



# SPECIFICATION FOR APPROVAL

CN: 0

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

PRODUCT TYPE : SMD TUNING FORK 3.2X1.5

NOMINAL FREQ. : 32.768KHz

TXC P/N : AH03270014

REVISION : A1

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

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

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

CUSTOMER SIGNATURE & Date  
 \_\_\_\_\_  
 \_\_\_\_\_

- (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.

Attachment: Product Specification Sheet

- 1
- 2
- 3
- 4
- 5

**Halogen Free  
RoHS Compliant**



**TXC CORPORATION**

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www.txccorp.com

# PRODUCT SPECIFICATION SHEET

CN: \_\_\_\_\_

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NOMINAL FREQ. : 32.768KHz




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REVISION : A1

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RD	QA	MFG
 Robin Huang	 Samson Xiong	 Jake Liu
23-Nov-15	23-Nov-15	23-Nov-15

**NOTE:**

(1)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.

(2)Revision "Sx" is for engineering samples only. PE/RD's approval required.

(3)Revision "Ax" is production ready. PE, QA and MFG's approval required

**Halogen Free  
RoHS Compliant**

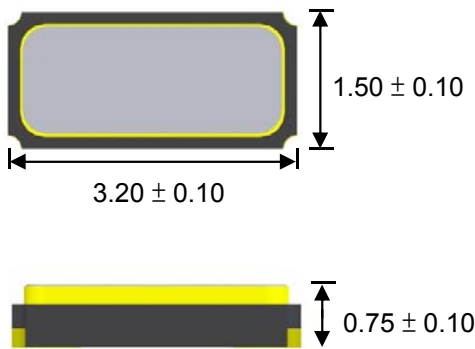


**ELECTRICAL SPECIFICATIONS**

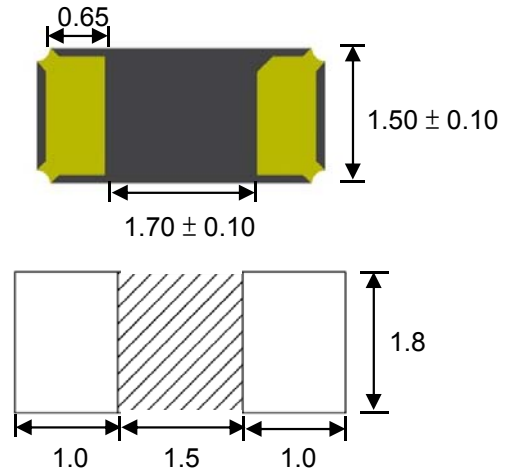
	Parameters	Sym.	Electrical Spec.				Notes
			Min	Typical	Max	Unit	
1	Nominal Frequency	F0	32.768			KHz	-
2	Frequency Tolerance	$\Delta f/f_0$	$\pm 10$			ppm	at 25 °C $\pm 3^\circ\text{C}$
3	Load Capacitance	CL	12.5			pF	-
4	Driver Level	DL	-	0.1	0.5	$\mu\text{W}$	-
5	Equivalent Series Resistance	ESR	-	-	70	K $\Omega$	at 25 °C $\pm 3^\circ\text{C}$
6	Turnover Temperature	Tp	20	25	30	$^\circ\text{C}$	at 25 °C $\pm 5^\circ\text{C}$
7	Parabolic Curvature Constant	K	-	-	-0.04	ppm/ $^\circ\text{C}^2$	-
8	Operating Temperature	-	-40	~	85	$^\circ\text{C}$	-
9	Storage Temperature	-	-40	~	125	$^\circ\text{C}$	-
10	Insulation Resistance	IR	500	-	-	M $\Omega$	at DC 100V $\pm 15\text{V}$
11	Shunt Capacitance	C0	-	1	-	pF	-
12	Aging	$\Delta f/f$	$\pm 3$			ppm	1st Year

