



**TXC CORPORATION**

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# SPECIFICATION FOR APPROVAL

CUSTOMER	:	_____
PRODUCT TYPE	:	SMD TUNING FORK 2.0X1.2
NOMINAL FREQ.	:	32.768KHz
TXC P/N	:	9H03200028
REVISION	:	S1
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

**RoHS Compliant**



# PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD TUNING FORK 2.0X1.2

NOMINAL FREQ. : 32.768KHz

TXC P/N : 9H03200028

REVISION : S1

PE/RD	QA	MFG
<i>Simon Wang</i>	<i>Yen Hsieh</i>	<i>Shu-Chen ko</i>
2017/8/10	2017/8/10	2017/8/10

**NOTE:**

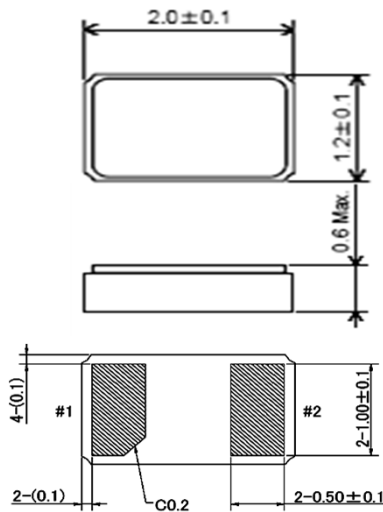
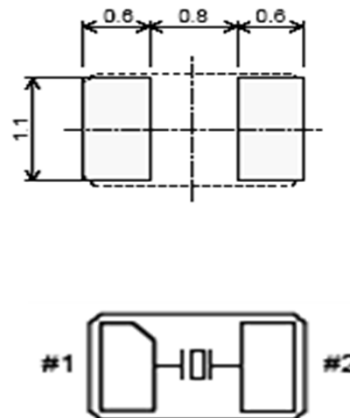
- (1) The green product standard set by TXC is based upon the international standards. Related information is publicly described on the TXC's Website, and updated regularly. The document is compliant with the latest green product quality system directives at the time.
- (2) Revision "Sx" is for engineering samples only. PE/RD's approval required.
- (3) Revision "Ax" is production ready. PE, QA and MFG's approval required.

**RoHS Compliant**



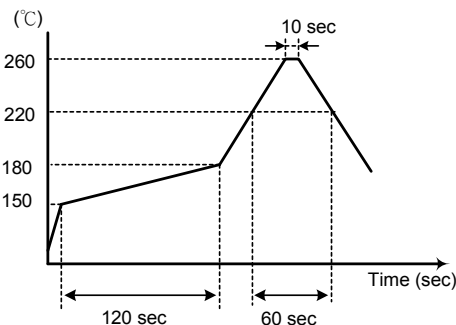
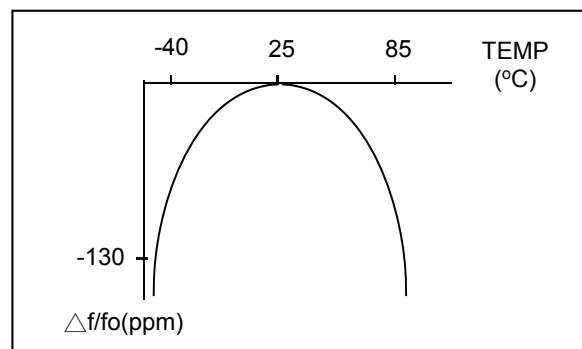
**ELECTRICAL SPECIFICATIONS**

	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	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	7.0			pF	-
5	Series Resistance	-	-	-	90	KΩ	-
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	-	1.3	-	pF	-
11	Motional Capacitance	C1	-	6.4	-	fF	-
12	Insulation Resistance	-	500	-	-	MΩ	at DC 100V±15V
13	Aging	-	±3			ppm	1st Year

