



# 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: 4/21/2003 (REV. NO: 1)

Product Name: SMD 5.0x3.2 13.0MHz Crystal Unit

TST Parts No.: TZ0196A

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

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

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

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

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

Checked by: \_\_\_\_\_ Kelly Huang

Approval by: \_\_\_\_\_ TF Yang

Date: \_\_\_\_\_ 4/21/2003



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## SMD 5.0x3.2 13.0MHz Crystal Unit

MODEL NO.: TZ0196A

REV. NO.: 1

### Features:

- Surface Mount Seam Weld Package
- Excellent Aging
- Good Frequency Perturbation and Stability over temperature
- Ultra Miniature Package

RoHS Compliant  
Lead free  
Lead-free soldering

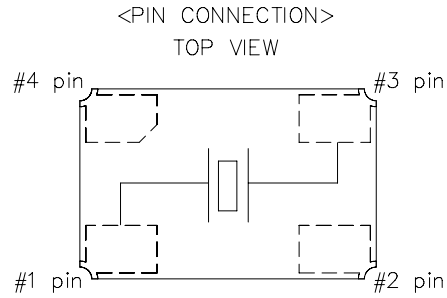
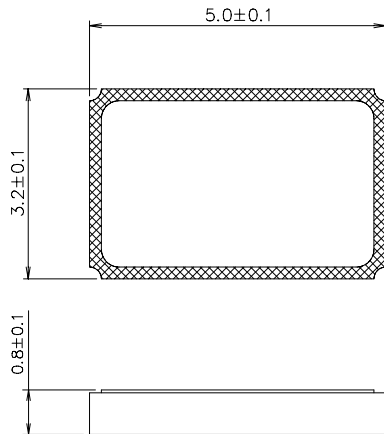
### Description and Applications:

Surface mount 5.0mmx3.2mm crystal unit for use in wireless telecommunications devices, especially for a need of ultra miniature package for mobility.

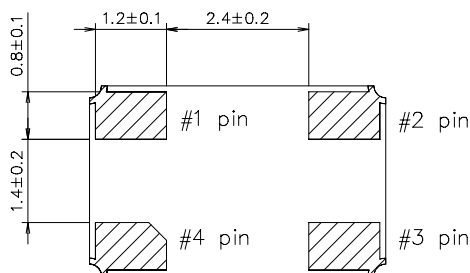
### Electrical Specifications:

| TZ0196A                                        | Specification                             |
|------------------------------------------------|-------------------------------------------|
| Nominal Frequency                              | 13.000000 MHz                             |
| Mode of Oscillation                            | Fundamental                               |
| Storage Temperature Range                      | -40°C to +85°C                            |
| Operating Temperature Range                    | -20°C to +85°C                            |
| Frequency Stability over Operating Temperature | +/-10 ppm (referred to the value at 25°C) |
| Frequency Make Tolerance                       | +/-10 ppm @ 25°C +/- 3°C                  |
| Equivalent Series Resistance (Rs)              | 40 $\Omega$ max                           |
| Drive Level                                    | 10+/-2 $\mu$ W                            |
| Shunt Capacitance (Co)                         | 2.0 pF max                                |
| Load Capacitance (CL)                          | 8 pF +/-0.2 pF                            |
| Motional Capacitance (C1)                      | 5.0 fF +/-10%                             |
| Insulation Resistance                          | 500 M $\Omega$ min./DC 100V               |
| Pulling Sensitivity                            | 29.5 ppm/pF +/-10% (@ 8 pF Load)          |
| Aging                                          | $\pm$ 1.0 ppm/year @25°C                  |
| Marking                                        | Laser marking                             |

# Mechanical Dimensions (mm):



Marking #2, #4 is connected with metal cap of top.

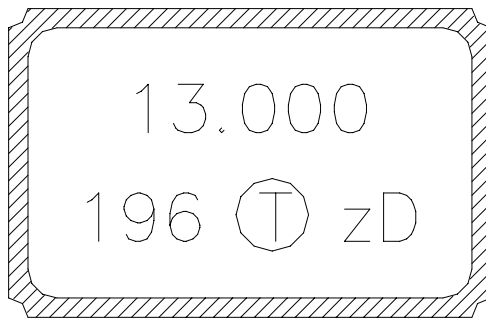


|        | Pin Connection |
|--------|----------------|
| #1 pin | IN/OUT         |
| #2 pin | GND            |
| #3 pin | IN/OUT         |
| #4 pin | GND            |

## Marking:

Line 1: Customer Frequency (13.000)