**DIMENSIONS**

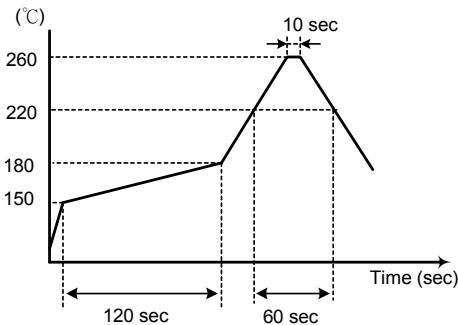
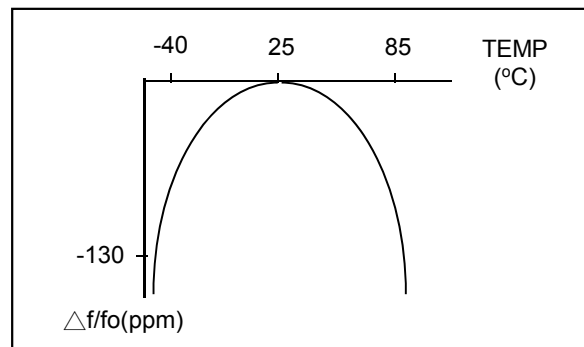
(UNIT:mm)


**RECOMMENDED SOLDER PAD**

(UNIT:mm)


**SUGGESTED REFLOW PROFILE**

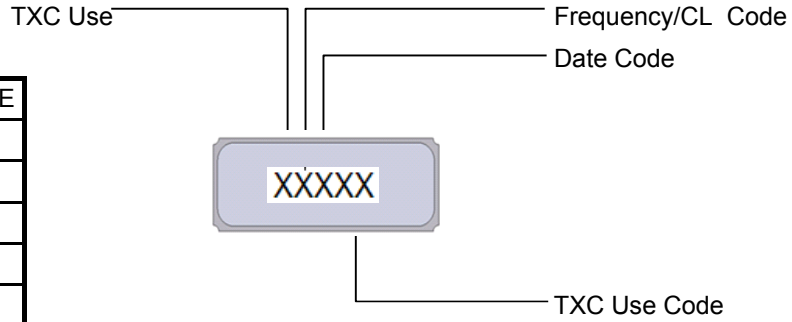
Total time : 200 sec. Max.

