

# SPECIFICATION FOR APPROVAL

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

PRODUCT TYPE : SMD GPS TCXO 3.2\*2.5

NOMINAL FREQ. : 16.368MHz

TXC P/N : 7Q16300001

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.

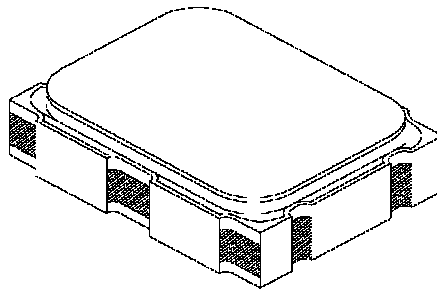
Attachment(s):

- 1. Product Specification Sheet
- 2. Testing Report(Electrical & Temperature)
- 3. Reliability Report

**RoHS Compliant**

# PRODUCT SPECIFICATION SHEET

CUSTOMER : \_\_\_\_\_  
PRODUCT TYPE : SMD GPS TCXO 3.2\*2.5  
NOMINAL FREQ. : 16.368MHz  
TXC P/N : 7Q16300001  
REVISION : S1



PE/RD	QA	MFG
<i>Chen Ching</i>		
2007/7/3		

**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**



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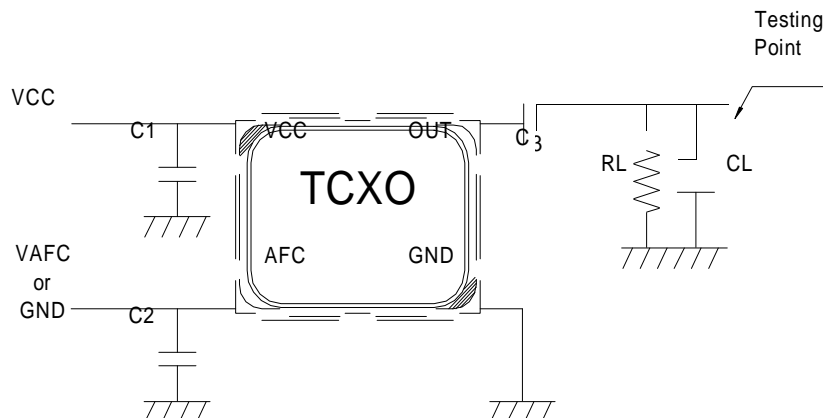
### ¾ ELECTRICAL SPECIFICATIONS

Item	Parameters		Condition	Electrical Specifications			
				MIN	TYP	MAX	UNITS
1	Nominal Frequency			16.368000			MHz
2	Operating Temperature Range			-30		85	°C
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°C			±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°C step, from low to high temperature)			0.5	ppm/°C
13	Storage Temperature			-40		85	°C
15	Start-up Time	vs. Frequency	Within ±1.0 ppm			2.5	mS
16		vs. Output Level	To 90% of Vp-p			2.5	mS
17	Duty Cycle			40	50	60	%
18	Aging over 1st Year					±1.0	ppm
20	Harmonics					-7	dBc
21	Phase Noise	@ 10Hz Offset			-70		dBc/Hz
22		@ 100Hz Offset			-105		dBc/Hz
23		@ 1KHz Offset			-130		dBc/Hz
24		@ 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°C over temperature. Temperature varied at max. of 2°C per minute.

