

SPECIFICATION FOR APPROVAL

CUSTOMER : _____

PRODUCT TYPE : SMD TUNING FORK 3.2X1.5

NOMINAL FREQ. : 32.768KHz

TXC P/N : 9H03277014

REVISION : A2

CUSTOMER P/N : _____

PM / SALES : _____

DATE : _____

CUSTOMER CONFIRMATION : _____

(Singnature)

(Date)

MSL: Level 1
Halogen Free
RoHS Compliant

PRODUCT SPECIFICATION SHEET

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NOMINAL FREQ. : 32.768KHz

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RD	QA	MFG
<i>James Chung</i>	<i>Shipo Lin</i>	<i>Shu-Chen ko</i>
James Chung	Shipo Lin	Shu-Chen Ko
2021/9/3	2021/9/3	2021/9/3

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<u>Rev</u>	<u>Revise page</u>	<u>Revise contents</u>	<u>Date</u>	<u>Ref.No.</u>	<u>Reviser</u>
A2	N/A	Revised	2021/9/3	N/A	Shu-Chen Ko

Spec Sheet Contents

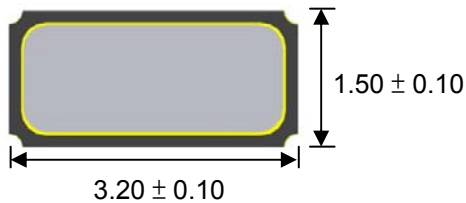
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ELECTRICAL SPECIFICATIONS

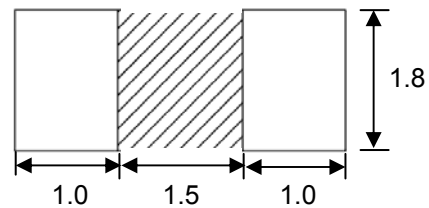
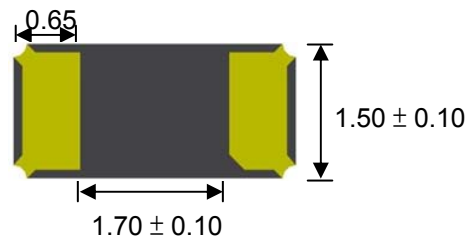
	Parameters	Sym.	Electrical Spec.				Notes
			Min	Typical	Max	Unit	
1	Nominal Frequency	F0	32.768			KHz	-
2	Frequency Tolerance	$\Delta f/f_0$	-20		+20	ppm	at 25 °C +/-3 °C
3	Load Capacitance	CL	6.0			pF	-
4	Driver Level	DL	-	0.1	1	μW	-
5	Equivalent Series Resistance	ESR	-	-	50	K Ω	at 25 °C +/-3 °C
6	Turnover Temperature	Tp	20	25	30	°C	at 25 °C +/-3 °C
7	Parabolic Curvature Constant	K	-	-	-0.04	ppm/°C ²	-
8	Operating Temperature	-	-40	~	85	°C	-
9	Storage Temperature	-	-40	~	125	°C	-
10	Shunt Capacitance	C0	-	1.0	-	pF	
11	Motional Capacitance	C1	-	3.4	-	pF	
12	Insulation Resistance	IR	500	-	-	M Ω	at DC 100V+/-15V
13	Aging	$\Delta f/f$	-3		+3	ppm	1st Year

FACTORY LOCATION : CHINA
DIMENSIONS

(UNIT:mm)

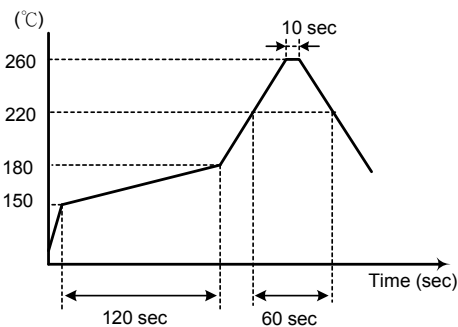
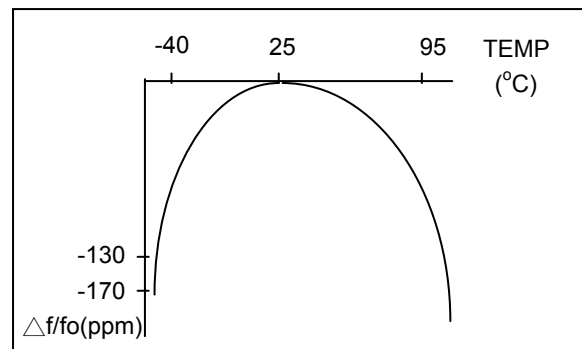

