

# SPECIFICATION FOR APPROVAL

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

PRODUCT TYPE : SMD TCXO 3.2 \* 2.5

NOMINAL FREQ. : 26 MHz

TXC P/N : 7Q26000001

REVISION : A2

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**

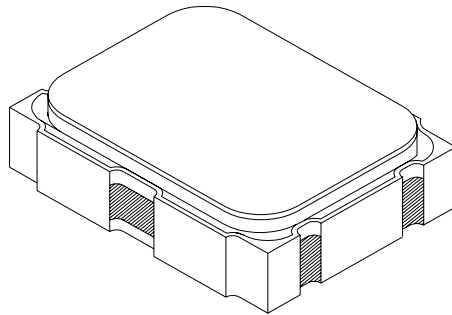
# PRODUCT SPECIFICATION SHEET




PRODUCT TYPE : SMD TCXO 3.2 \* 2.5

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PE/RD	QA	MFG
		
2008/9/12	2008/9/12	2008/9/12

**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**

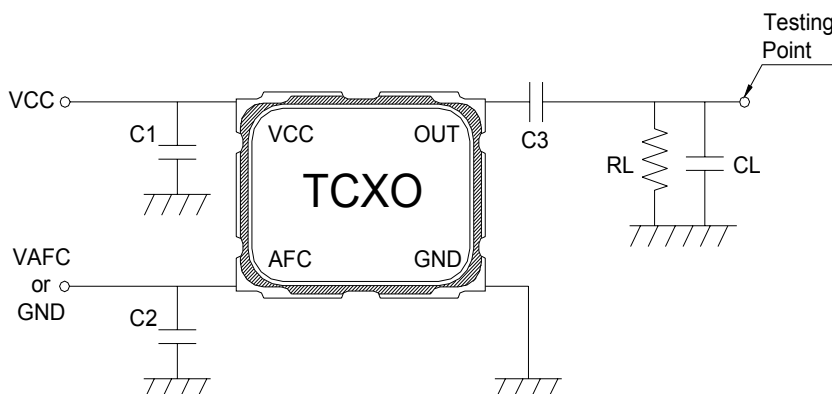


**ELECTRICAL SPECIFICATIONS**

Item	Parameters		Condition	Electrical Specifications			
				MIN	TYP	MAX	UNITS
1	Nominal Frequency			26.000000			MHz
2	Operating Temperature Range			-30		85	
3	Supply Voltage			2.60	2.80	3.00	V <sub>DC</sub>
4	Current Drain		With standard output load.		1.5		mA
5	Output Level		Note1	0.8			Vp-p
6	Output Type			Clipped Sinewave			
7	Standard Output Load			10 KΩ // 10 pF			
8	Frequency Tolerance After Reflow		25 ± 2			±2.0	ppm
9	Frequency Stability	vs. Temperature	Note2			±0.5	ppm
10		vs. Load	± 10%			±0.2	ppm
11		vs. Supply Voltage	( Standard Vcc ± 5% )			±0.2	ppm
12	Slope of Frequency Drift over Temperature		Vs. Temperature Range ( 2 step, from low to high temperature )			0.1	ppm/
13	Storage Temperature			-40		85	
14	Start-up Time	vs. Frequency	Within ±1.0 ppm			2.5	mS
15		vs. Output Level	To 90% of Vp-p			2.5	mS
16	Duty Cycle			40	50	60	%
17	Aging over 1st Year					±1.0	ppm
18	Harmonics					-7	dBc
19	Phase Noise	@ 10Hz Offset	Typical value at 25°C ± 5			-70	dBc/Hz
20		@ 100Hz Offset				-105	dBc/Hz
21		@ 1KHz Offset				-130	dBc/Hz
22		@ 10KHz Offset				-145	dBc/Hz

Note 1 Decoupling capacitor is required in external circuit.