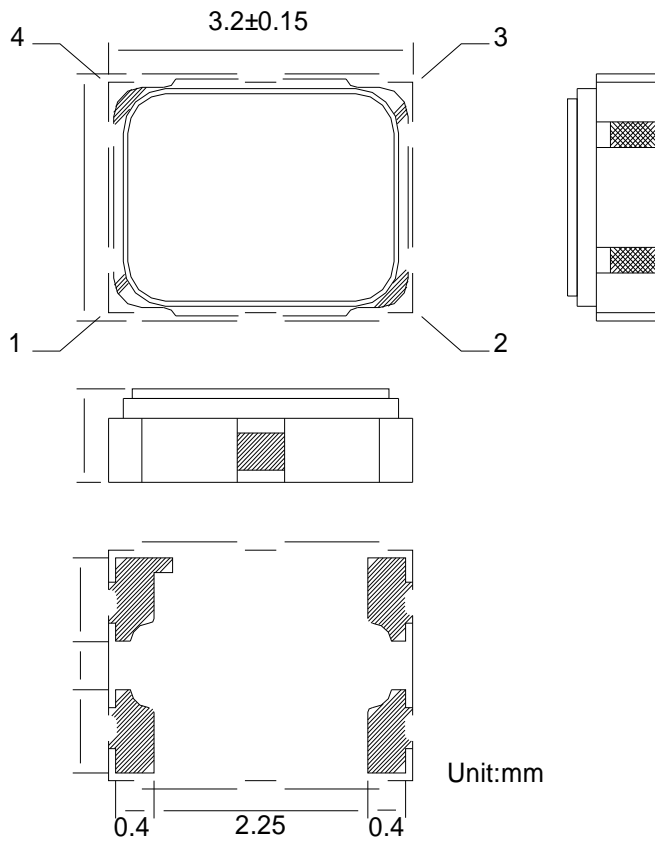
### ¾ TESTING CIRCUIT



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

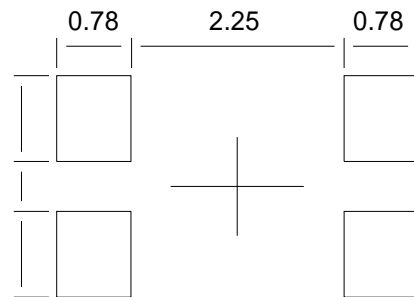
**¾ DIMENSIONS**



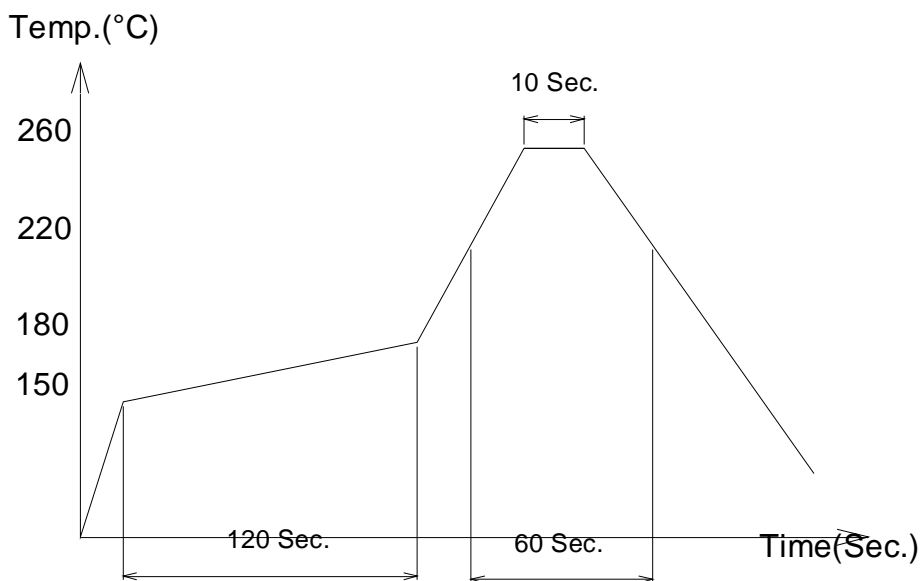
**Pin Function:**

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

**Land Pattern:**



**¾ SUGGESTED REFLOW PROFILE**



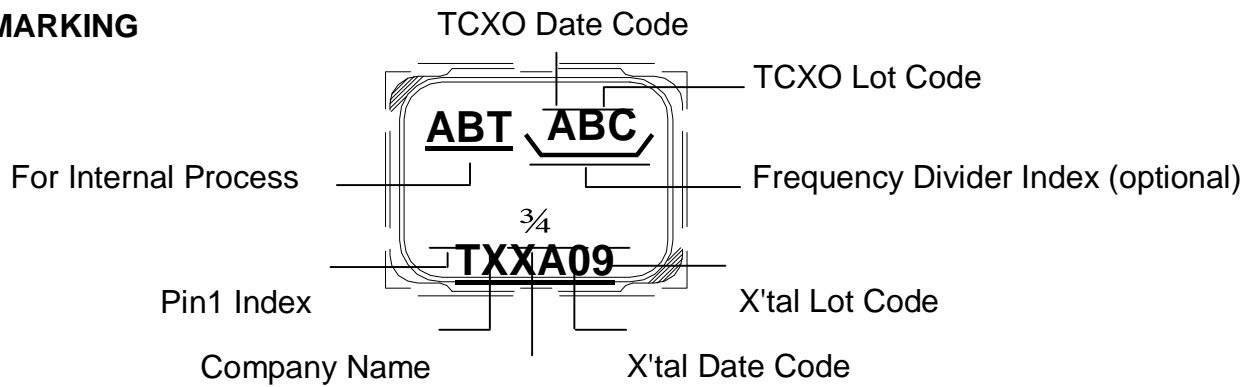
Total Time: 200 Sec. Max.  
Solder Melting Point: 220 °C