Line 2: TST P/N (196) + TST Logo + Crystal Product Code + Date Code

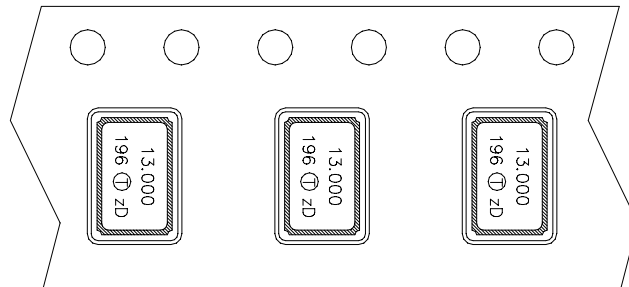


## Product Code Table

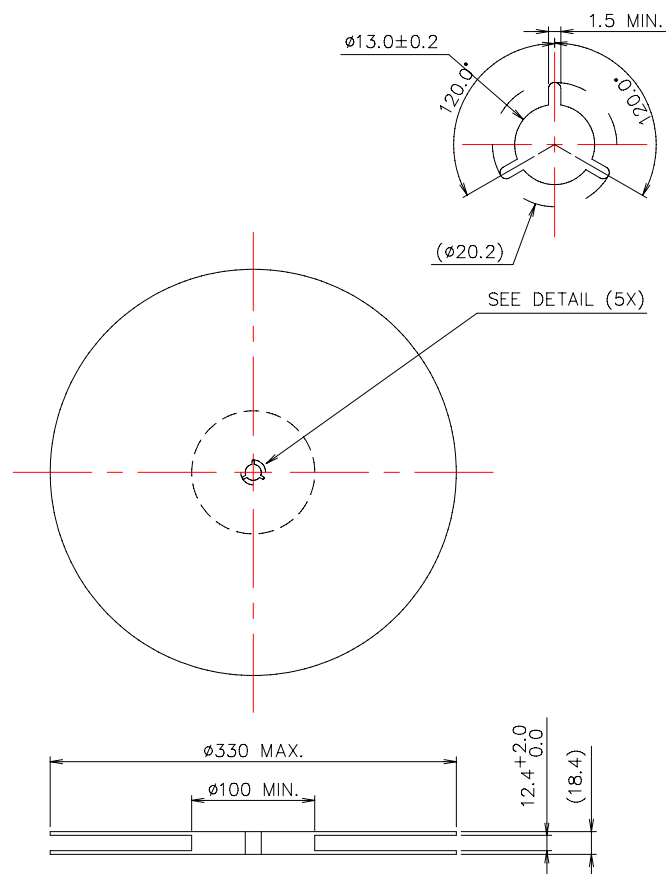
| Year         | 2001<br>2005 | 2002<br>2006 | 2003<br>2007 | 2004<br>2008 |
|--------------|--------------|--------------|--------------|--------------|
| Product Code | Z            | z            | <u>Z</u>     | <u>z</u>     |

## Date Code Table

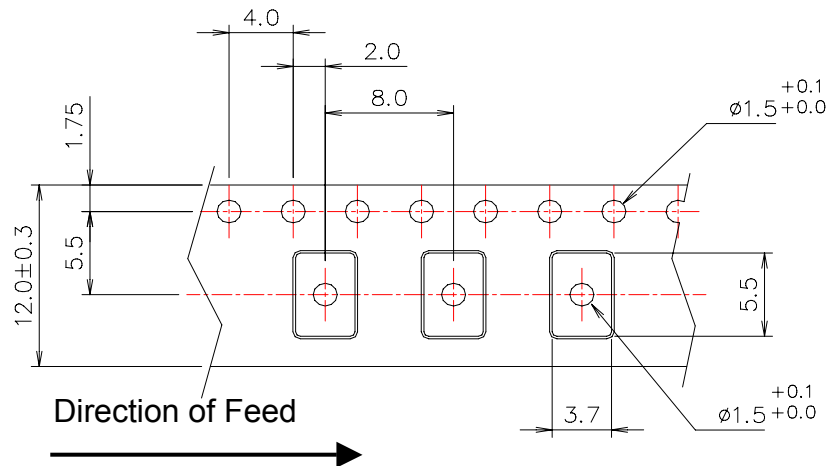
| WK01 | WK02 | WK03 | WK04 | WK05 | WK06 | WK07 | WK08 | WK09 | WK10 | WK11 | WK12 | WK13 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| A    | B    | C    | D    | E    | F    | G    | H    | I    | J    | K    | L    | M    |
| WK14 | WK15 | WK16 |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



## Reel Dimensions (mm):



## Tape Dimensions (mm):



[NOTE]:

1. Unless otherwise specified tolerance on dimension  $\pm 0.1$  mm.
2. Material: conductive polystyrene with color black.
3. 10 pitch cumulative tolerance  $\pm 0.2$  mm.

## Reflow Profile:

1. Preheating shall be fixed at  $140 \sim 160$  °C for 60 ~ 90 seconds.
2. Ascending time to preheating temperature  $150$  °C shall be 30 seconds min.
3. Heating shall be fixed at  $200$  °C for 50 ~ 60 seconds and at  $230 \pm 10$  °C peak.

