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 :

PRODUCT TYPE : SMD TCXO 2.5 * 2.0

NOMINAL FREQ. : 38.4 MHz

TXC P/N : 7L38403002

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):

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

RoHS Compliant

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PRODUCT SPECIFICATION SHEET

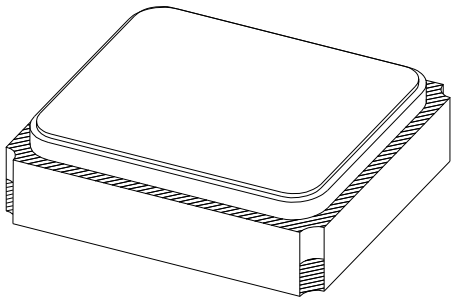
CUSTOMER :

PRODUCT TYPE : SMD TCXO 2.5 * 2.0

NOMINAL FREQ. : 38.4 MHz

TXC P/N : 7L38403002

REVISION : S1



PE/RD	QA	MFG
Kenneth Kao		
2011/10/17		

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

PRODUCT TYPE : SMD TCXO 2.5 * 2.0 P/N : 7L38403002 REVISION : S1

Rev	Revise page	Revise contents	Date	Ref.No.	Reviser
S1	N/A	Initial released	2011/10/17	N/A	Su-Chen Chiang

■ ELECTRICAL SPECIFICATIONS

Item	Parameters		Condition	Electrical Specifications				Note
				MIN	TYP	MAX	UNITS	
1	Nominal Frequency				38.400000		MHz	
2	Operating Temperature Range			-30		+85	℃	
3	Supply Voltage			1.70	1.80	3.30	V	
4	Current Drain					2.5	mA	
5	Output Level			0.8			V	1
6	Output Type				Clipped Sinewave			
7	Output Load		Resistance	9	10	11	kΩ	
8			Capacitance	9	10	11	pF	
9	Frequency Tolerance		After 2 times reflow			±2.0	ppm	2
10	Frequency Stability	vs. Temperature	Temp: -30 ~ +85 ℃			±0.5	ppm	3
11		vs. Load	Load: 10 kΩ // 10 pF ±10%			±0.2	ppm	
12		vs. Supply Voltage	Vcc: 1.8 V ±5%			±0.1	ppm	
13	Slope of Frequency Drift over Temperature					±0.1	ppm/℃	4
14	Storage Temperature			-40		+85	℃	
15	Start-up Time	vs. Frequency	Within ± 1 ppm			2.5	ms	
16		vs. Output Level	To 90% of Vp-p			2.5	ms	
17	Duty Cycle			40	50	60	%	
18	Aging					±1.0	ppm/year	
19	Harmonics					-7	dBc	
20	Phase Noise	@ 1 Hz offset			-50		dBc/Hz	
21		@ 10 Hz offset			-80		dBc/Hz	
22		@ 100 Hz offset			-108		dBc/Hz	
23		@ 1 kHz offset			-130		dBc/Hz	
24		@ 10 kHz offset			-145		dBc/Hz	

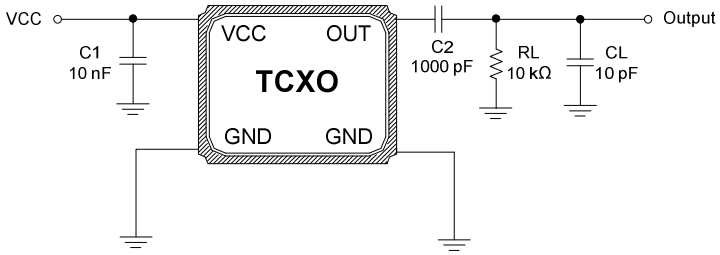
Note 1 Decoupling capacitor is required in external circuit.

Note 2 Refer to nominal frequency

Note 3 Refer to frequency before reflow

Note 4 Minimum of 1 frequency reading every 2°C over temperature, based on temperature varied at maximum of 2°C per minute.

