



TAI-SAW TECHNOLOGY CO., LTD.

No. 3, Industrial 2nd Rd., Ping-Chen Industrial District,
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Approval Sheet For Product Specification

Issued Date: 12/16/2003 (REV. NO: 2)

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

TST Parts No.: TZ0197A

Customer Parts No. : _____

Company: _____

Division: _____

Approved by: _____

Date: _____

Checked by: _____ Kelly Huang

Approval by: _____ TF Yang

Date: _____ 12/16/2003



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SMD 5.0x3.2 13.0MHz Crystal Unit

MODEL NO.: TZ0197A

REV. NO.: 2

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

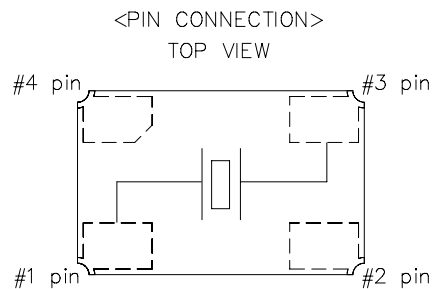
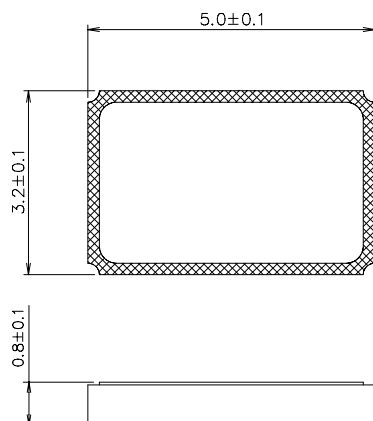
Description and Applications:

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

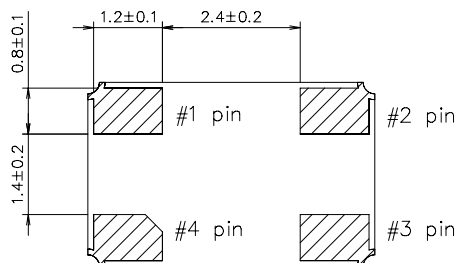
Electrical Specifications:

TZ0197A	Specification
Nominal Frequency	13.0 MHz
Mode of Oscillation	Fundamental
Storage Temperature Range	-30°C to +85°C
Operating Temperature Range	-25°C to +75°C
Frequency Stability over Operating Temperature	+/-10 ppm (referred to the value at 25°C)
Frequency Make Tolerance	56 +/- 10 ppm @ 25°C +/- 3°C
Equivalent Series Resistance (ESR)	40 Ω max.
Drive Level	50 +/- 10 uW
Drive Level Dependence (Delta R)	2.0 Ω max over below 8 drive points (0.01,0.1,1,10,20,30,50,0.01 uW)
Shunt Capacitance (Co)	2.0 pF max
Load Capacitance (CL)	7 pF +/- 0.2 pF
Motional Capacitance (C1)	4.9 fF +/- 20%
Activity Dip	+/-1.0 ppm/°C max
Aging	+/-1.0 ppm/year @25°C
Marking	Laser marking

Mechanical Dimensions (mm):



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

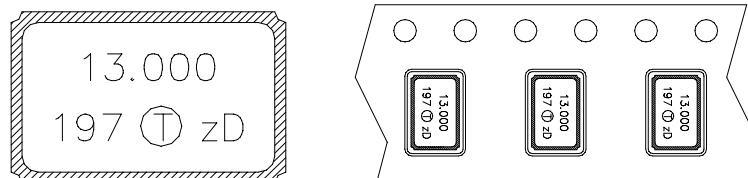


	Pin Connection
#1 pin	IN/OUT
#2 pin	GND
#3 pin	IN/OUT
#4 pin	GND

Marking:

Line 1: Customer Frequency (13.000)

Line 2: TST P/N (197) + TST Logo + Crystal Product Code + Date Code



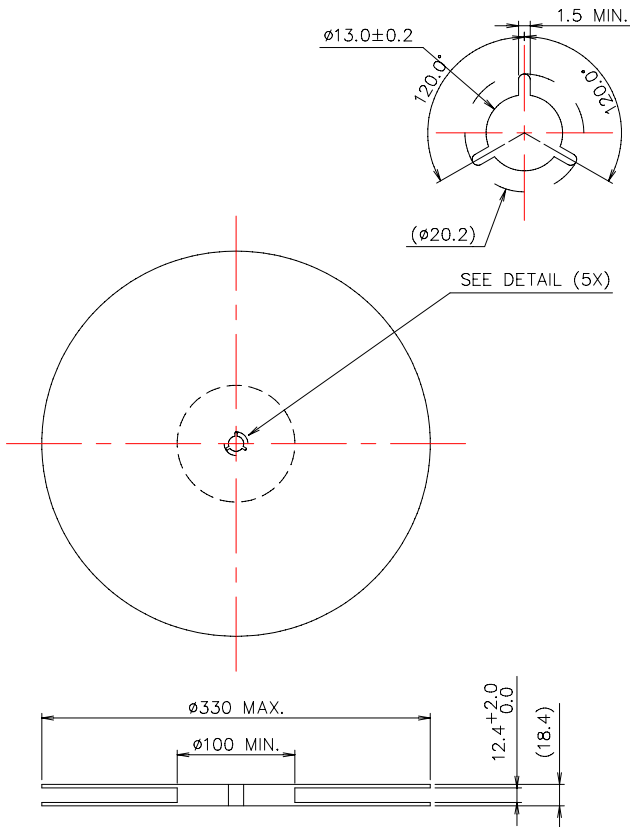
Product Code Table

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

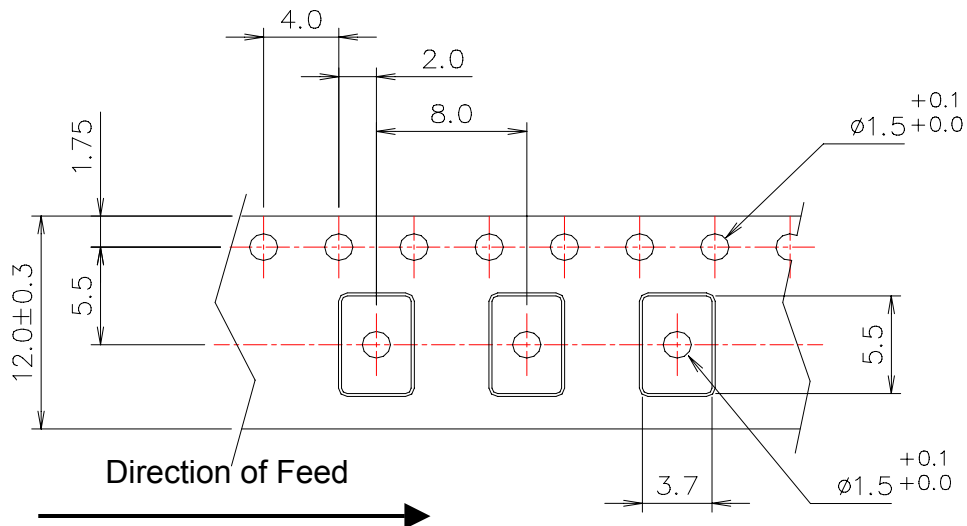
Date Code Table

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 ± 0.1 mm.
2. Material: conductive polystyrene with color black
3. 10 pitch cumulative tolerance ± 0.2 mm.

Reflow Profile:

1. Preheating shall be fixed at 140 ~ 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±10 °C peak.