RECOMMENDED SOLDER PAD

(UNIT:mm)

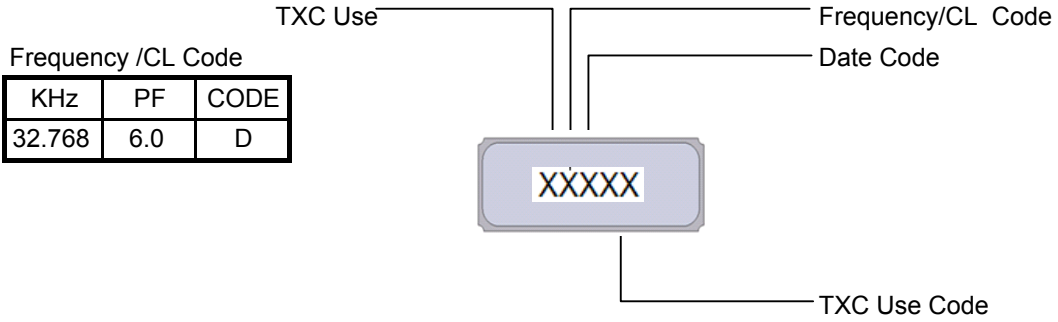

SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

Solder melting point :220 °C


TEMPERATURE V.S FREQUENCY CURVE


MARKING

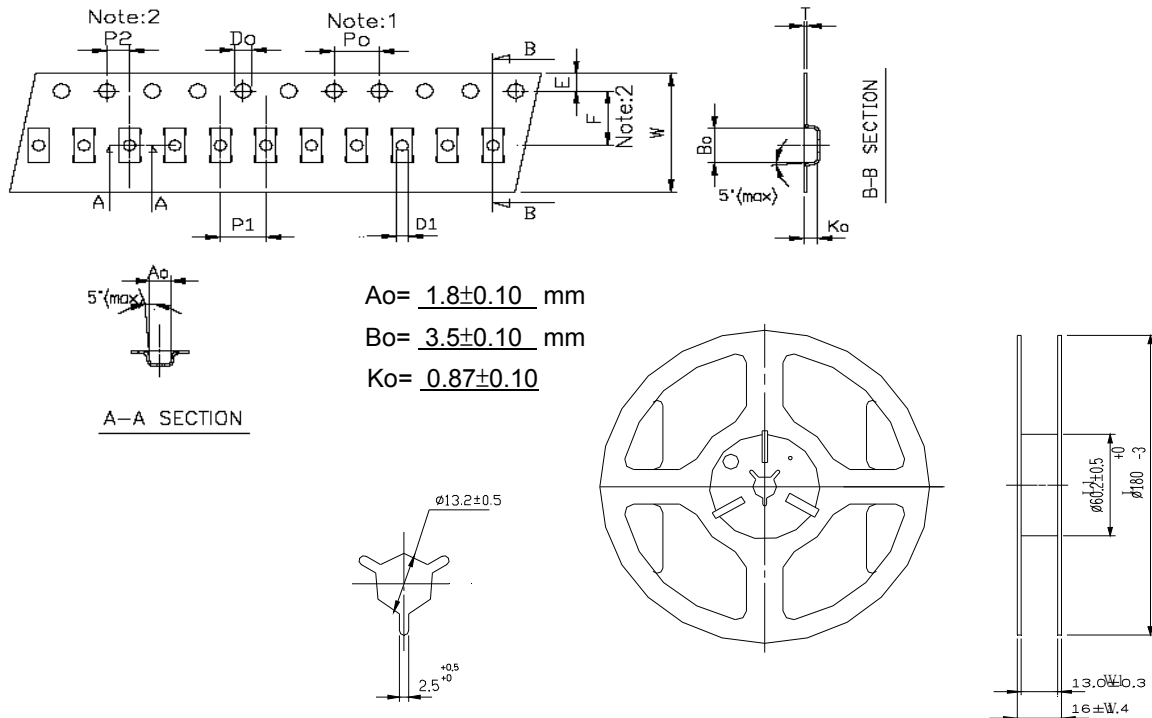


Date Code

YEAR					MONTH											
					JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2009	