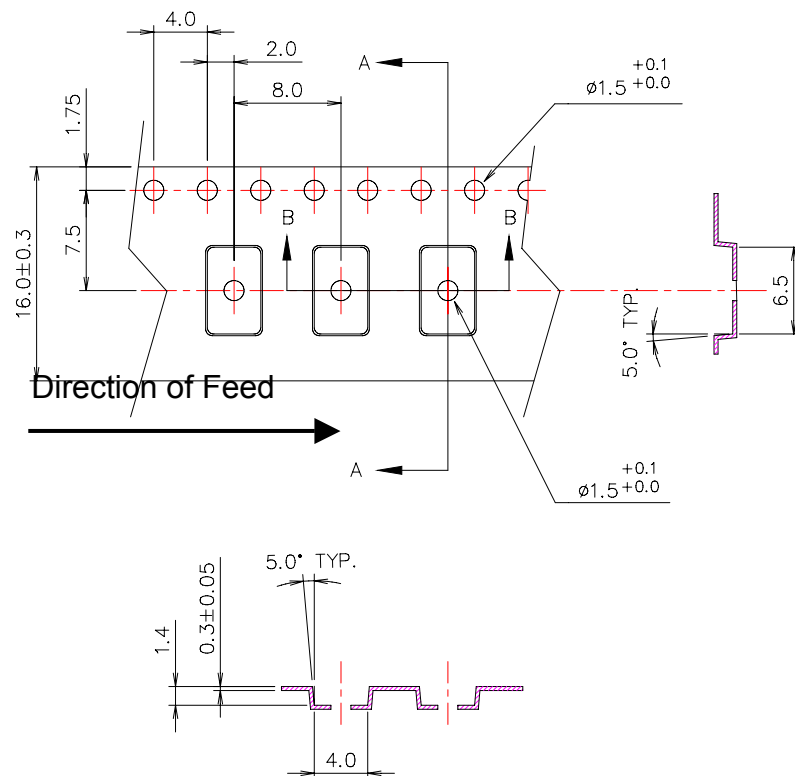
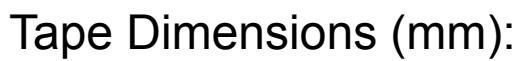
## Product Code Table

| Year         | 2008     | 2009 | 2010 | 2011     |
|--------------|----------|------|------|----------|
|              | 2012     | 2013 | 2014 | 2015     |
| Product code | <u>z</u> | Z    | z    | <u>z</u> |

## Date Code Table

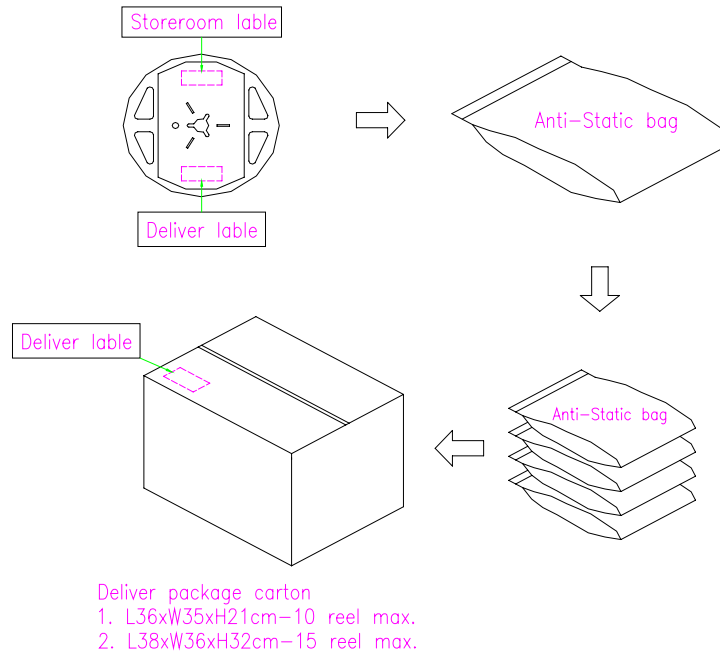
| WK01 | WK02 | WK03 | WK04 | WK05 | WK06 | WK07 | WK08 | WK09 | WK10 | WK11 | WK12 | WK13 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| A    | B    | C    | D    | E    | F    | G    | H    | I    | J    | K    | L    | M    |
| WK14 | WK15 | WK16 | 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    |

