

# SPECIFICATION FOR APPROVAL

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

PRODUCT TYPE : SMD T7 TYPE

NOMINAL FREQ. : 32.768KHz

TXC P/N : 9H03200413

REVISION : A4

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**

Pb used in internal connecting (Sn:Pb=10:90) is exempt from EU directive

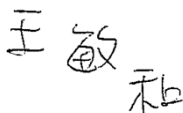


# PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD T7 TYPE

NOMINAL FREQ. : 32.768KHz

TXC P/N : 9H03200413

REVISION : A4

PE/RD	QA	MFG
		
13-Apr-12	13-Apr-12	13-Apr-12

**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**

Pb used in internal connecting (Sn:Pb=10:90) is exempt from EU directive

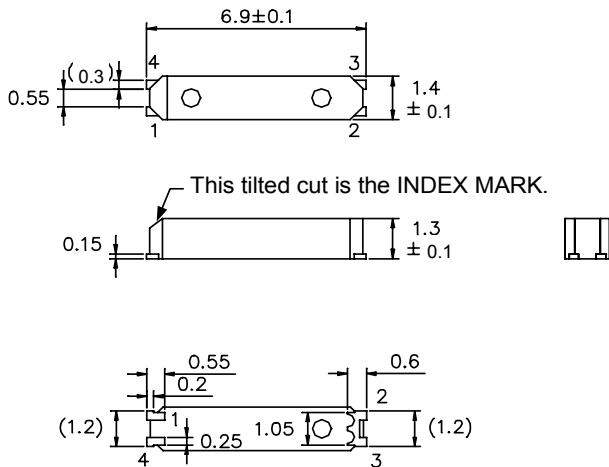


**ELECTRICAL SPECIFICATIONS**

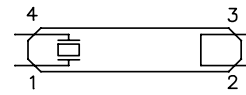
	Parameters	Sym.	Electrical Spec.				Notes
			Min	Typical	Max	Unit	
1	Nominal Frequency	F0	32.768			KHz	-
2	Frequency Tolerance	$\Delta f/f_0$	$\pm 20$			ppm	at 25 $\pm 3$
3	Load Capacitance	CL	12.5			pF	-
4	Driver Level	DL	-	0.1	1	$\mu W$	-
5	Equivalent series resistance	ESR	-	-	65	K $\Omega$	at 25 $\pm 3$
6	Q-value	Q	40	-	-	k	-
7	Turnover Temperature	Tp	20	25	30		at 25 $\pm 5$
8	Parabolic Curvature Constant	K	-	-	$-4 \times 10^{-8}$	<sup>2</sup>	-
9	Operating Temperature	-	-40	~	85		-
10	Storage Temperature	-	-55	~	125		-
11	Insulation Resistance	IR	500	-	-	M $\Omega$	at DC 100V $\pm 15$ V
12	Shunt Capacitance	C0	-	0.8	-	pF	-
13	Motional Capacitance	C1	-	1.9	-	fF	-
14	Aging	$\Delta f/f$	$\pm 3$			ppm	1st Year

**DIMENSIONS**

(UNIT:mm)

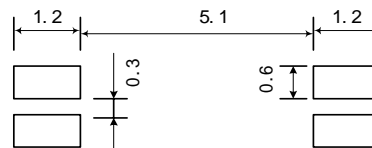

**RECOMMENDED**

(UNIT:mm)



Connection

Do not connect pin 2 and pin 3 to external device.

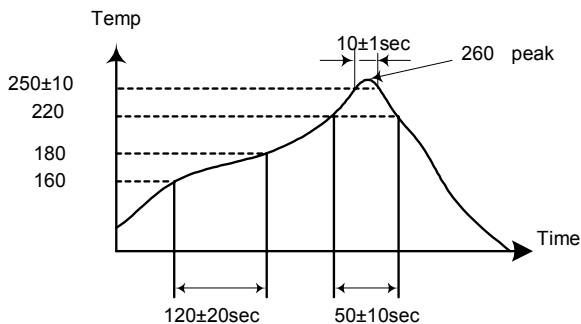
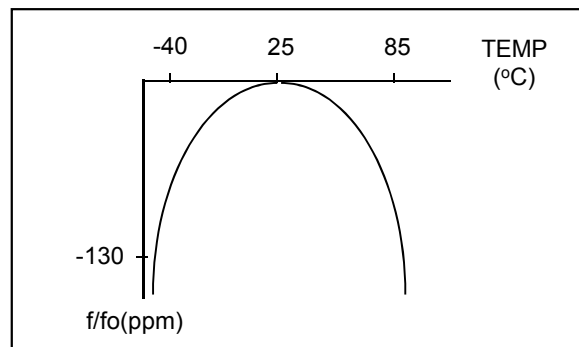


