

# SPECIFICATION FOR APPROVAL

CUSTOMER : \_\_\_\_\_

PRODUCT TYPE : SMD TUNING FORK 3.2X1.5  
\_\_\_\_\_

NOMINAL FREQ. : 32.768KHz  
\_\_\_\_\_

TXC P/N : 9H03200019  
\_\_\_\_\_

REVISION : A4  
\_\_\_\_\_

CUSTOMER P/N : \_\_\_\_\_

PM / SALES : \_\_\_\_\_

DATE : \_\_\_\_\_

CUSTOMER CONFIRMATION : \_\_\_\_\_  
(Singnature)  
\_\_\_\_\_

(Date)  
\_\_\_\_\_

**RoHS Compliant**

# PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD TUNING FORK 3.2X1.5

NOMINAL FREQ. : 32.768 KHz

TXC P/N : 9H03200019

REVISION : A4

PE/RD	QA	MFG
<i>Simon Wang</i> Simon Wang	<i>Ton Hsieh</i> Ton Hsieh	<i>Shu-Chen ko</i> Shu-Chen Ko
2018/12/4	2018/12/4	2018/12/4

**RoHS Compliant**



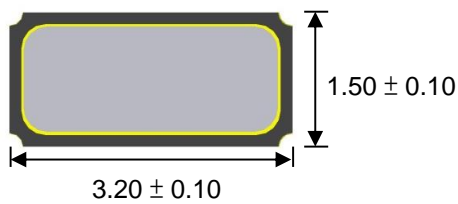
## Spec Sheet Contents

No.	Content	Page
1	ELECTRICAL SPECIFICATIONS DIMENSIONS SUGGESTED REFLOW PROFILE& MANUAL SOLDER CONDITION	P.3
2	MARKING PACKING	P.4
3	PACKING	P.5
4	STRUCTURE ILLUSTRATION UNIT WEIGHT	P.6
5	RELIABILITY SPECIFICATIONS	P.7
5	NOTE	P.8

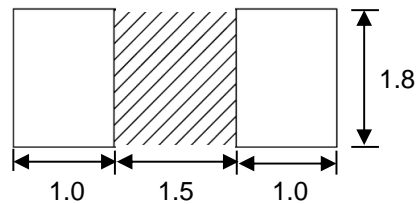
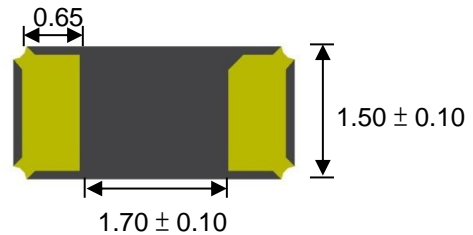
**ELECTRICAL SPECIFICATIONS**

	Parameters	SYM.	Electrical Spec.				Notes
			MIN.	TYP.	MAX.	UNITS	
1	Nominal Frequency	F0	32.768			KHz	-
2	Frequency Tolerance	-	± 20			ppm	at 25 °C
3	Driver Level	DL	-	0.1	0.5	uW	-
4	Load Capacitance	CL	12.5			pF	-
5	Series Resistance	-	-	-	65	Kohms	-
6	Peak Temperature (Frequency)	-	20	25	30	°C	at 25 °C ±5°C
7	Frequency-Temperature coefficient	-	-	-	-0.04	ppm/°C <sup>2</sup>	-
8	Storage Temperature	-	-55	~	125	°C	-
9	Operating Temperature	-	-40	~	85	°C	-
10	Shunt Capacitance	C0	-	1.0	-	pF	-
11	Motional Capacitance	C1	-	3.4	-	fF	-
12	Insulation Resistance	-	500	-	-	Mohms	at DC 100V±15V
13	Aging	-	±3			ppm	1st Year