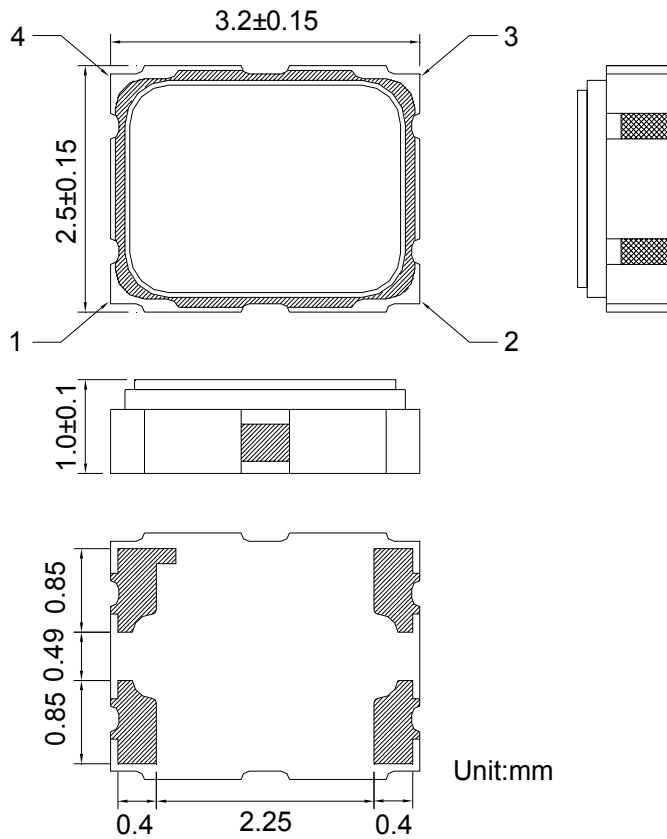
Note 2 Referenced to the mid point between minimum and maximum frequency value over the specified temperature range. Minimum of 1 frequency reading every 2 over temperature. Temperature varied at max. of 2 per minute.

**TESTING CIRCUIT**


External Components:

Name	Function
C1	AC Noise Bypass for VCC
C2	AC Noise Bypass for AFC
C3	DC Component Block for Output
RL	Load Resistance
CL	Load Capacitance

