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Approval Sheet For Product Specification

Issued Date: 03/17/2009 (REV. NO: 1)

Product Name: SMD 2.5x2.0 38.4 MHz Crystal Units

TST Parts No.: TZ1612A

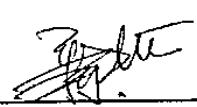
Customer Parts No. : _____

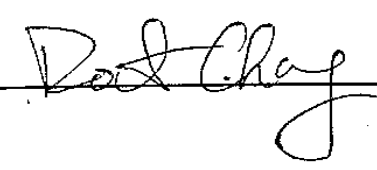
Company: _____

Division: _____

Approved by: _____

Date: _____

Checked by: Eddie Huang 

Approval by: Robert Chang 

Date: 03/17/2009



MODEL NO.: TZ1612A

REV. NO.: 1

Features:

- Surface Mount Hermetic Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature
- Ultra Miniature Package

RoHS Compliant
Lead free
Lead-free soldering

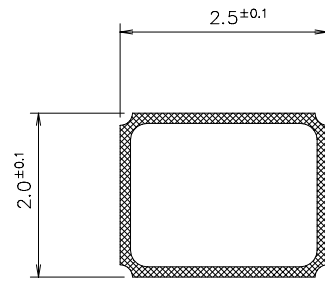
Description and Applications:

Surface mount 2.5mmx2.0mm crystal unit for use in wireless communications devices, especially for a need of ultra miniature package for mobility.

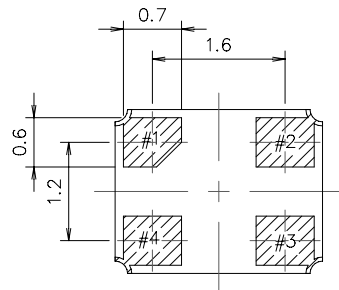
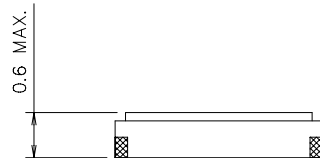
Electrical Specifications:

TZ1612A	Specification
Nominal Frequency	38.400000 MHz
Mode of Oscillation	Fundamental
Storage Temperature Range	-40°C to +85°C
Operating Temperature Range	-20°C to +70°C
Frequency Stability initial @ 25C + over temp -20C to +70C + aging	+/-20 ppm (referred to the value at 25°C)
Equivalent Series Resistance (ESR)	50 Ω max
Nominal Drive Level	100 uW max.
Shunt Capacitance (Co)	3.0 pF max
Load Capacitance (CL)	15 pF
Insulation Resistance	500 M Ω min./DC 100V
Marking	Laser Marking
Unit Weight	9.5 +/-0.5mg

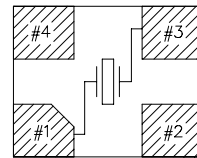
Mechanical Dimensions (mm):



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

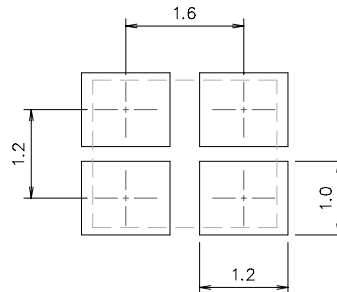


Internal Connections
(Top View)



[NOTE] #2, #4 is connected with a cover
(Please connect with a GND or a power supply)

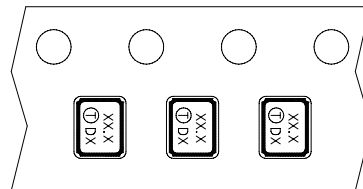
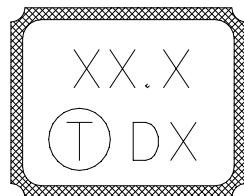
Recommended Land Pattern: (unit: mm)



Marking:

Line 1: Frequency (38.4)