**DIMENSIONS (UNIT:mm)**



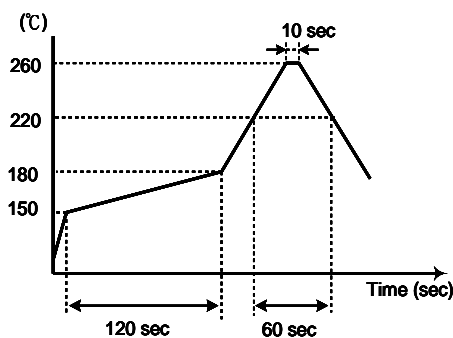
**RECOMMENDED SOLDER PAD (UNIT:mm)**



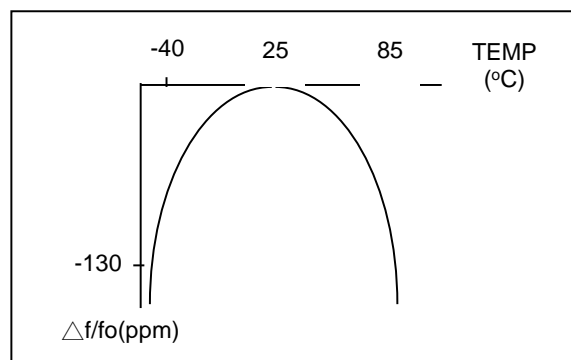
**SUGGESTED REFLOW PROFILE**

Total time : 200 sec. Max.