■ TESTING CIRCUIT

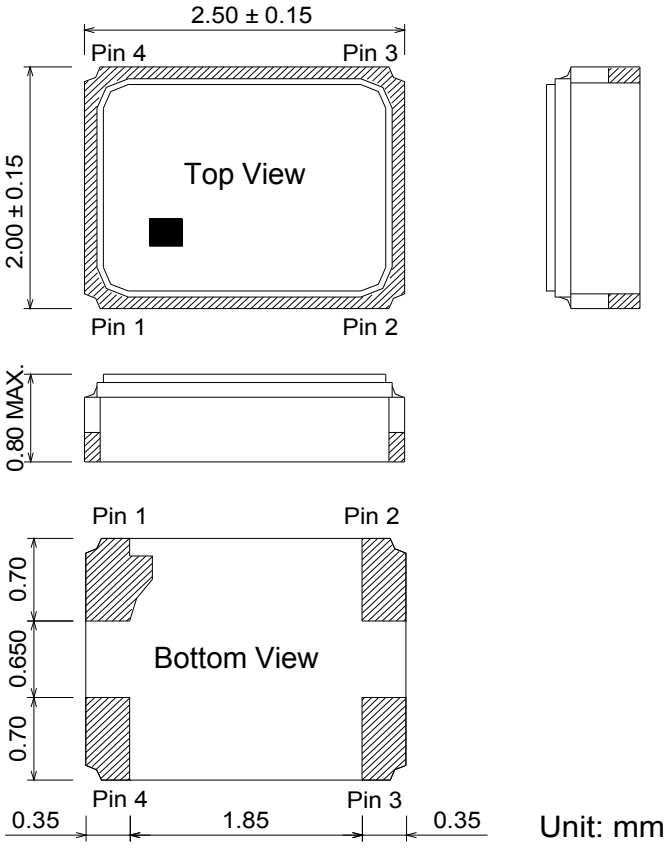


External Components

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

Note: Bypass capacitor (C1) and DC blocking capacitor (C2) should be placed.