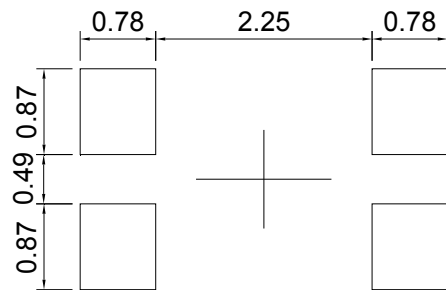
**DIMENSIONS**



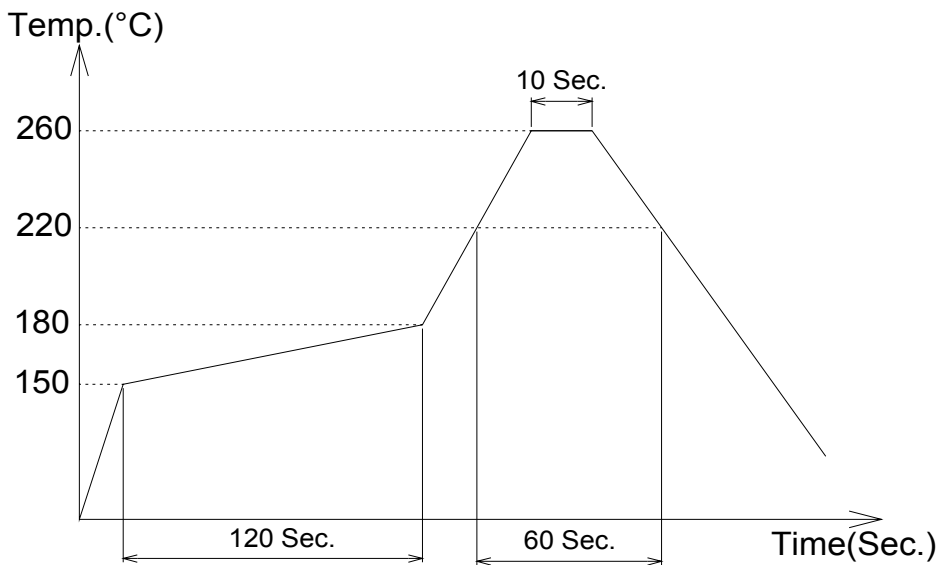
**Pin Function:**

- 1. AFC or GND
- 2. GND
- 3. OUTPUT
- 4. VCC

**Land Pattern:**

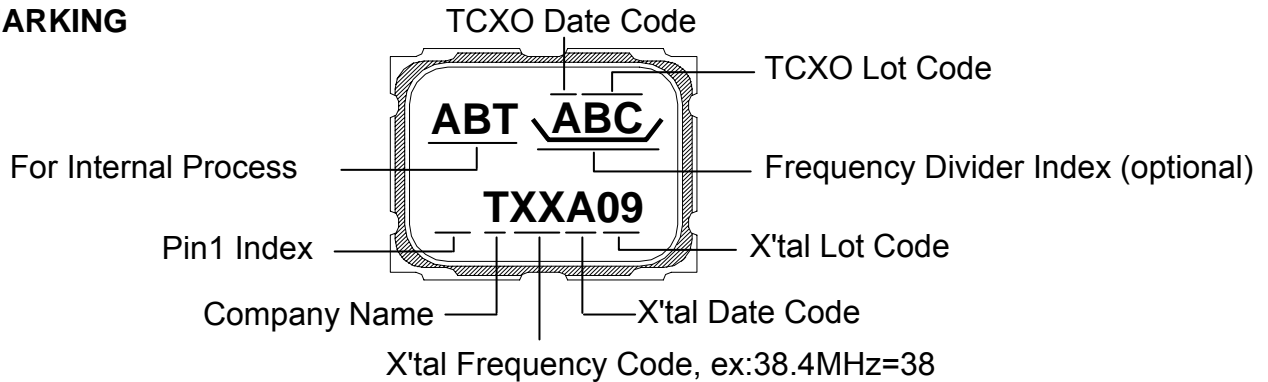


**SUGGESTED REFLOW PROFILE**



Total Time: 200 Sec. Max.  
Solder Melting Point: 220 °C

**MARKING**



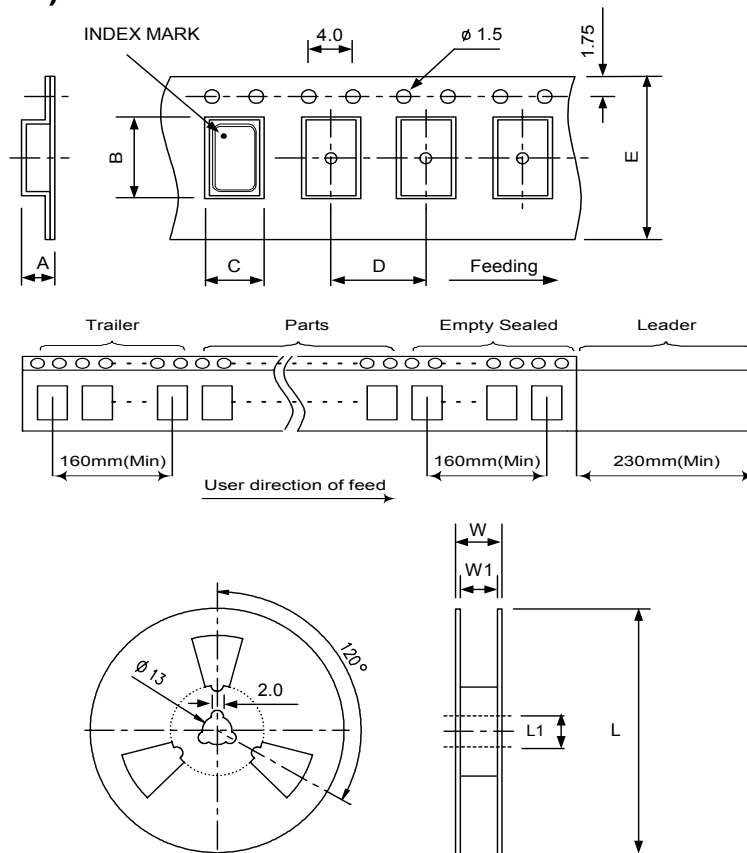
**DATE CODE**

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

Note: If TCXO frequency is X'tal frequency divided by 2, then frequency divider index appears.  
 If TCXO frequency is the same as X'tal frequency, then no frequency divider index appears.