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**3/4 MARKING**



X'tal Frequency Code, ex:38.4MHz=38

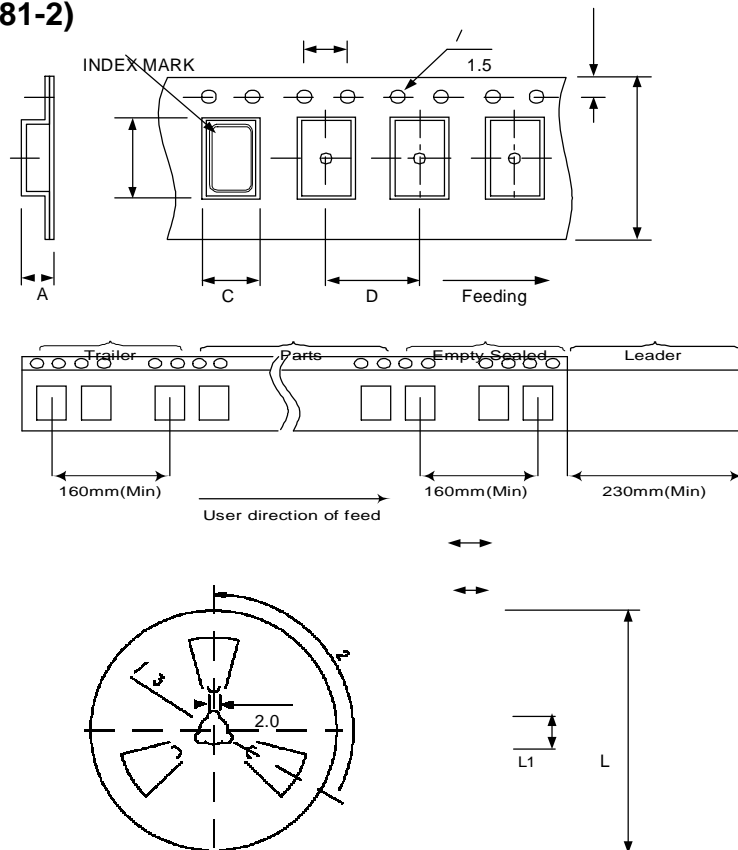
DATE CODE				MONTH											
YEAR				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2005	2009	2013	2017	A	B	C	D	E	F	G	H	J	K	L	M
2006	2010	2014	2018	N	P	Q	R	S	T	U	V	W	X	Y	Z
2007	2011	2015	2019	a	b	c	d	e	fg		h	j	k	l	m
2008	2012	2016	2020	n	p	qr		s	t	u	v	w	x	y	z

\* 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.