Suggested Layout

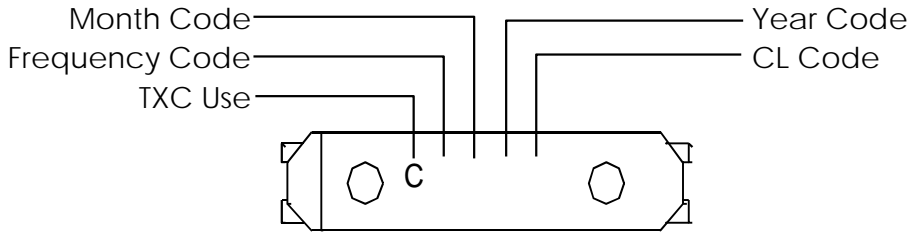
**SUGGESTED REFLOW PROFILE**

Total time : 200 sec. Max.

Solder melting point :220


**TEMPERATURE V.S FREQUENCY CURVE**


**MARKING**



Frequency Code:

KHz	CODE
32.768	3

Month Code:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A	B	C	D	E	F	G	H	J	K	M	N

Year Code:

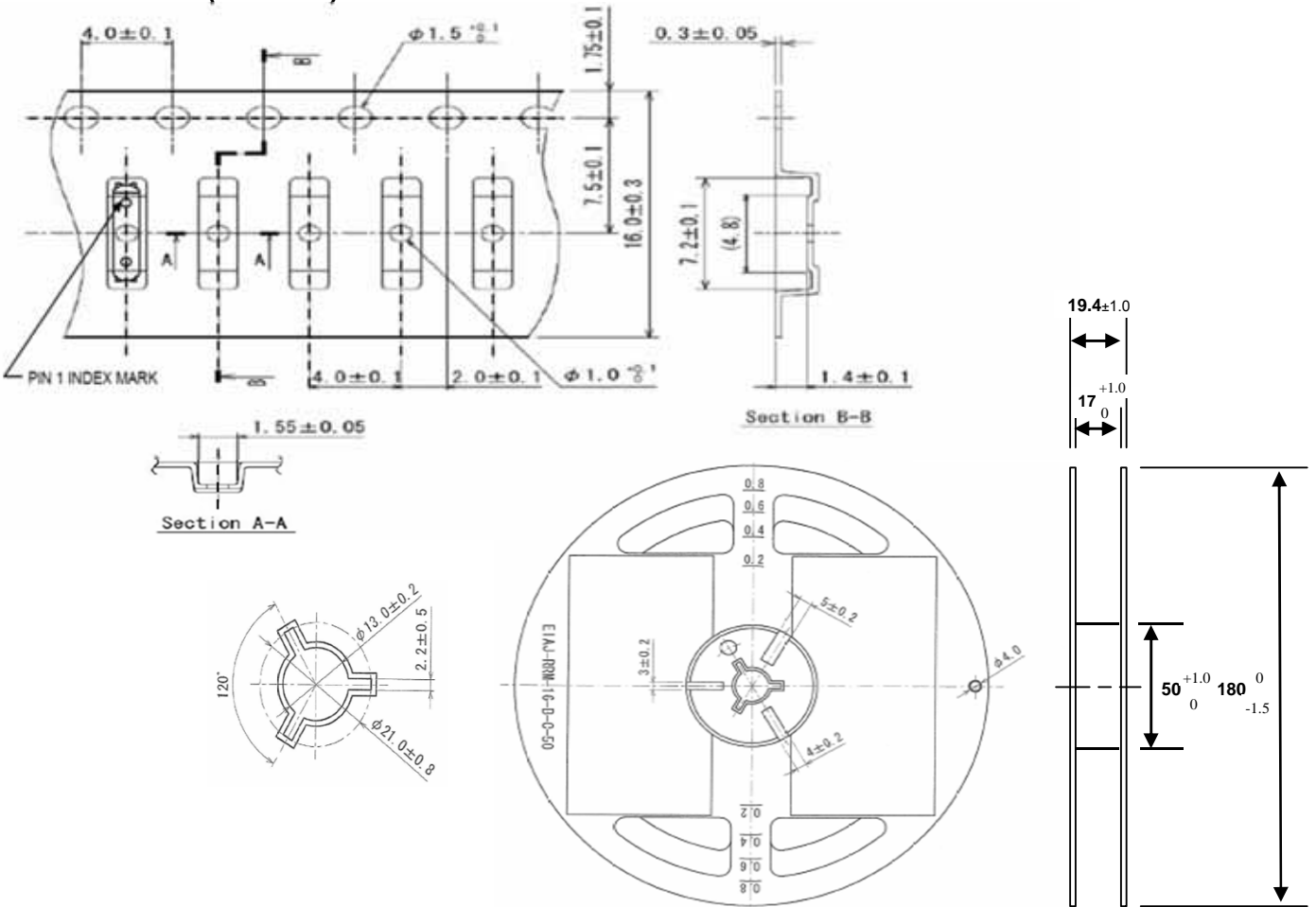
2010	A	2016	G
2011	B	2017	H
2012	C	2018	J
2013	D	2019	K
2014	E	2020	M
2015	F	2021	N