■ DIMENSIONS

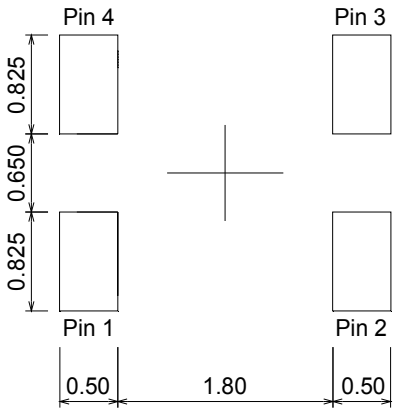


Unit: mm

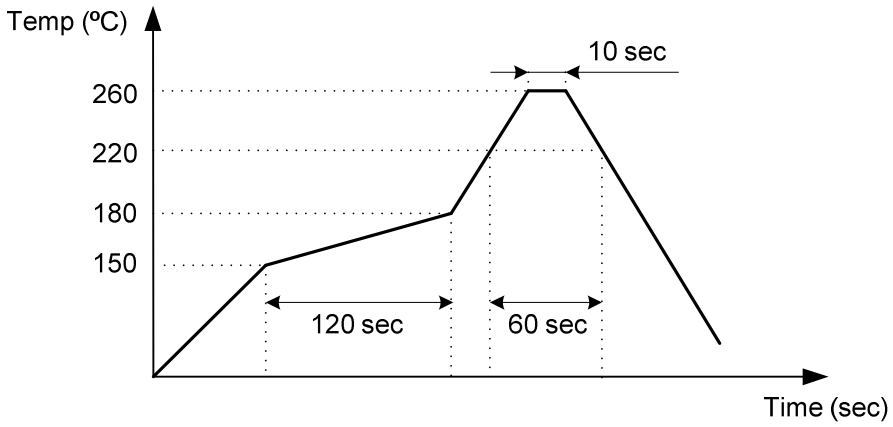
Pin Connection

Name	Function
Pin 1	GND
Pin 2	GND
Pin 3	OUTPUT
Pin 4	VCC

Recommended Land Pattern

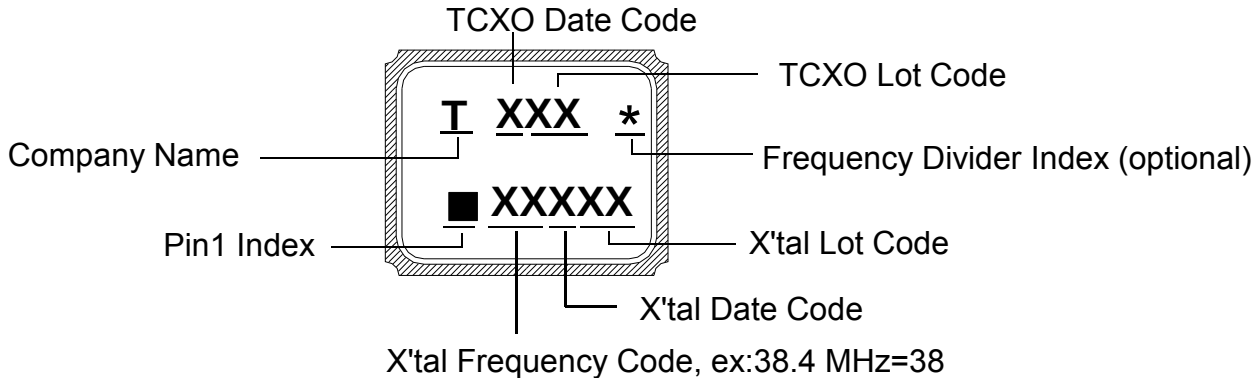


■ SUGGESTED REFLOW PROFILE



Note : Total Time: 200 sec. Max., Solder Melting Point: 220°C

■ MARKING



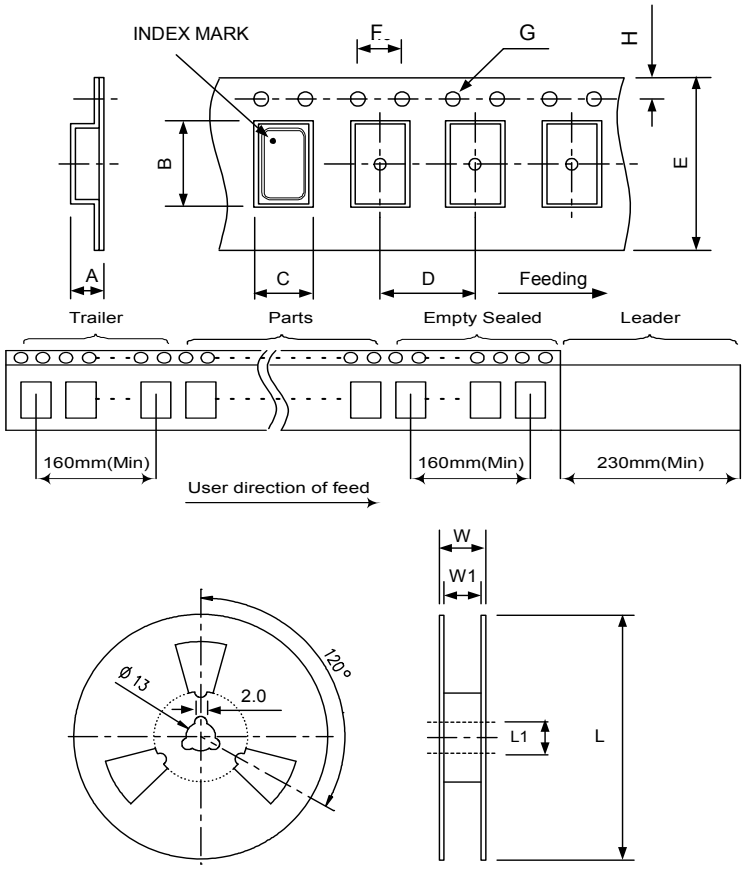
DATE CODE

YEAR \ MONTH				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

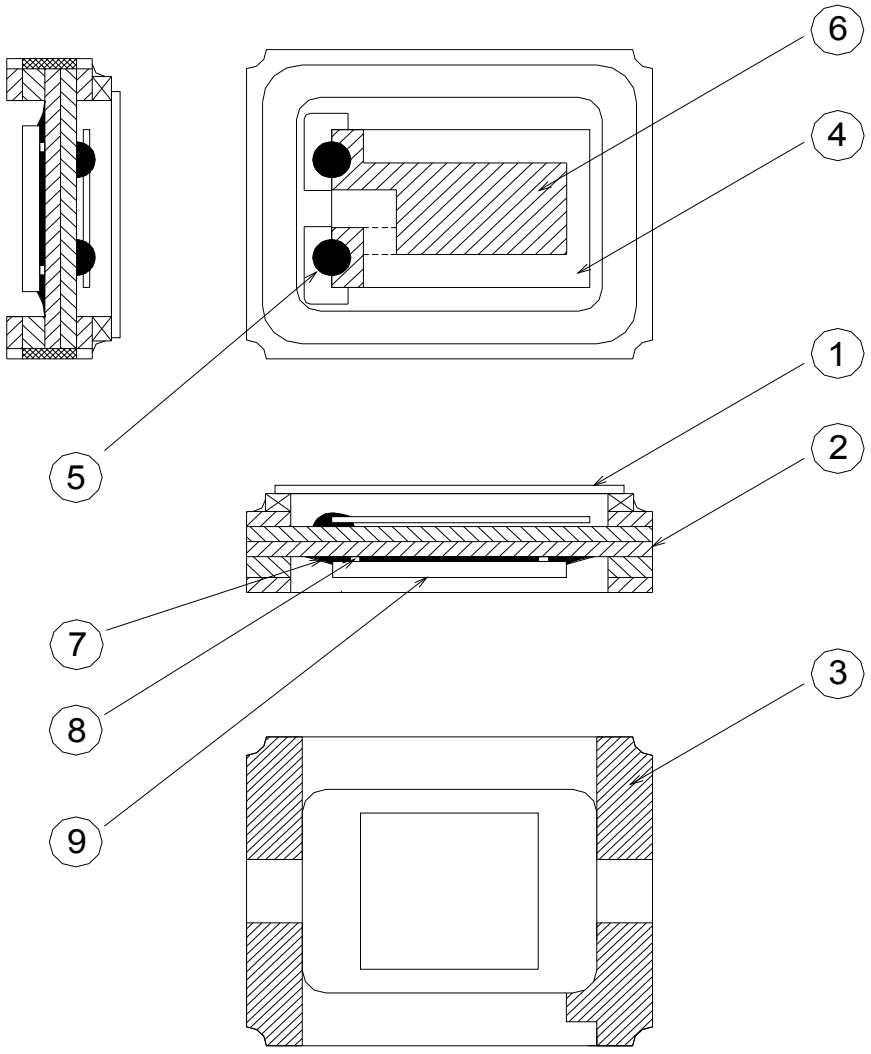
DIMENSIONS (mm)	A	B	C	D	E	F	G	H	L	L1	W	W1	Standard Reel Quantity is 3,000 pcs per reel
	1.15	2.70	2.25	4.00	8.00	4.00	1.55	1.75	178	13.0	11.6	8.4	

■ WEIGHT

0.0135 g / piece(TYP), 40 ± 2 g /3 kpcs(regardless of tape weight)

STRUCTURE ILLUSTRATION

Crystal Enclosure Seal: Seam Welding



No.	COMPONENTS	MATERIALS	FINISH/SPECIFICATIONS
1	Cap	Metal(Fe + Co + Ni)	-
2	Base	Ceramic	Color Black
3	Pad	Au	Tungsten Metalize + Ni Plating + Au Plating
4	Crystal Blank	SiO_2	-
5	Conductive Adhesive	Ag	Silicone Resin
6	Electrode	Noble Metal	-
7	Underfill	Organic	Color Black