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



Unit: mm

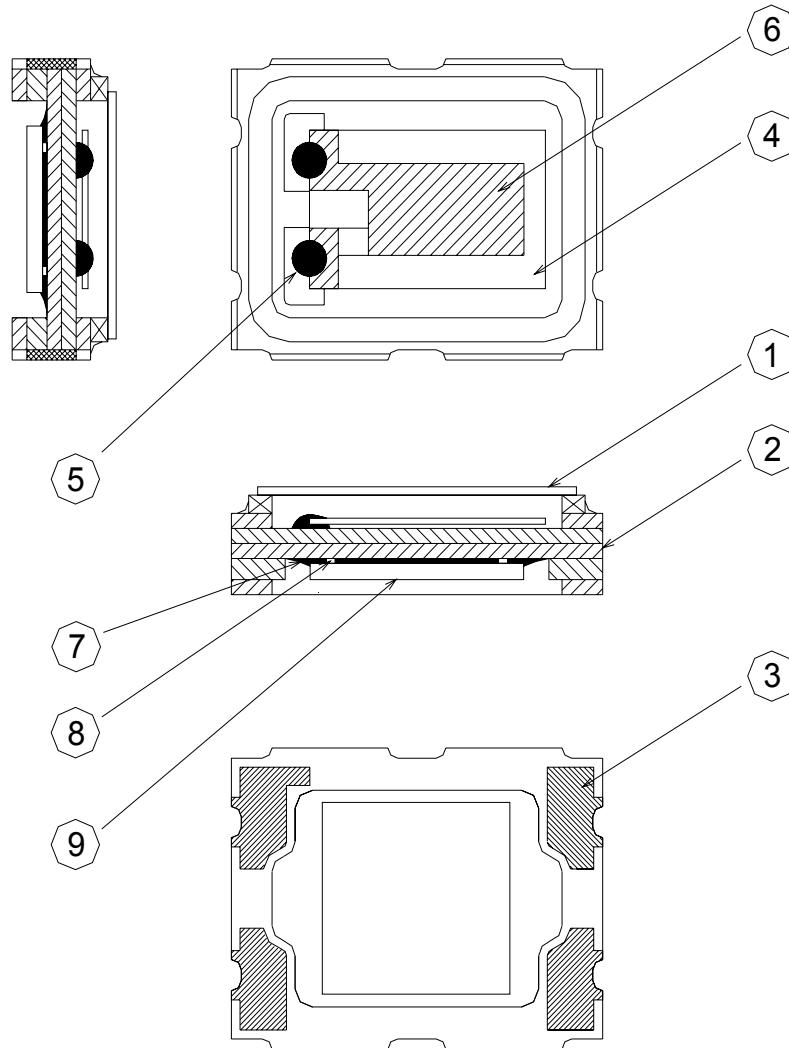
DIMENSIONS (mm)	A	B	C	D	E	L	L1	W	W1	Standard Reel Quantity is 3,000 pcs per reel
	1.40	3.40	2.70	4.00	8.0	178.0	13.0	11.5	8.0	

**WEIGHT**

0.0217g / piece(TYP), 65 ± 2g / 3k pcs( regardless of tape weight )

**STRUCTURE ILLUSTRATION**

Crystal Enclosure Seal: Seam Welding  
 Crystal Enclosure Medium: Vacuum



No.	COMPONENTS	MATERIALS	Q'TY	FINISH/SPECIFICATIONS
1	Cap	Metal(Fe + Co + Ni)	1	-
2	Base	Ceramic	1	Color Black
3	Pad	Au	4	Tungsten Metalize + Ni Plating + Au Plating
4	Crystal Blank	SiO <sub>2</sub>	1	-
5	Conductive Adhesive	Ag	4	Epoxy Resin
6	Electrode	Noble Metal	2	-
7	Underfill	Organic	1	Color Black
8	Bump	Au	8	
9	IC	Si	1	

