



**TXC CORPORATION**

4F, NO. 16, Sec. 2 Chung Yang S Rd., Peitou, Taipei, Taiwan.

TEL : 886-2-2894-1202 , 886-2-2895-2201 FAX : 886-2-2894-1206 , 886-2-2895-6207

www.txccorp.com

## SPECIFICATION FOR APPROVAL

CUSTOMER : INTEL

PRODUCT TYPE : SMD TUNING FORK 3.2X1.5

NOMINAL FREQ. : 32.768KHz

TXC P/N : 9H03220005

REVISION : S2

CUSTOMER P/N : G35577-001

PM / SALES :

DATE : 08/15/2011

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**



TXC CORPORATION

4F, NO. 16, Sec. 2 Chung Yang S Rd., Peitou, Taipei, Taiwan.

TEL : 886-2-2894-1202 , 886-2-2895-2201 FAX : 886-2-2894-1206 , 886-2-2895-6207

www.txccorp.com

# PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD TUNING FORK 3.2X1.5

NOMINAL FREQ. : 32.768KHz

TXC P/N : 9H03220005

REVISION : S2

RD	QA	MFG
王敏和		
15-Aug-11		

## NOTE:

- (1)Lead Free Products are "Directive 2002/95/EC of The European Parliament of 27 January 2003 on the restriction of the use of certain hazardous substances (RoHS) in electrical and electronic equipment" Compliant (Attachment: SGS Test Report).
- (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**



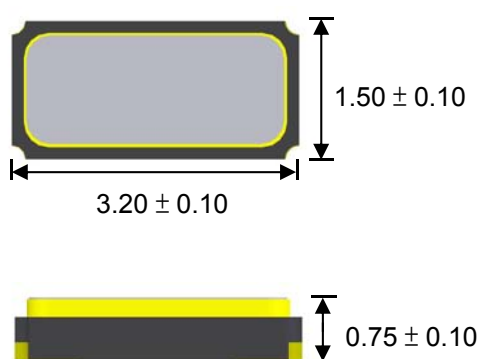
<u>Rev</u>	<u>Revise page</u>	<u>Revise contents</u>	<u>Date</u>	<u>Ref.No.</u>	<u>Reviser</u>
S1	NA	Initial release	23-May-11	-	Alan Cheng
S2	P.3	PACKING DIMENSION CHANGE	15-Aug-11	-	Alan Cheng

## ELECTRICAL SPECIFICATIONS

	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	F0	32.768				KHz
2	Frequency Tolerance	-	$\pm 20$				ppm
3	Driver Level	DL	-	0.1	0.5	$\mu$ W	-
4	Load Capacitance	CL	12.5				pF
5	Series Resistance	-	-	-	70	K $\Omega$	-
6	Peak Temperature (Frequency)	-	20	25	30	$^{\circ}$ C	at 25 $^{\circ}$ C $\pm 5^{\circ}$ C
7	Frequency-Temperature coefficient	-	-	-	$-4.0 \times 10^{-8}$	$^{\circ}$ C <sup>2</sup>	-
8	Storage Temperature	-	-55	~	125	$^{\circ}$ C	-
9	Operating Temperature	-	-40	~	85	$^{\circ}$ C	-
10	Shunt Capacitance	C0	-	1.5	-	pF	
11	Motional Capacitance	C1	-	6.7	-	fF	
12	Insulation Resistance	-	500	-	-	M $\Omega$	at DC 100V $\pm$ 15V
13	Aging	-	$\pm 3$				ppm
							1st Year

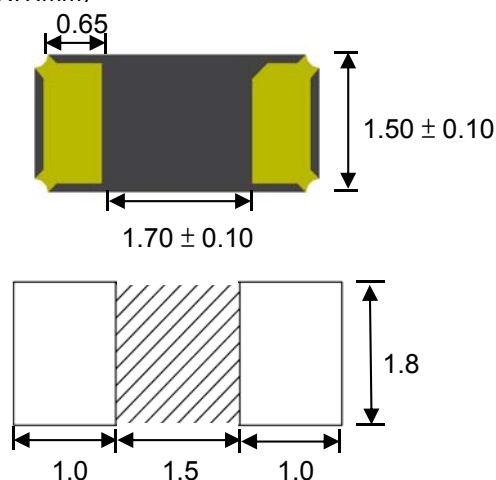
## DIMENSIONS

(UNIT:mm)



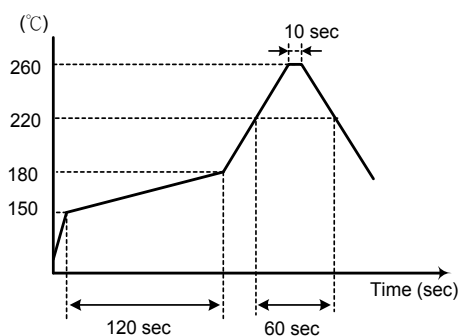
## RECOMMENDED SOLDER PAD

(UNIT:mm)