2013	2017	2021	2025	A	B	C	D	E	F	G	H	J	K	L	M
2010	2014	2018	2022	2026	N	P	Q	R	S	T	U	V	W	X	Y	Z
2011	2015	2019	2023	2027	a	b	c	d	e	f	g	h	j	k	l	m
2012	2016	2020	2024	2028	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

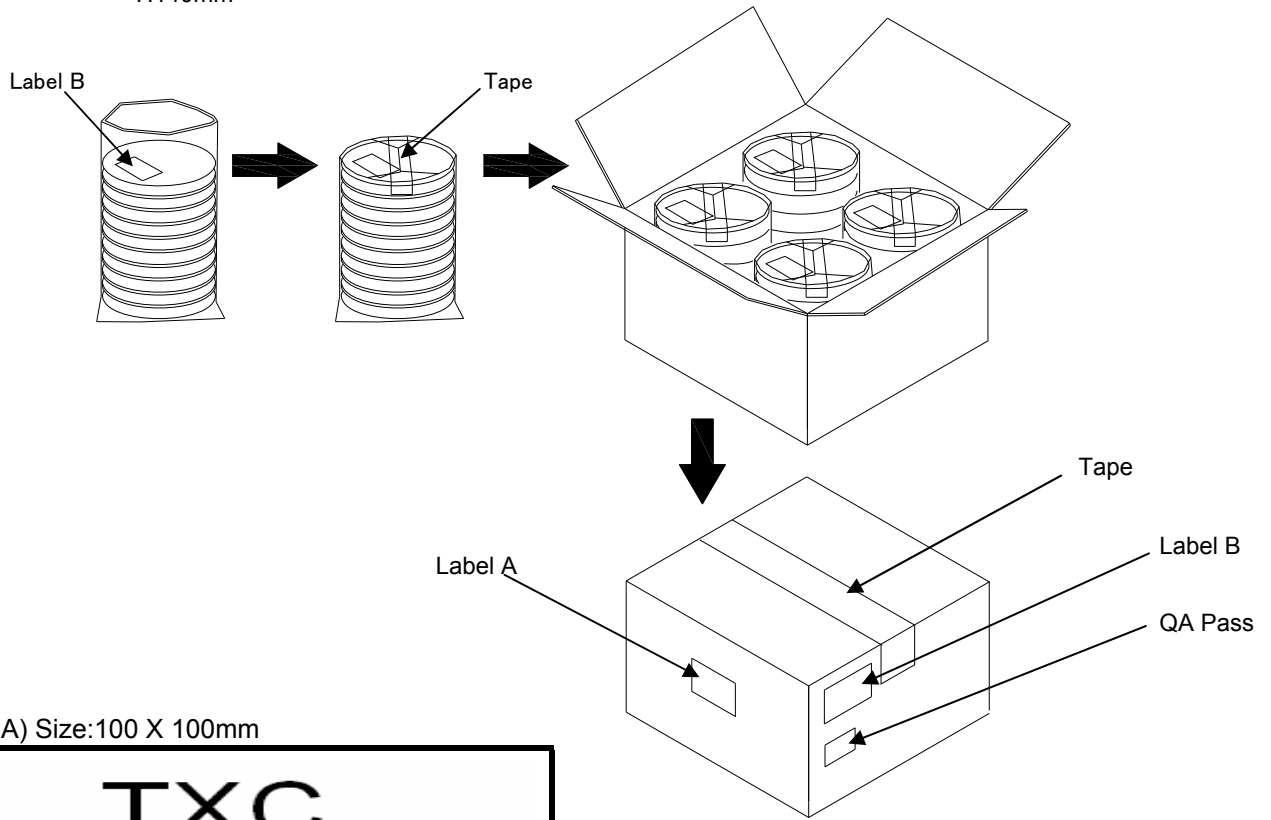
REEL DIMENSIONS	W	W1	L	L1
	16 ± 1.4	13 ± 0.3	$180 + 0/-3$	60.2 ± 0.5