## [

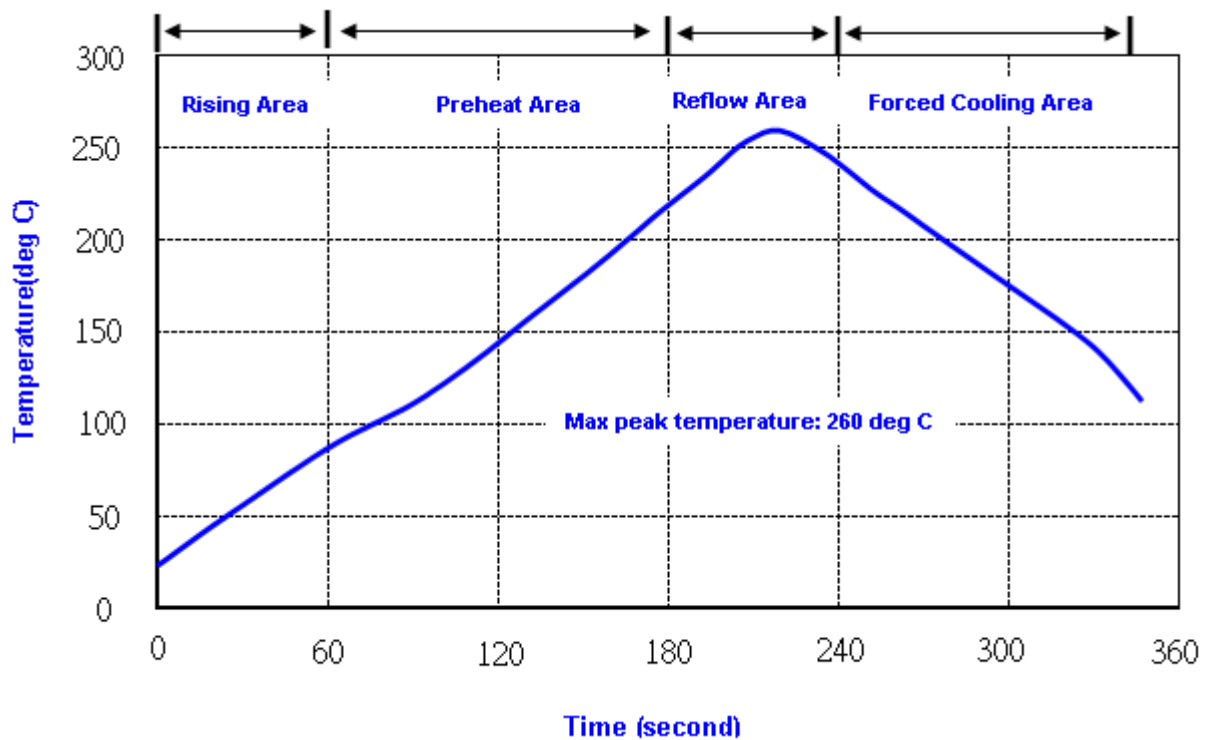


## Packing Quantity/Packing:

3K pcs maximum per reel



## Reflow Profile:



Note: 1. Max peak temperature: 260+/-5 deg C; Time: 10+/-2 sec  
2. Temperature: 217+/-5 deg C; Time: 90~100 sec

# Reliability Specifications

| Test name                                | Test process / method                                                                                                                                                         | Reference standard                           |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| <b>Mechanical characteristics</b>        |                                                                                                                                                                               |                                              |
| resistance to Soldering heat (IR reflow) | Temp./ Duration : 260°C /10sec ×2 times<br>Total time : 4min.(IR-reflow)                                                                                                      | EIAJED-4701<br>-300(301)M(II)                |
| Vibration                                | Total peak amplitude : 1.5mm<br>Vibration frequency : 10 to 55 Hz<br>Sweep period : 1.0 minute<br>Vibration directions : 3 mutually perpendicular<br>Duration : 2 hr / direc. | MIL-STD 202F<br>method 201A                  |
| Mechanical Shock                         | directions : 3 impacts per axis<br>Acceleration : 3000g's, +20/-0 %<br>Duration : 0.3 ms (total 18 shocks)<br>Waveform : Half-sine                                            | MIL-STD 202F<br>method 213C                  |
| Solderability                            | Solder Temperature:265±5°C<br>Duration time: 5±0.5 seconds.                                                                                                                   | MIL-STD 883G<br>method 2003                  |
| <b>Environmental characteristics</b>     |                                                                                                                                                                               |                                              |
| Thermal Shock                            | Heat cycle conditions<br>-55 °C (30min) ↔ 125 °C (30min)<br>* cycle time : 10 times                                                                                           | MIL-STD 883G<br>method 1010.7                |
| Humidity test                            | Temperature : 70 ± 2 °C<br>Relative humidity : 90~95%<br>Duration : 96 hours                                                                                                  | MIL-STD 202F<br>method 103B                  |
| Dry heat ( Aging test )                  | Temperature : 125 ± 2 °C<br>Duration : 168 hours                                                                                                                              | MIL-STD 883G<br>method 1008.2<br>condition C |
| PCT test                                 | Pressure: 2.06kg/cm <sup>2</sup> (2.03*10 <sup>5</sup> pa)<br>Temperature : 121 ± 2 °C<br>Relative humidity : 100%<br>Duration : 24 hours                                     | EIAJED-4701-3<br>B-123A                      |