 Solder melting point :220 $^\circ\text{C}$ 

**TEMPERATURE V.S FREQUENCY CURVE**


**MARKING**

Frequency /CL Code

KHz	PF	CODE
32.768	12.5	A
32.768	7.0	B
32.768	9.0	C
32.768	6.0	D
32.768	7.6	E

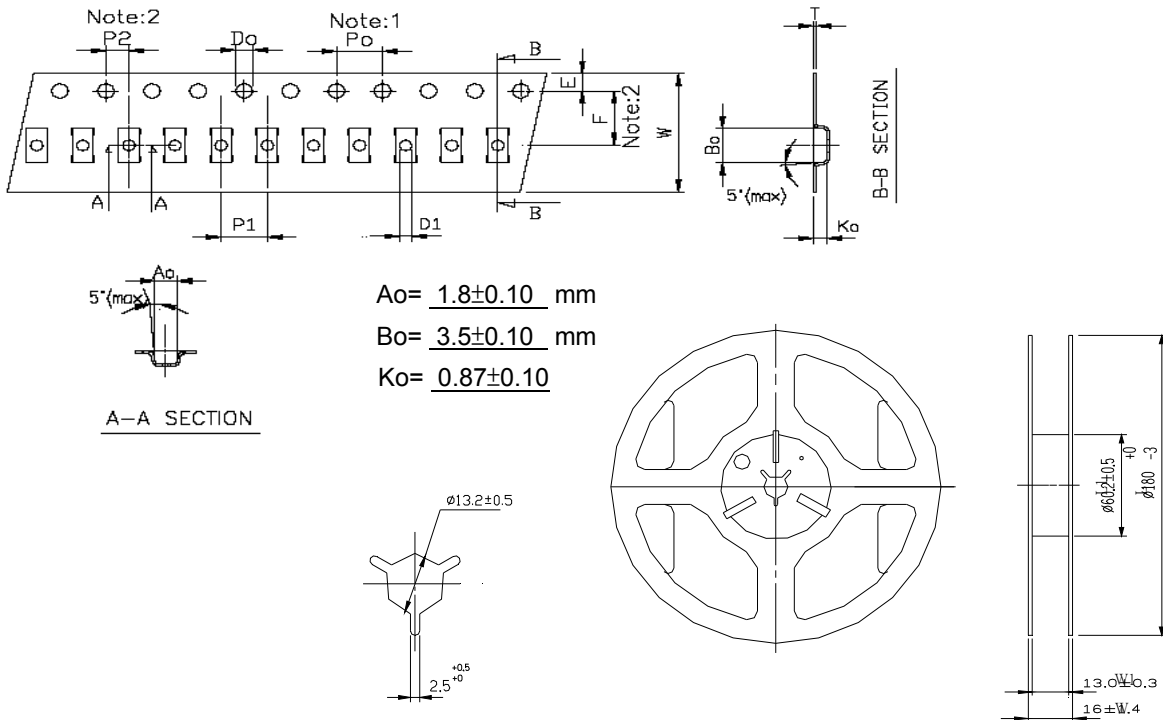


Date Code

YEAR					MONTH											
					JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2001	2005	2009	2013	2017	A	B	C	D	E	F	G	H	J	K	L	M
2002	2006	2010	2014	2018	N	P	Q	R	S	T	U	V	W	X	Y	Z
2003	2007	2011	2015	2019	a	b	c	d	e	f	g	h	j	k	l	m
2004	2008	2012	2016	2020	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.

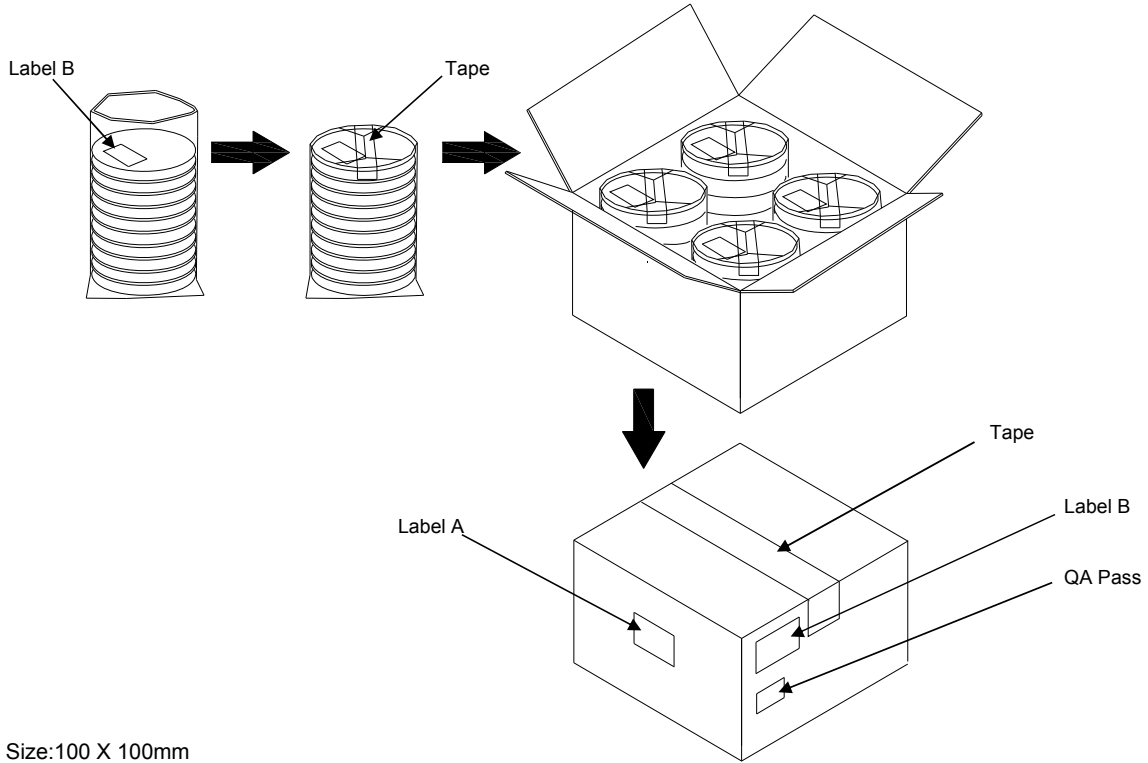
**PACKING**

Reel Quantity :