- 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)
H140mm

Box Size:
1. L200 X W200 X



(Label A) Size:100 X 100mm

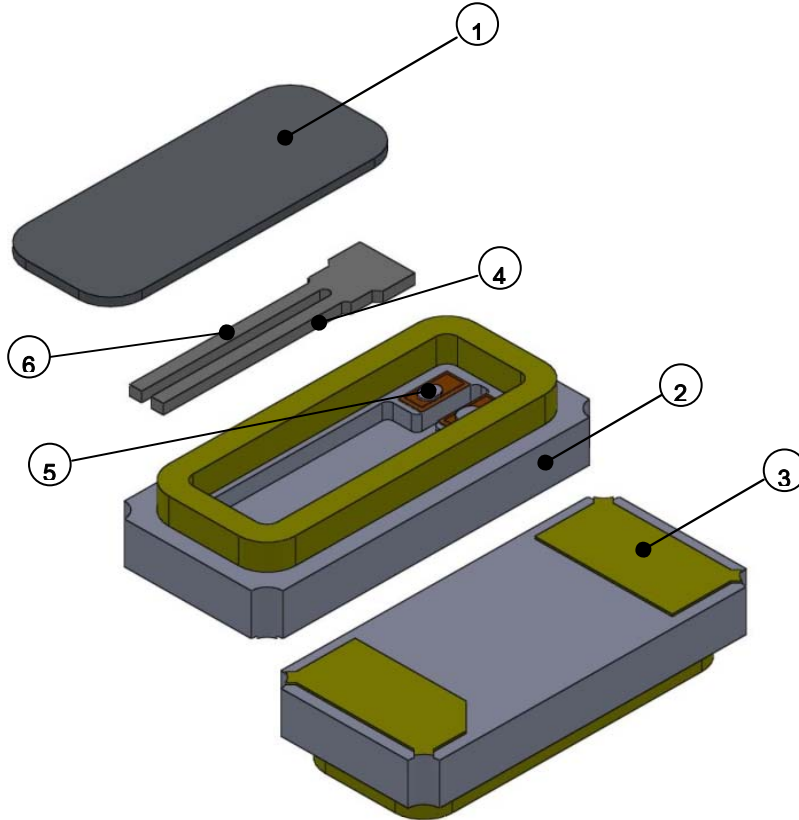
TXC	
Inv No:	00096815
Po No:	21106326- 24- 1
Part No:	□□□□□□□□
Qty:	40000 PCS
C/No:	157- 44

(Label B) Size:80 X 40mm

TXC CORPORATION		QA PASS
DATE CODE:	QTY:	2011/09/02
□□□□□□□□	1000	
LOT NO:	RoHS	QR Code
□□□□□□□□	HF	
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 1.27 ~ 8.89 μ m + Au plating 0.30 ~ 1.00 μ m
4	Crystal chip	SiO_2	-
5	Conductive adhesive	Ag	Silicon resin
6	Electrode	Au+Cr	-

■ UNIT WEIGHT:

0.0118 g/pcs

RELIABILITY SPECIFICATIONS
1. Mechanical Endurance

No.	Test Item	Test Methods	REF. DOC
1.1	Drop Test	150 cm height, fall freely onto concrete floor 3 times.	MIL-STD-202
1.2	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
1.3	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
1.4	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
2.1	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
2.2	High Temp. Storage	+ 125 °C ± 3 °C for 1000 ± 12 hours	MIL-STD-883
2.3	Low Temp. Storage	- 40 °C ± 3 °C for 1000 ± 12 hours	MIL-STD-883
2.4	Thermal Shock	Total 100 cycles of the following temperature cycle 	MIL-STD-883
2.5	Pressure Cooker Storage	121 ± 3°C, RH100%, 2 bar, for 240 hours	EIA-JESD22
2.6	High Temp & Humidity	85°C ± 3°C, RH 85% , 1000Hrs	EIA-JESD22

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 .