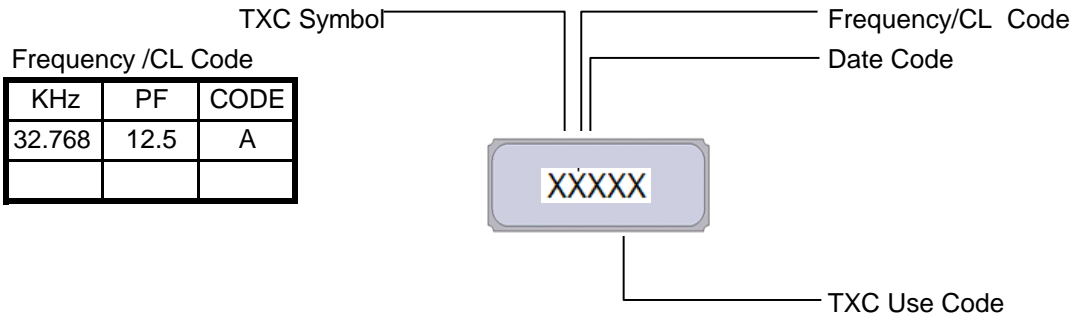
Solder melting point :220°C



**TEMPERATURE V.S FREQUENCY CURVE**



**MARKING**

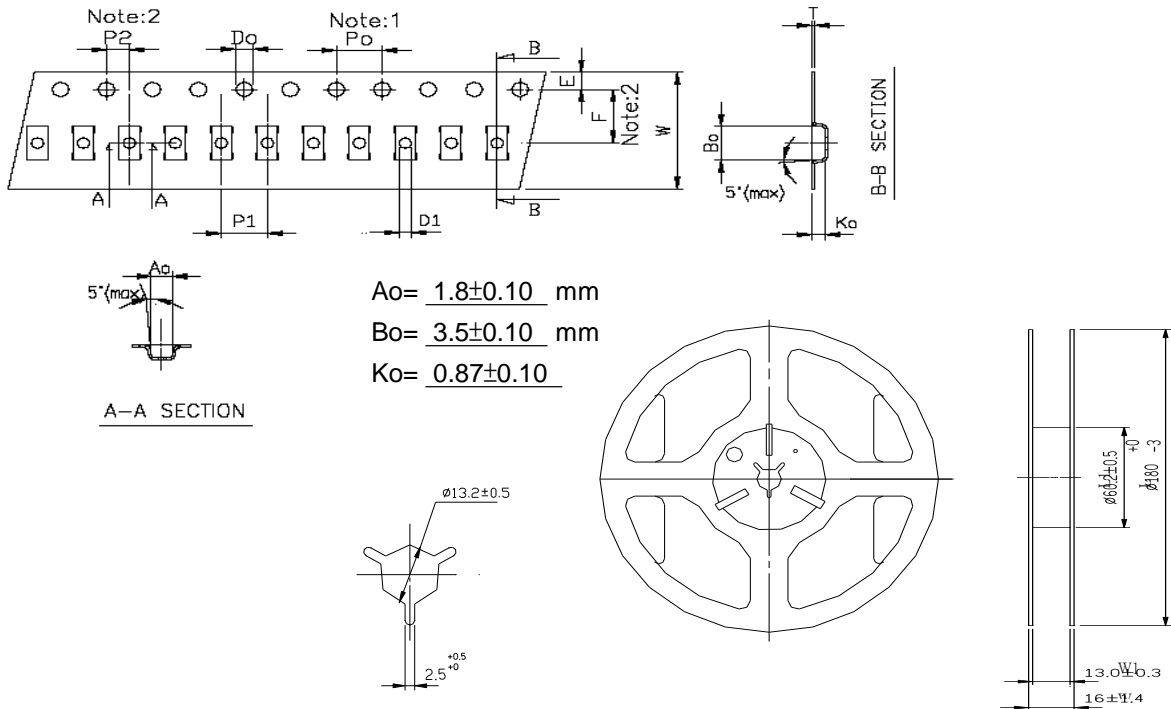


Date Code

YEAR					MONTH											
					JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2005	2009	2013	2017	2021	A	B	C	D	E	F	G	H	J	K	L	M
2006	2010	2014	2018	2022	N	P	Q	R	S	T	U	V	W	X	Y	Z
2007	2011	2015	2019	2023	a	b	c	d	e	f	g	h	j	k	l	m
2008	2012	2016	2020	2024	n	p	q	r	s	t	u	v	w	x	y	z

This date code will be cycled every four years

**PACKING**



CARRIER TAPE DIMENSIONS	K1	P0	P1	P2	D0	D1	E	F	10P0	W	T	pcs / Reel
	-	4	4	2	1.55	1.1	1.75	5.5	40	12	0.25	3K

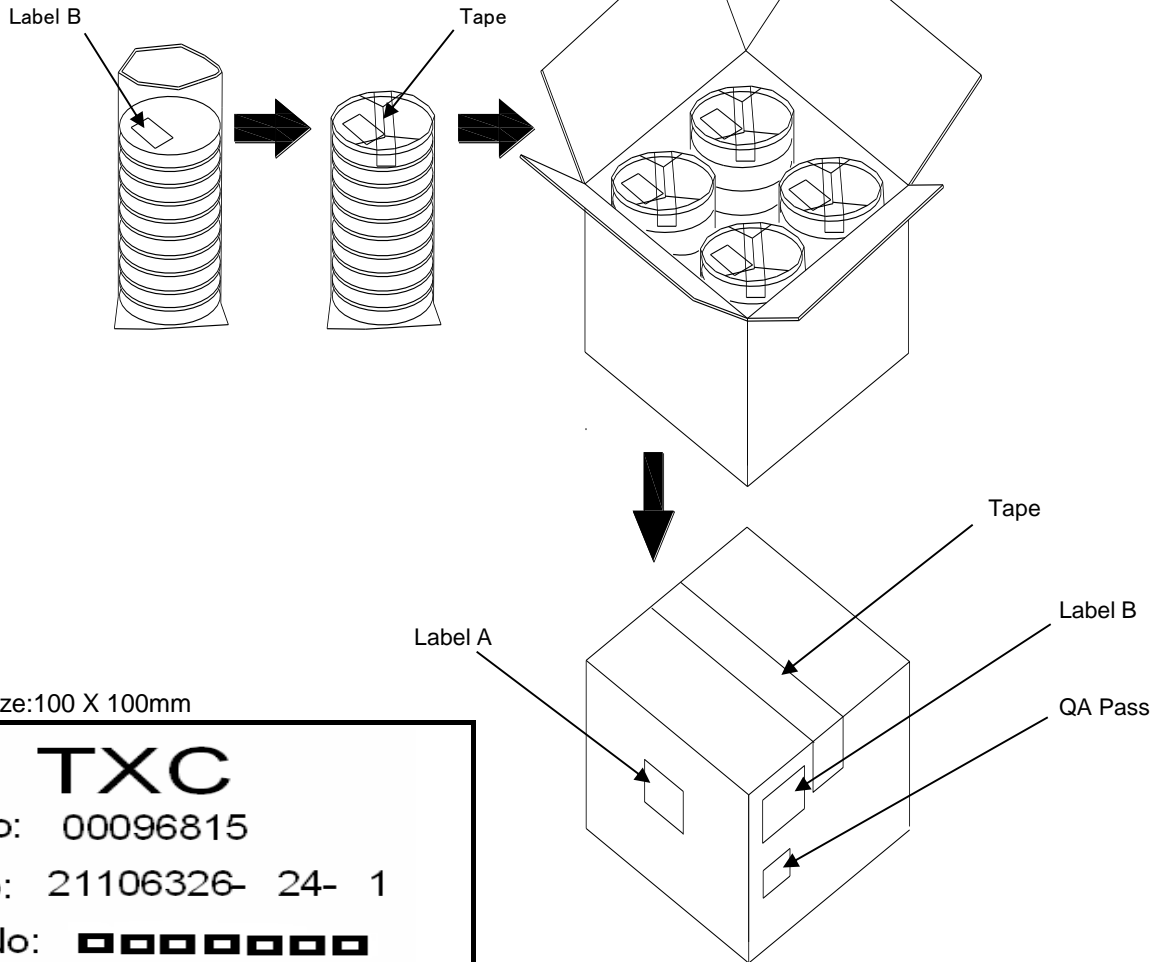
REEL DIMENSIONS	W	W1	L	L1
	16±1.4	13±0.3	180+0/-3	60.2±0.5