Line 2: TST Logo + Date Code + Product Code

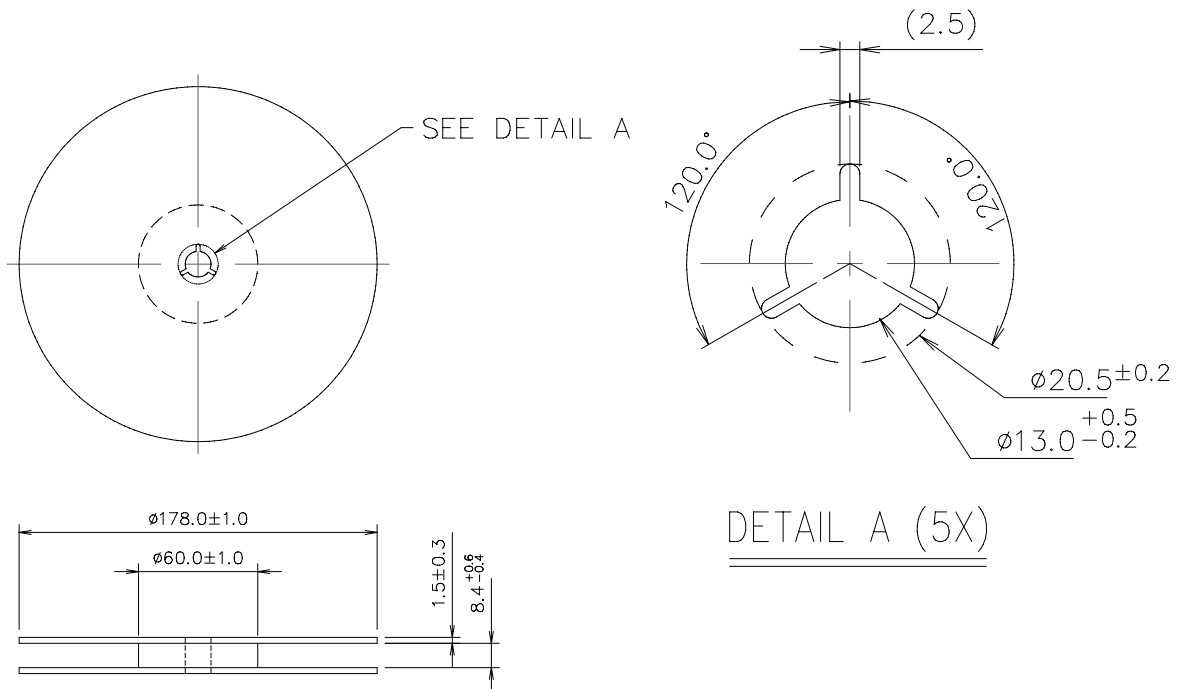
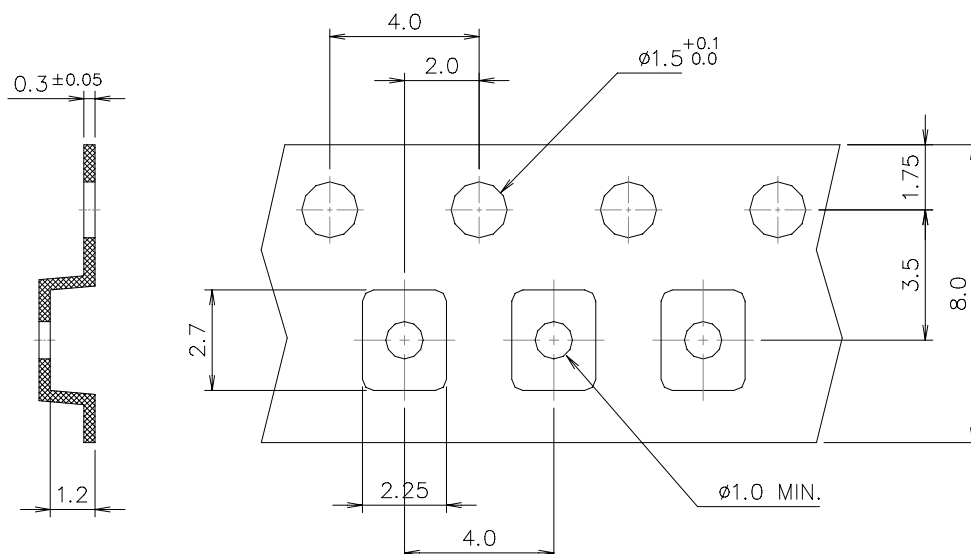


Date Code Table

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

Product Code Table:

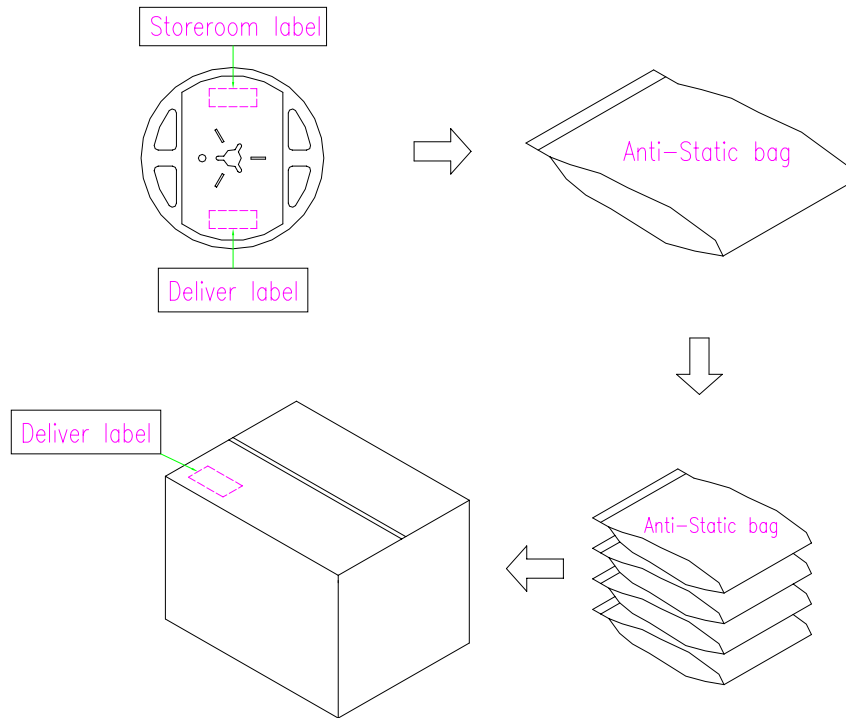
Year	2007	2008
	2009	2010
	2011	2012
	2013	2014
Product code	X	X

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.

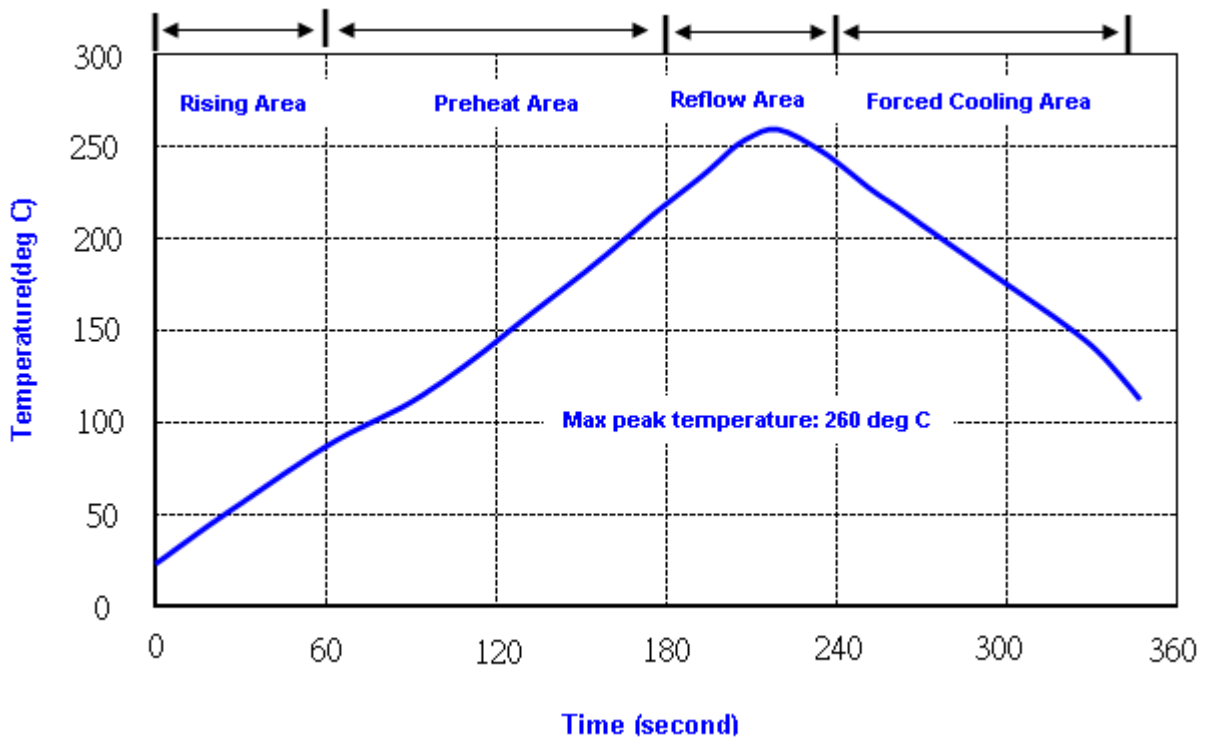
Packing Quantity/Packing:

3K pcs maximum per reel



Deliver package carton
 1. L36xW35xH21cm-10 reel max.
 2. L38xW36xH32cm-15 reel max.

Reflow Profile:



Note: 1. Max peak temperature: 260 $\pm$ 5 deg C; Time: 10 $\pm$ 2 sec
 2. Temperature: 217 $\pm$ 5 deg C; Time: 90~100 sec

Reliability Specifications

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