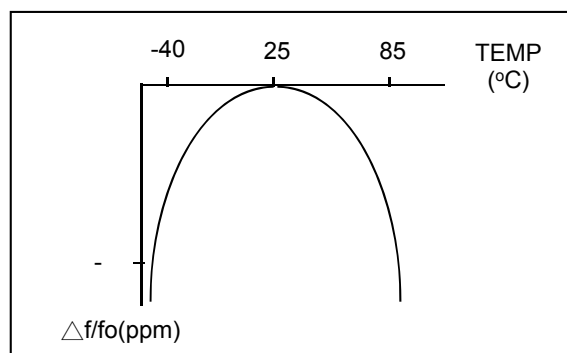


## SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

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


## TEMPERATURE V.S FREQUENCY CURVE



## ■ MARKING

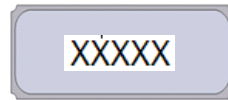
Frequency /CL Code

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

TXC Use

Frequency/CL Code

- Date Code



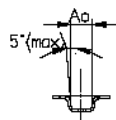
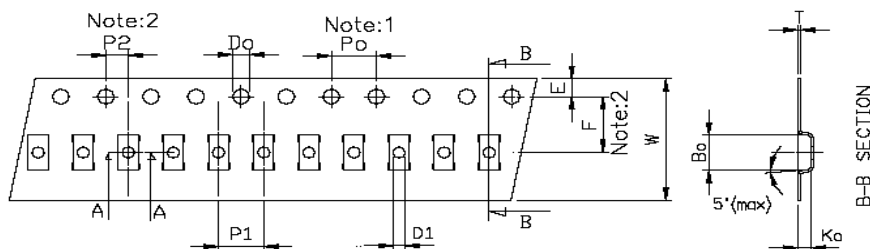
- TXC Use Code

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

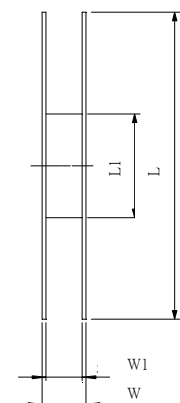
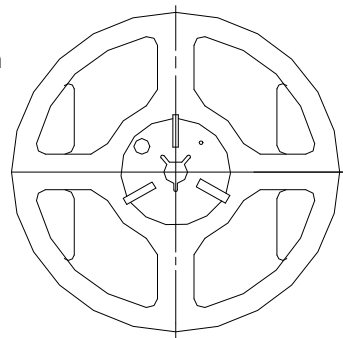
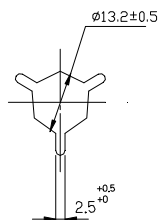


A-A SECTION

$A_o = 1.8 \pm 0.10$  mm

$B_0 = \underline{3.5 \pm 0.10} \text{ mm}$

$K_o = 1.0 \pm 0.10$  mm

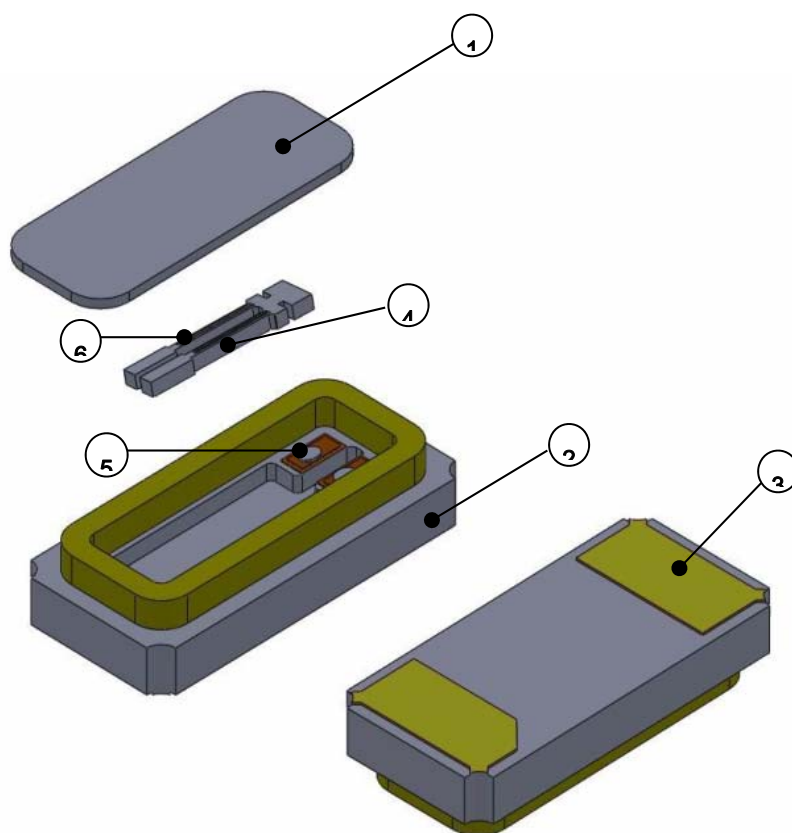


CARRIER TAPE DIMENSIONS	K1	P0	P1	P2	D0	D1	E	F	10P0	W	T	pcs / Reel
	–	4	4	2	1.55	1.1	1.75	5.5	40	12	0.25	3K

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

- REMARK : 1. 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.
2. 160 mm (6.3) minimum trailer of empty carrier tape sealed with cover tape.

# **■ 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	-

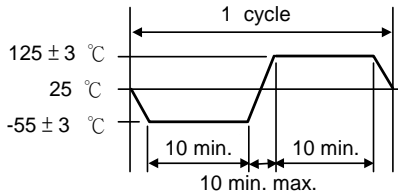
**■ UNIT WEIGHT:**  
 0.01197g/pcs

## ■ RELIABILITY SPECIFICATIONS

### 1.Mechanical Endurance

No.	Test Item	Test Methods	REF. DOC
1.1	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