- REMARK :
- 230 mm (9.05) minimum leader which consist of carrier and/or tape followed by a minimum of 160 mm (6.3) of empty carrier tape sealed with cover tape.
  - 160 mm (6.3) minimum trailer of empty carrier tape sealed with cover tape.

**PACKING**

Reel Quantity :  
1. Reel X 6 (6 Reels x1)  
X H140mm

Box Size:  
1. L200 X W200



(Label A) Size:100 X 100mm

<b>TXC</b>	
Inv No:	00096815
Po No:	21106326- 24- 1
Part No:	□□□□□□□□
Qty:	40000 PCS
C/No:	157- 44

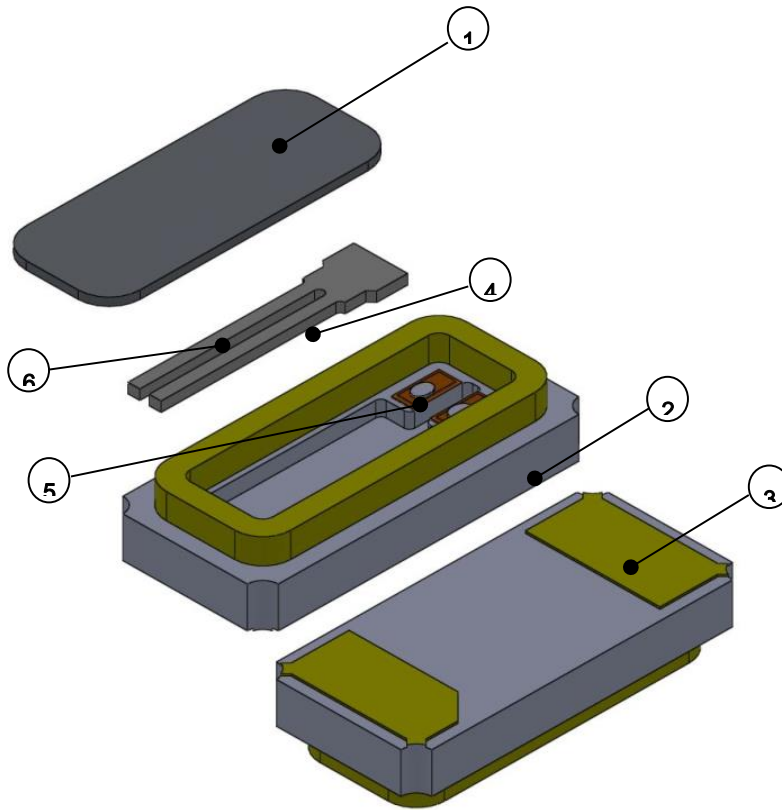
(Label B) Size:80 X 40mm

TXC CORPORATION		QA PASS
DATE CODE:	QTY:	2011/09/02
□□□□□□□□	1000	
LOT NO:	<b>RoHS</b>	QR CODE
□□□□□□□□	<b>HF</b>	
PART NO:		
□□□□□□□□		
FREQ:	□□□□□□□□	

**[STORAGE]**

- 1.The storage time to be 1 year maximum.
- 2.Don't be caught in the rain.
- 3.The storage environment shall be 5°C ~40°C temperature and 30% ~ 75%RH humidity and free from the sun shine.
- 4.If customers have special requirements, we can paste labels according to it.