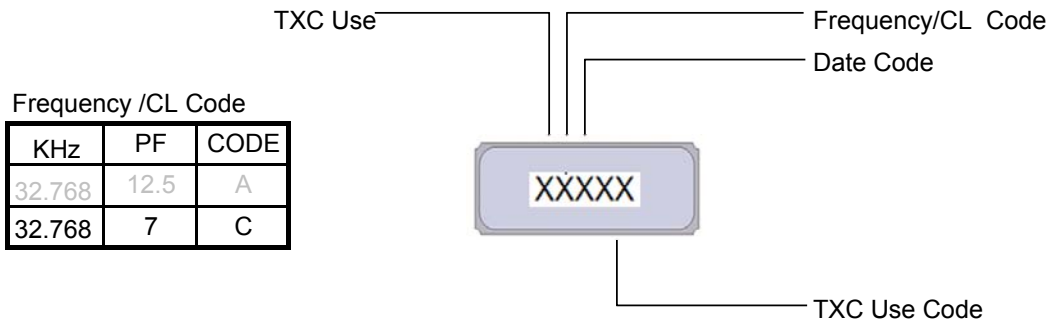
**DIMENSIONS (UNIT:mm)**

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

**SUGGESTED REFLOW PROFILE**

Total time : 200 sec. Max.