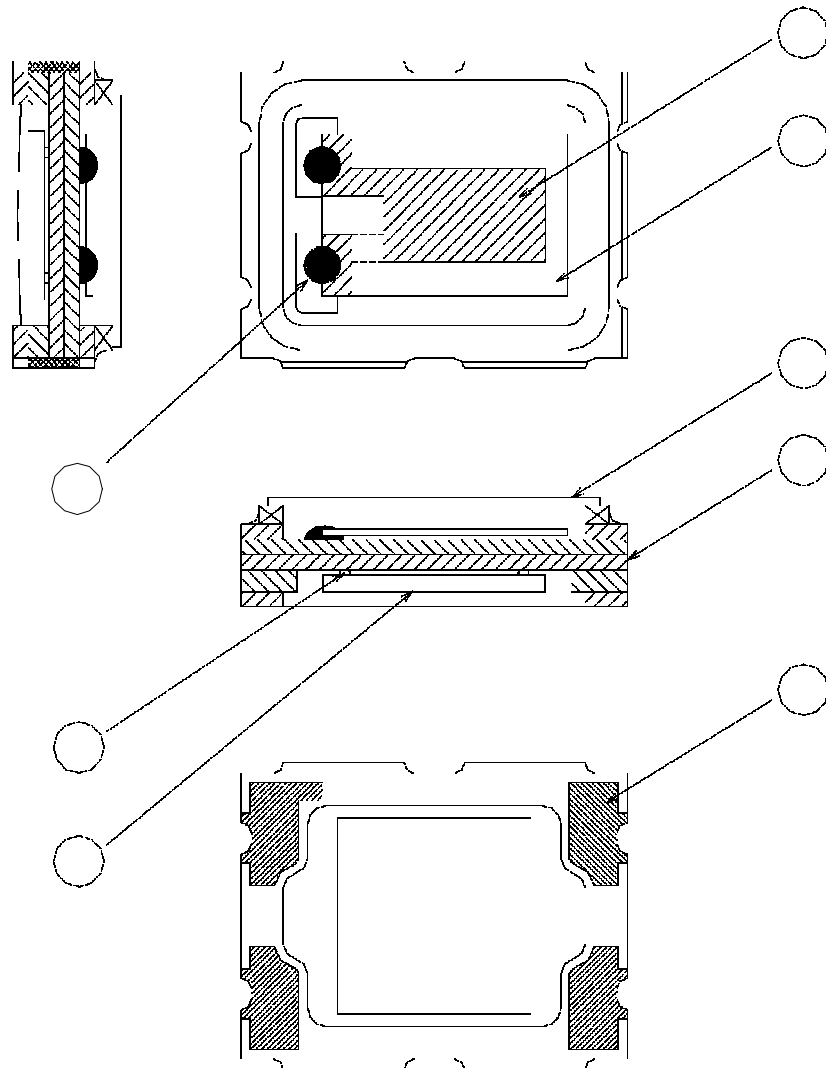
**3/4 PACKING : (EIA-481-2)**



DIMENSION S (mm)	A	B	C	D	E	LL	1	W	W1	Standard Reel Quantity is 3,000pcs per reel
	1.40	3.40	2.70	4.00	8.0	178.0	13.0	11.5	8.0	

**3/4 WEIGHT**

0.027g/piece(TYP), 81±2g/3kpcs(regardless of tape weight)



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	2	Epoxy Resin
6	Electrode	Au + Cr	2	-
7	Bump	Au	8	
8	IC	Si	1	

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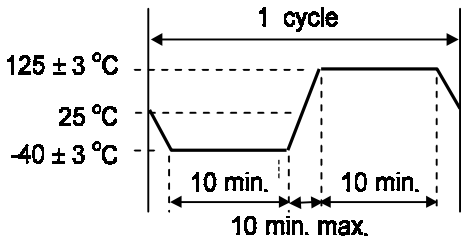
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### ¾ RELIABILITY SPECIFICATIONS

#### 1. Mechanical Endurance

No.	Test Item	Test Methods	REF. DOC
1.1	Drop Test	75 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. 0.5m sec. duration time.	MIL-STD-202F
1.3	Vibration	Frequency range 10 ~ 2000 Hz Amplitude 1.52 mm Sweep time 20 minutes Perpendicular axes each test 4 hours (Total test time 12 hrs)	MIL-STD-883E
1.4	Gross Leak	Standard Sample For Automatic Gross Leak Detector. Test Pressure: 2Kg / cm <sup>2</sup>	MIL-STD-883E
1.5	Fine Leak	Helium Bomging 4.5 Kgf / cm <sup>2</sup> for 2 hrs	MIL-STD-883E
1.6	Solderability	Temperature 260 ± 5 Immersing depth 0.5 mm minimum Immersion time 5 ± 1 seconds Flux Rosin resin methyl alcohol solvent ( 1 : 4 )	MIL-STD-883E

#### 2. Environmental Endurance

No.	Test Item	Test Methods	REF. DOC
2.1	Resistance to Soldering Heat	Pre-heat temperature 125 Pre-heat time 60 ~ 120 sec. Test temperature 260 ± 5 Test time 10 ± 1 sec.	MIL-STD-202F
2.2	High Temp. Storage	+125 ± 3 for 1000 hours	MIL-STD-883E
2.3	Low Temp. Storage	-40 ± 3 for 1000 hours	MIL-STD-883E
2.4	Thermal Shock (Air to Air)	Total 100 cycles of the following temperature cycle 	MIL-STD-883E
2.5	Autoclave Storage	120 ± 3, RH100%, 2 bar, for 240 hours	JESD22-A102-C
2.6	High Temp_Humidity	85 ± 3, RH 85%, 1000 hours	JIS C5023
2.7	Aging	85 ± 3, Voltage input by specification, 1000 Hrs	JIS C6701