CL Code:

CL(pF)	CODE
12.5	C

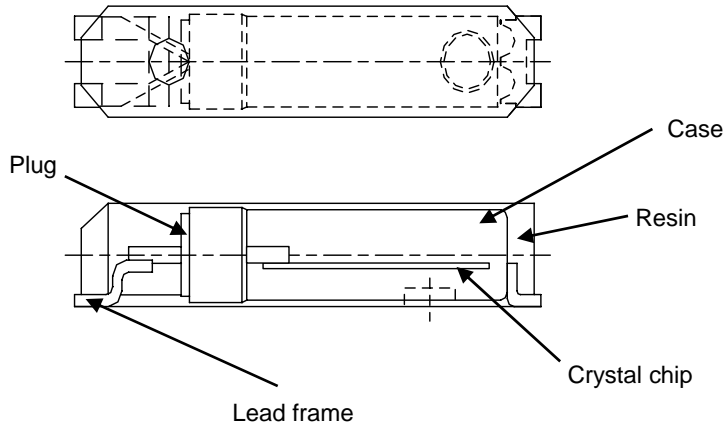
**PACKING : (EIA-481-2)**

Unit:mm



QUANTITY	pcs / Reel
	3K

- 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**


Portion	Material name	Weight ratio (w%)	Major substance	%(By portion weight)	CAS No.
Crystal chip	Silica cristobalite	About 1.0	Silica cristobalite	97	14808-60-7
			Gold	0.9	7440-57-5
Resin	Epoxy resin	35~45	Silica	89	60676-86-0
			Epoxy Resin	6.0	25068-38-6
			Phenol Resin	4.0	9003-35-4
			Carbon Black	0.2	1333-86-4
Lead frame	42 alloy	5~10	Iron	35	7439-89-6
			Nickel	29	7440-02-0
			Tin	36	7440-31-5
Case	Nickel Silver	35~42	Copper	61	7440-50-8
			Nickel	22	7440-02-0
			Zinc	17	7440-66-6
Plug		10~15	Silica amorphous	18	60676-86-0
			Nickel	24	7440-02-0
			Iron	36	7439-89-6
			Sn-90Pb	15	

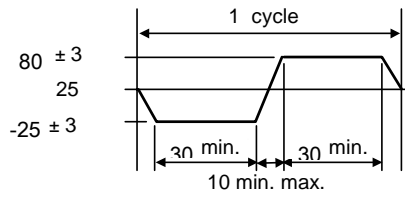
**UNIT WEIGHT:**

0.02826 g/pcs

**RELIABILITY SPECIFICATIONS**
**1.Mechanical Endurance**

No.	Test Item	Test Methods	REF. DOC
1	Drop Test	75 cm height, fall freely onto concrete floor 3 times.	MIL-STD-202
1	Vibration	Frequency range                      10 ~ 60 Hz Amplitude                                      1.50 mm Sweep time                                      2~3 minute Perpendicular axes each test time      2 hours (Total test time 6 hours)	MIL-STD-883

**2.Environmental Endurance**

No.	Test Item	Test Methods	REF. DOC
2	High Temp. Storage	+ 85 ± 3 for 500 ± 12 hours	MIL-STD-883
2	Low Temp. Storage	- 40 ± 3 for 500 ± 12 hours	MIL-STD-883
2	Thermal Shock	Total 20 cycles of the following temperature cycle 	MIL-STD-883
2	High Temp & Humidity	60 ± 2 , RH 90~95% , 500Hrs	EIA-JESD22