## RELIABILITY SPECIFICATIONS

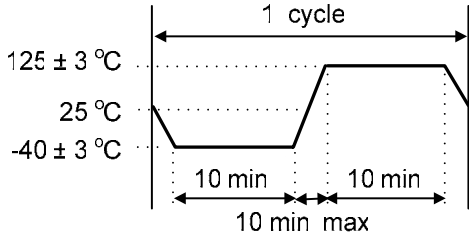
### 1. Mechanical Endurance

No.	Test Item	Test Methods	Criteria
1.1	Drop Test	Height : 100 cm height Direction : X,Y,Z 6 directions Test cycles : 3 cycles Fall freely on to concrete floor Mounting on test fixture (total weight=100g)	+/- 2.0 ppm
1.2	Mechanical Shock	Acceleration : 1000 G Duration : 0.5 ms Test cycles : 3 times for all 3 directions	+/- 2.0 ppm
1.3	Vibration	Acceleration : 20 G Duration : 4 hours/each direction Frequency range : 10 ~ 2000 Hz Amplitude : 1.52 mm Direction : X,Y,Z 3 directions Sweep speed : 20 minutes/cycle	+/- 2.0 ppm
1.4	Gross Leak	Standard sample for automatic gross leak detector. Test Pressure : 2 kg/cm <sup>2</sup>	< 1.5×10 <sup>-5</sup> Pa m <sup>3</sup> /sec
1.5	Fine Leak	Helium bombing 4.5 kgf / cm <sup>2</sup> for 2 hours	< 1.0×10 <sup>-9</sup> Pa m <sup>3</sup> /sec
1.6	Solderability	Preheate temperature : 125 ± 5 Preheate time : 120 sec Soldering temperature : 245 ± 5 Duration : 5 ± 1 second Method : Solder bath method	90% Coated

[Note] Criteria mean the maximum frequency change after reliability test, frequency measured at 25 .



2. Environmental Endurance

No.	Test Item	Test Methods	Criteria
2.1	High Temp. Storage	Temperature : +125 ± 3 Duration : 168 hours	+/- 2.0 ppm
2.2	Low Temp. Storage	Temperature : -40 ± 3 Duration : 500 hours	+/- 2.0 ppm
2.3	Thermal Shock (Air to Air)	Total 100 cycles of the following temperature cycle : 	+/- 2.0 ppm
2.4	High Temp & Humidity	Temperature : 85 ± 3 Humidity: RH 85% Duration : 168 hours	+/- 2.0 ppm
2.5	Aging	Temperature : 85 ± 3 Duration : 500 hours Voltage input by specification	+/- 2.0 ppm

[Note] Criteria mean the maximum frequency change after reliability test, frequency measured at 25 .

**NOTICE**

1. Product storage (Before dry bag opened) and usage(After dry bag opened) condition :

	Before dry bag opened	After dry bag opened
Temperature	-10 ~ 50 degC	-10 ~ 30 degC
Humidity	10%~65%	10%~60%
Period	6 months	2 days

2. Please keep product used within 2 days after dry bag opened, and pack the rest product into dry bag by heat sealing the bag neck.

**PROHIBITED ITEMS**

Be sure to use the product under the following conditions. Otherwise, the product may lose function due to improper usage.

1. Reflow soldering heat resistance :
  - 1.1 Peak temperature and period : 265 degC , 10 sec.
  - 1.2 Preheating temperature and period : 170 ± 10 degC, 120 sec.
  - 1.3 Reflow passage times : twice
2. Manual soldering heat resistance :
  - 2.1 Soldering iron :  
Pressing a soldering iron of 350 degC on the terminal electrode below 3 sec.
  - 2.2 Hot air gun soldering :  
Keep the hot air export head above the product with a minimum gap distance : 1.5cm  
Maximum hot air blowing temperature : 300 degC  
Maximum hot air blowing period : 2 sec