



TAI-SAW TECHNOLOGY CO., LTD.

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

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

E-mail: ttsales@mail.taisaw.com Web: www.taisaw.com

Product Specifications Approval Sheet

Product Description: SMD TSX 2.0x1.6 26MHz

(Temperature Sensing Crystal)

TST Part No.: TM0016A

Customer Part No.: _____

Customer signature required
Company: _____
Division: _____
Approved by : _____
Date: _____

Checked by: _____ Glen Peng *Glen*

Approved by: _____ Kelly Huang *Kelly Huang*

Date: _____ 01/06/2020

1. Customer signed back is required before TST can proceed with sample build and receive orders.
2. Orders received without customer signed back will be regarded as agreement on the specifications.
3. Any specifications changes must be approved upon by both parties and a new revision of specifications shall be released to reflect the changes.
- 4.



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SMD TSX 2.0x1.6 26MHz

MODEL NO.: TM0016A

REV. NO.: 2

Revise:

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Revised by
1	N/A	Initial release	12/20/19'	N/A	Glen Peng
2	5	Update product thickness	01/06/20'	ECN-202000006	Glen Peng



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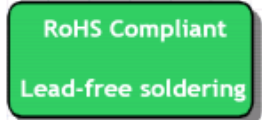
SMD TSX 2.0x1.6 26MHz

MODEL NO.: TM0016A

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Features:

- Surface Mount Hermetic Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature
- Ultra Miniature Package
- Moisture Sensitivity Level (MSL) : Level-1



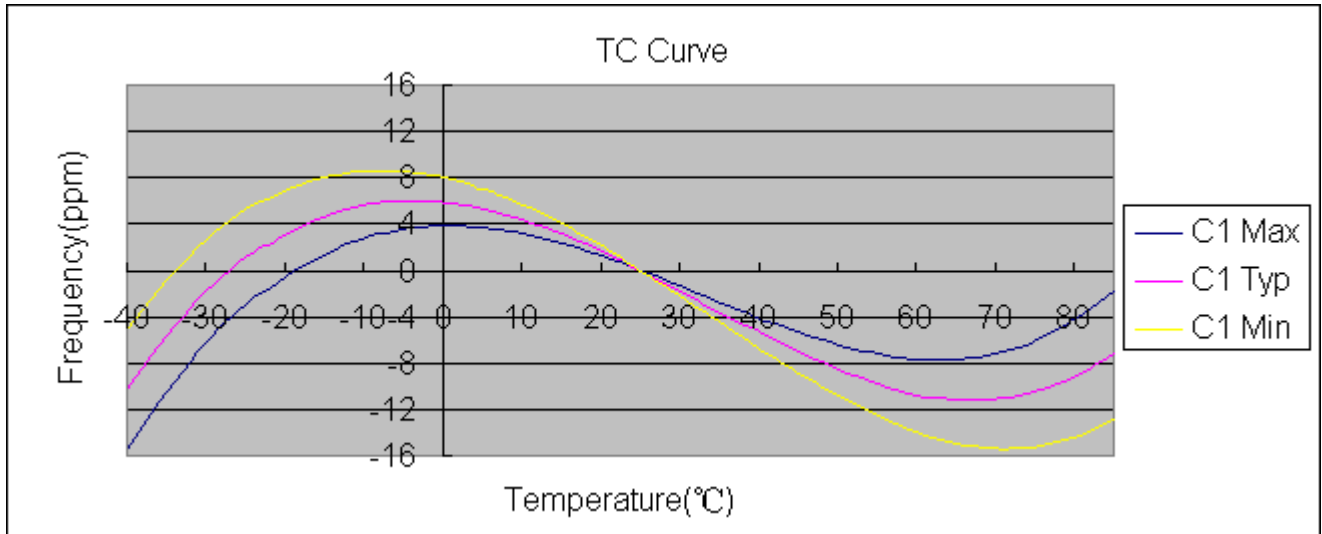
Description and Applications:

Surface mount 2.0mmx1.6mm crystal unit for use in wireless communications devices, especially for a need of ultra miniature package for mobility.