Solder melting point :220°C


**TEMPERATURE V.S FREQUENCY CURVE**


**MARKING**



Frequency /CL Code

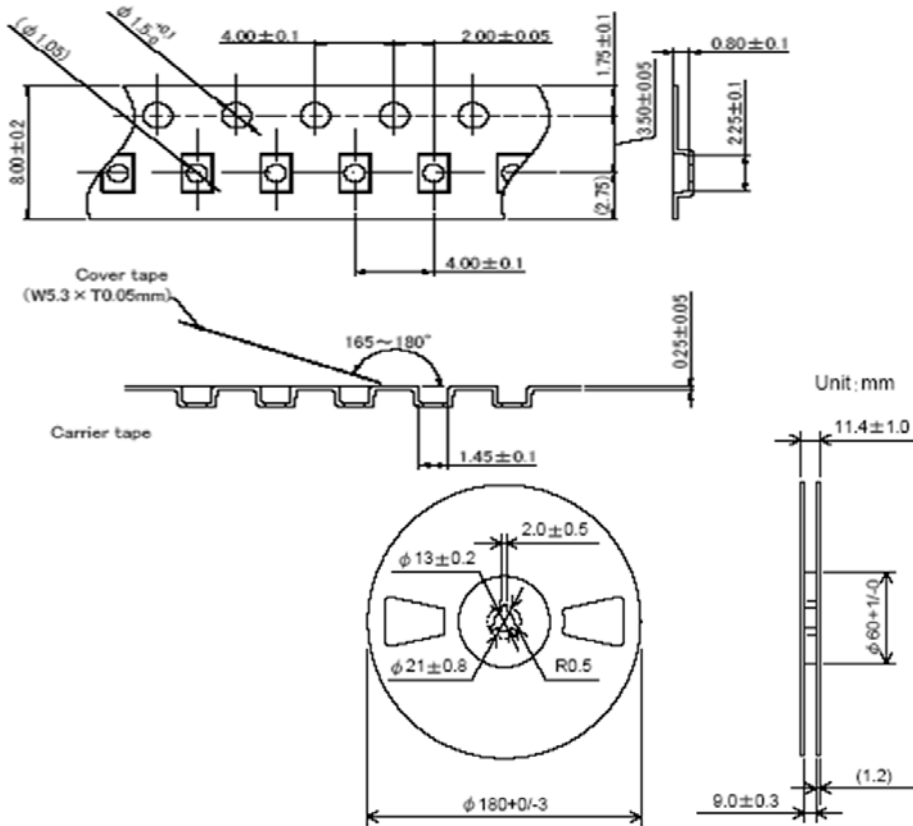
KHz	PF	CODE
32.768	12.5	A
32.768	7	C

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

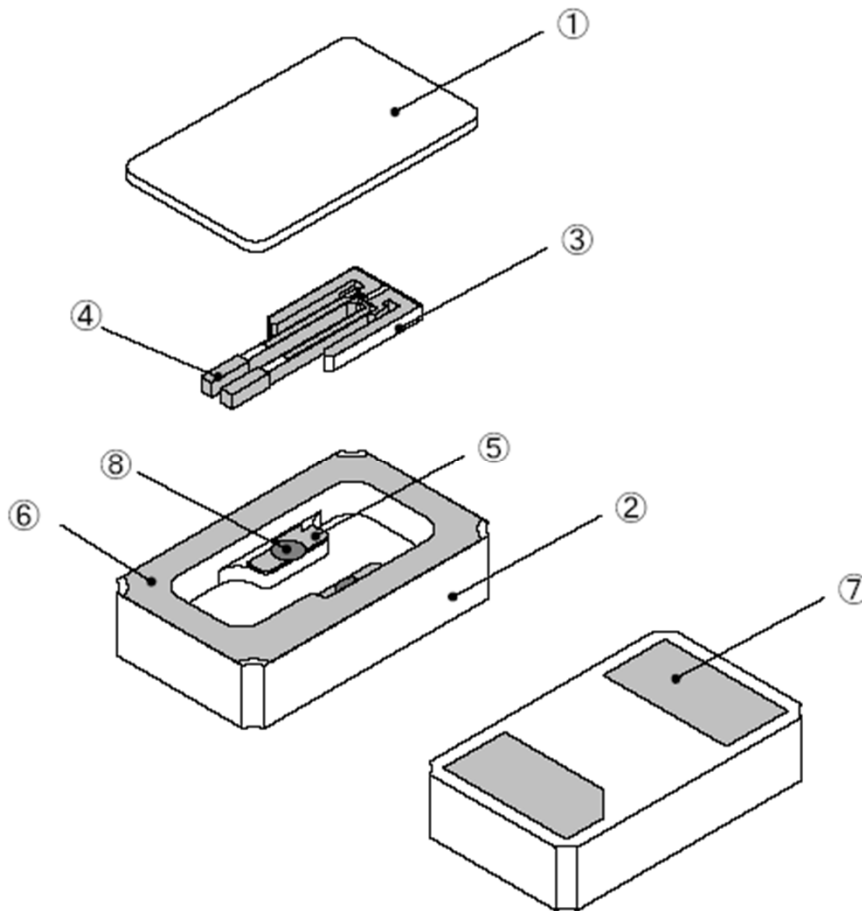
**PACKING (UNIT:mm)**



Amount	PCS/REEL
	3K

3000 pieces of taped crystal units are put into a packing reels

- 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.

**■ STRUCTURE ILLUSTRATION**


NO	COMPONENTS	MATERIALS	QTY	FINISH/SPECIFICATIONS
1	Lid	Kovar (Fe/Co/Ni)	1	-
2	Base(Package)	Ceramic( $Al_2O_3$ )	1	Color Black
3	Crystal blank	$SiO_2$	1	-
4	Electrode	Noble Metal	2	-
5	Internal terminals	Au	2	Tungsten metallize + Ni plating + Au plating
6	Metallize for sealing	Au	1	Tungsten metallize + Ni plating + Au plating
7	PAD	Au	2	Tungsten metallize + Ni plating + Au plating
8	Conductive adhesive	Ag	2	Silicon resin

**■ UNIT WEIGHT:**  
 0.005 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.	JIS C6701
1.2	Mechanical Shock	Device are shocked to half sine wave ( 1000 G ) three mutually perpendicular axes each 3 times. 1m sec. duration time	JIS C60068-2-27
1.3	Vibration	Frequency range                      10 ~ 55 Hz Amplitude                                1.5 mm,20G Sweep time                                1 minute Perpendicular axes each test time    2 hours (Total test time 6 hours)	JIS C60068-2-6
1.4	Solderability	Temperature                            255 °C ± 5°C Immersing depth                        0.5 mm minimum Immersion time                         3.5 ± 0.5 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                160 °C Pre-heat time                            90 ± 10 sec. Test temperature                        260 ± 5 °C Test time                                    5 ± 1 sec.	MIL-STD-202
2.2	High Temp. Storage	+ 100 °C ± 3 °C for 100 ± 12 hours	JIS C600682-2
2.3	Low Temp. Storage	- 40 °C ± 3 °C for 1000 ± 12 hours	JIS C600682-1
2.4	Thermal Shock	Total 100 cycles of the following temperature cycle 	JIS C0025
2.5	Pressure Cooker Storage	121 ± 3°C, RH100%, 2 bar, for 240 hours	JIS C6701
2.6	High Temp & Humidity	40°C ± 3°C, RH 90~95% , 1000Hrs	JIS C600682-3