**STRUCTURE ILLUSTRATION**



NO	COMPONENTS	MATERIALS	FINISH/SPECIFICATIONS
1	Lid	Kovar(Fe+Co+Ni) Alloy	-
2	Base(Package)	Ceramic( $Al_2O_3$ )	Alumina Ceramics
3	PAD	Au	Tungsten metalize + Ni plating + Au plating
4	Crystal chip	$SiO_2$	-
5	Conductive adhesive	Ag	Silicon resin
6	Electrode	Au+Cr	-

**UNIT WEIGHT:**

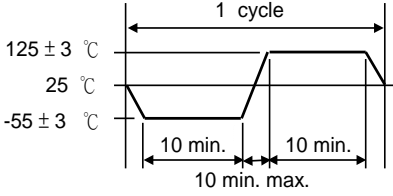
0.01197g/pcs

**RELIABILITY SPECIFICATIONS**

1. Mechanical Endurance

No.	Test Item	Test Methods	REF. DOC
1	Drop Test	150 cm height, fall freely onto concrete floor 3 times.	MIL-STD-202
1	Mechanical Shock	Device are shocked to half sine wave ( 1000 G ) three mutually perpendicular axes each 3 times. 0.5m sec. duration time	MIL-STD-202
1	Vibration	Frequency range                      10 ~ 2000 Hz Amplitude                                1.52 mm,20G Sweep time                                20 minute Perpendicular axes each test time 4 hours (Total test time 12 hours)	MIL-STD-883
1	Solderability	Temperature                              245 °C ± 5°C Immersing depth                        0.5 mm minimum Immersion time                         5 ± 1 seconds Flux    Rosin resin methyl alcohol solvent ( 1 : 4 )	MIL-STD-883

2. Environmental Endurance

No.	Test Item	Test Methods	REF. DOC
2	Resistance To Soldering Heat	Pre-heat temperature                  125 °C Pre-heat time                              60 ~ 120 sec. Test temperature                         260 ± 5 °C Test time                                    10 ± 1 sec.	MIL-STD-202
2	High Temp. Storage	+ 125 °C ± 3 °C for 1000 ± 12 hours	MIL-STD-883
2	Low Temp. Storage	- 40 °C ± 3 °C for 1000 ± 12 hours	MIL-STD-883
2	Thermal Shock	Total 100 cycles of the following temperature cycle 	MIL-STD-883
3	Pressure Cooker Storage	121 ± 3°C, RH100%, 2 bar, for 240 hours	EIA-JESD22
3	High Temp & Humidity	85°C ± 3°C, RH 85% , 1000Hrs	EIA-JESD22

**■ SUGGESTED MANUAL SOLDER CONDITION**

Temperature: 350 ± 10 °C

Time: 3 sec.

Re-solder times: twice

**Measurement condition**

Electrical characteristics measured by S&A250B or equivalent.

**NOTE:**

1. TXC requires one copy returned with signature and title of authorized individual that signifies acceptance of the attached specifications.
2. Orders received and accepted by TXC after return of signed copy of specification will be produced per these specifications.
3. Any changes to these specifications must be agreed upon by both parties and new revision of the "Product Specification Sheet" will be issued.
4. Any issuance of purchase order prior to consigning back the approval page of "Specification Sheets" from customers will be regarded as the agreement on the contents of these specifications.
5. The green product standard set by TXC is based upon the international standards. Related information is publicly described on the TXC's website, and updated regularly. The document is compliant with the latest green product quality system directives at the time.
6. Revision "Sx" is for engineering samples only. PE/RD's approval required.
7. Revision "Ax" is production ready. PE, QA and MFG's approval required.
8. Inform TXC in advance if you use ultrasonic welding in assembling process .