1. Reel X 6 (6 Reels)
2. Reel X 12 (12 Reels)
3. Reel X 25 (12 Reels + 13 Reels)
4. Reel X 50 ( 12 Reelsx2 + 13 Reelsx2 )

Box Size:

1. L200 X W200 X H140mm
2. L200 X W200 X H250mm
3. L400 X W200 X H250mm
4. L400 X W400 X H280mm



(Label A) Size:100 X 100mm

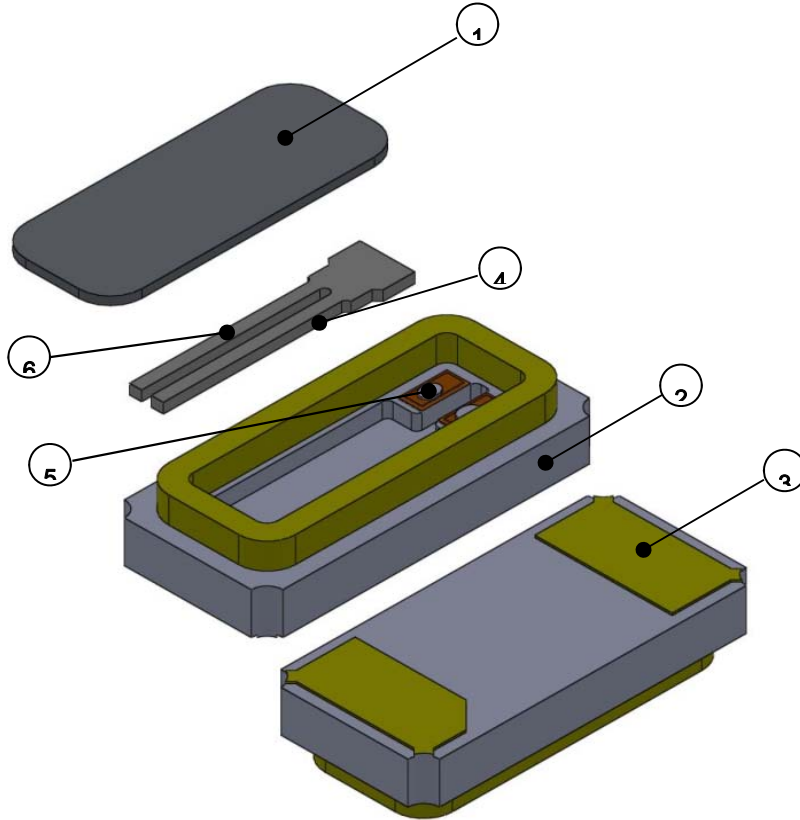
TXC
Inv No: 00096815
Po No: 21106326- 24- 1
Part No: <span style="font-family: monospace;">□□□□□□□□</span>
Q'ty: 40000 PCS
C/No: 157- 44

(Label B) Size:80 X 40mm

TXC CORPORATION		QA PASS
DATE CODE: <span style="font-family: monospace;">□□□□□□□□</span>	QTY: <span style="font-family: monospace;">□□□□</span>	2011/09/02
LOT NO: <span style="font-family: monospace;">□□□□□□□□</span>	<b>RoHS</b>	
PART NO: <span style="font-family: monospace;">□□□□□□□□</span>	<b>HF</b>	
FREQ: <span style="font-family: monospace;">□□□□□□□□</span>		

**[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 (AEC-Q200 Compliant)**
**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	Temperature cycling	-40°C to 125°C ,10min dwell time at each temperature extreme. 1 min. maximum transition time. <b>1000</b> cycles.	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:  $350 \pm 10$  °C

Time: 3 sec.

Re-solder times: twice

■ **FACTORY LOCATION**

TXC (NINGBO) CORPORATION

NO.189 Huang Shan West Road, Beilun District,

Ningbo Zhejiang China