8	Bump	Au	
9	IC	Si	

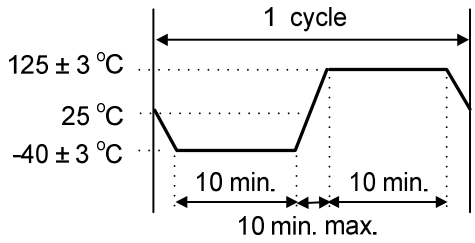
■ RELIABILITY SPECIFICATIONS

1. Mechanical Endurance

No.	Test Item	Test Methods	Criteria
1.1	Drop Test	Hegiht : 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=100 g)	+/- 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	Frequency range : 10 ~ 2000 Hz Amplitude : 1.52 mm (10 ~ 80 Hz) Acceleration : 20 g (80 ~ 2000 Hz) Sweep speed : 20 minutes/cycle Direction : X,Y,Z 3 directions Duration : 4 hours/each direction	+/- 2.0 ppm
1.4	Gross Leak	Standard sample for automatic gross leak detector. Test Pressure : 2 kg/cm^2	< 1.5×10^{-5} Pa m^3 / sec
1.5	Fine Leak	Helium bomging 4.5 kgf/cm^2 for 2 hours	< 1.0×10^{-9} Pa m^3 / sec
1.6	Solderability	Preheate temperature : 125℃ ± 5℃ Preheate time : 120 sec Solding temperature : 245℃ ± 5 ℃ Duration : 5 ± 1 sec Method : Solder bath method	90% Coated

[Note] Criteria mean the maximum frequency change after reliability test, frequency shell be 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 shell be measured after 2 hours at 25℃ leaving.