Electrical Specifications:

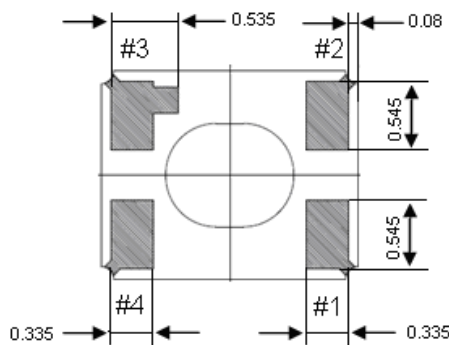
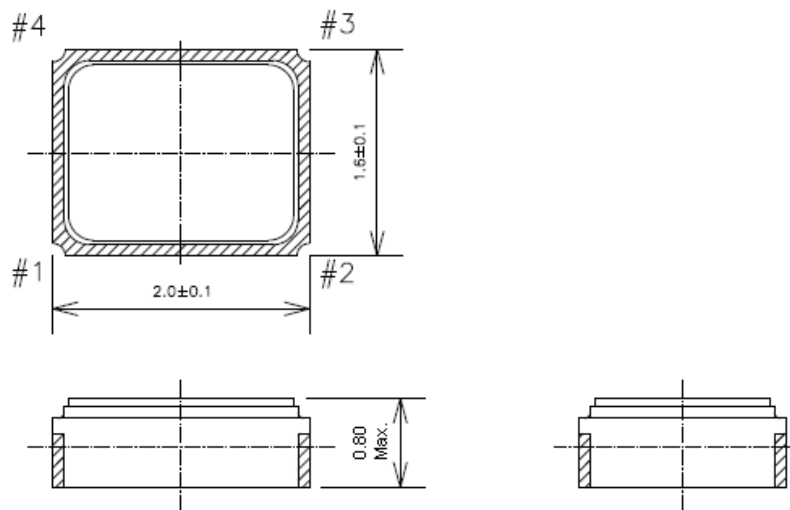
TM0016A	Specification(Crystal)
Nominal Frequency	26.000000 MHz
Mode of Oscillation	Fundamental
Storage Temperature Range	-40°C to +105°C
Operating Temperature Range	-40°C to +85°C
Frequency Stability over Operating Temperature Range	+/-16 ppm (referred to the value at 25°C)
Frequency Make Tolerance (FL)	+/-10 ppm @ 25°C +/- 3°C
Equivalent Series Resistance (ESR)	40 Ω max
Nominal Drive Level	10uW typical and 100 uW max
Shunt Capacitance (Co)	3.0 pF max
Load Capacitance (CL)	7 pF
Hysteresis	+/-0.5 ppm @ -40~85°C
Aging	+/-1ppm/year
Insulation Resistance	500 MW min./DC 100V
Trim Sensitivity	14.5 ppm/pF min
Unit Weight	5.7mg+/-0.5mg
Inflection Point (Ti)	30.5 +/- 1.5°C

Room Temp (T0)	30.5°C			
S curve 3 order curve fitting coefficient	Min	Typ	Max	Unit
C1	-0.46	-0.36	-0.26	ppm/°C
Marking	Laser Marking			
Resistance (25°C)	100K +/- 1% Ω			
B-constant	4250 +/- 1% k (Evaluated from 25°C to 50°C, 1% tolerance)			

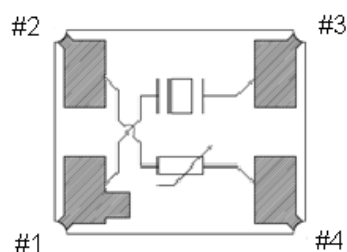


Coefficient reference to 30.5C				Unit
	Min Curve	Typ Curve	Max Curve	
C1	-0.45	-0.36	-0.27	ppm/°C
C2	-4.16	-2.28	-2.03	e ⁴ -ppm/°C ²
C3	9.19	9.22	9.20	e ⁵ -ppm/°C ³

Mechanical Dimensions (unit: mm):



Terminal land connection (TOP VIEW)

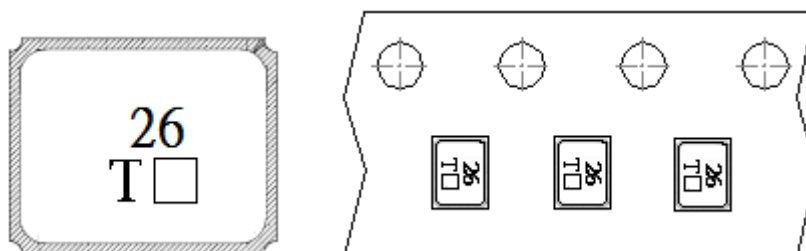


#1	XTAL IN
#2	THERMISTOR OUT, GND
#3	XTAL OUT
#4	THERMISTOR IN

Marking:

Line 1: XX; Frequency (26)

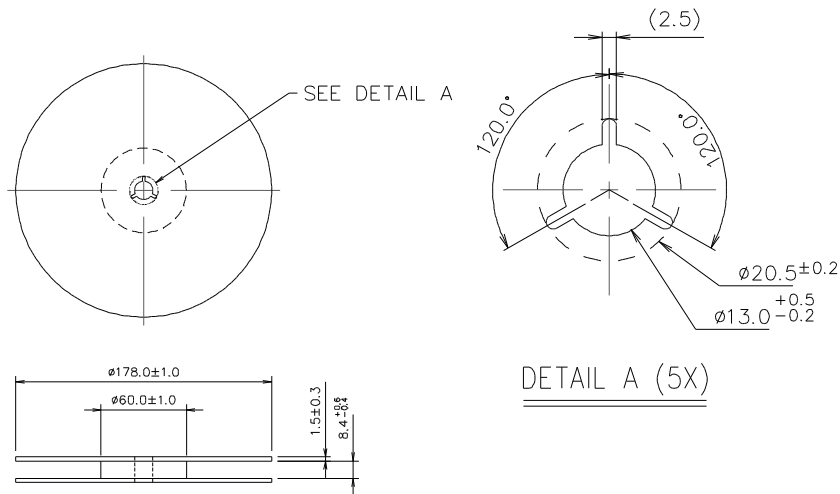
Line 2: T; Traceable Code + ; date Code of Year/Month



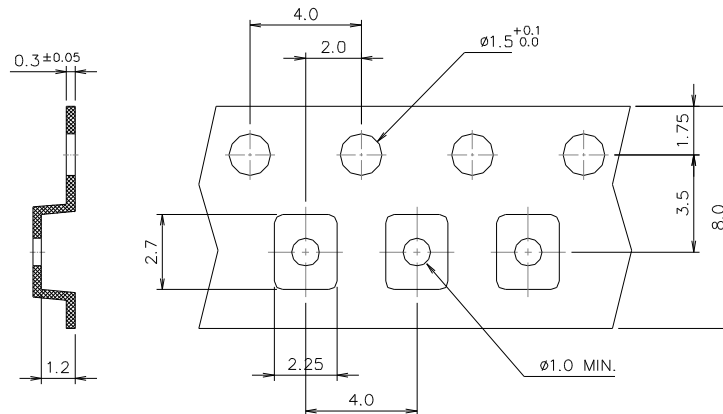
Date Code Table: Year/Month

Year/Month	1	2	3	4	5	6	7	8	9	10	11	12
2018	A	B	C	D	E	F	G	H	J	K	L	M
2019	N	P	Q	R	S	T	U	V	W	X	Y	Z
2020	a	b	c	d	e	f	g	h	i	j	k	m
2021	n	p	q	r	s	t	u	v	w	x	y	z

Reel Dimensions (mm):



Tape Dimensions (mm):

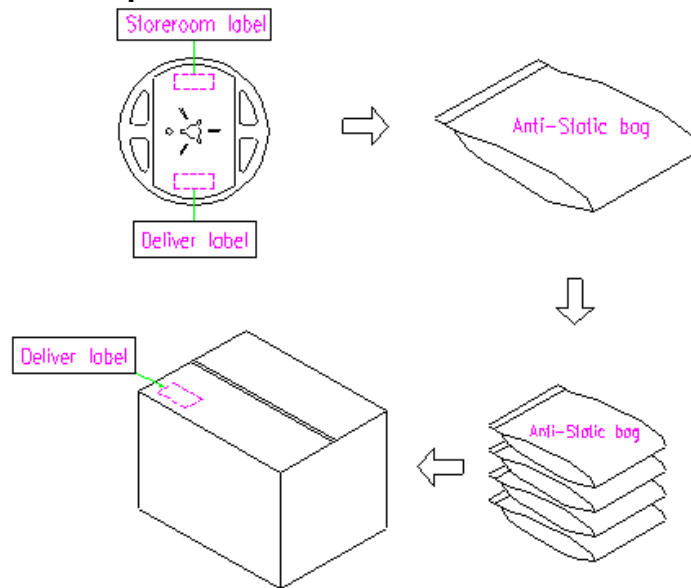


[NOTE]:

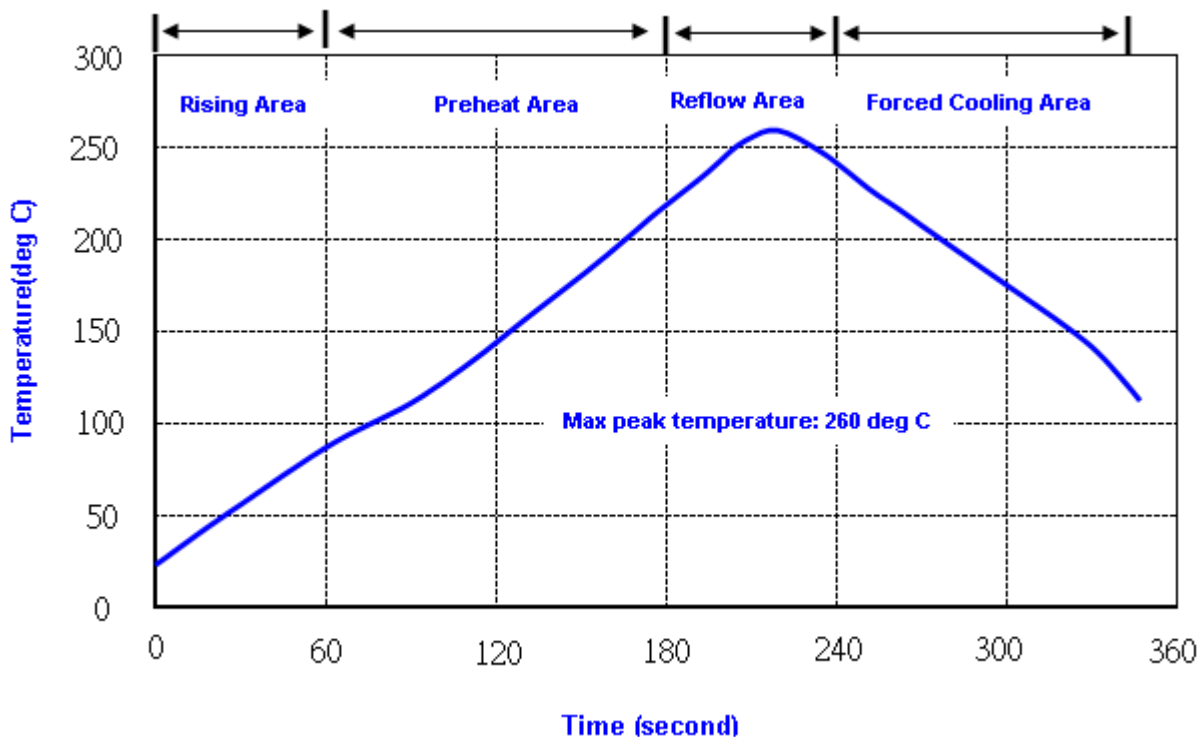
1. Unless otherwise specified tolerance on dimension ± 0.1 mm.
2. Material: conductive polystyrene with color black. **Direction of Feed** \rightarrow
3. 10 pitch cumulative tolerance ± 0.2 mm.

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
Mechanical characteristics		
resistance to Soldering heat (IR reflow)	Temp/ Duration : 265°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 2000 Hz Sweep period : 20 minute Vibration directions : 3 mutually perpendicular Duration : 2 hr / direc.	MIL-STD 202G method 204
Mechanical Shock	directions : 3 impacts per axis Acceleration : 3000g's, +20/-0 % Duration : 0.3 ms (total 18 shocks) Waveform : Half-sine	MIL-STD 202G method 213
Solderability	Solder Temperature: 265±5 °C Duration time: 5±0.5 seconds.	J-STD-002
Environmental characteristics		
Thermal Shock	Heat cycle conditions -40 °C (30min) ↔ 85 °C (30min) * cycle time : 10 times	MIL-STD 883G method 1010.8
Humidity test	Temperature : 85 ± 2 °C Relative humidity : 85% Duration : 96 hours	MIL-STD 202G method 103
Dry heat (Aging test)	Temperature : 125 ± 2 °C Duration : 168 hours	MIL-STD 202G method 108A
Cold resistance (Low Temp Storage)	Temperature : -40 ± 2 °C Duration : 96 hours	IEC 60068-2-1