PRODUCT TYPE : SMD TCXO 2.5 * 2.0 P/N : 7L40002001 REVISION : A1

Rev	Revise page	Revise contents	Date	Ref.No.	Reviser
S1	N/A	Initial released	2010/7/28	N/A	Kenneth Kao

PRODUCT TYPE : SMD TCXO 2.5 * 2.0 P/N : 7L40002001 REVISION : A1

■ ELECTRICAL SPECIFICATIONS

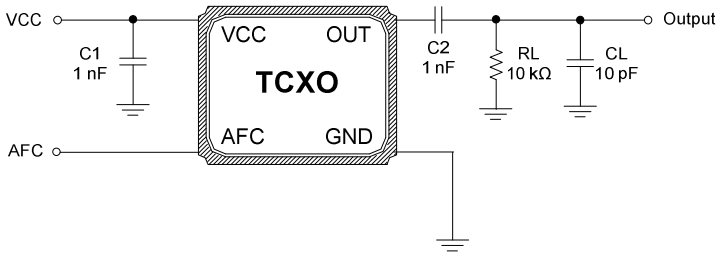
Item	Parameters		Condition	Electrical Specifications				Note
				MIN	TYP	MAX	UNITS	
1	Nominal Frequency				40.000000		MHz	
2	Operating Temperature Range			-30		+85	℃	
3	Supply Voltage			2.60	3.30	3.60	V	
4	Current Drain		With standard output load			2.0	mA	
5	Output Level			0.8			V	1
6	Output Type				Clipped Sinewave			
7	Standard Output Load				10 KΩ // 10 pF			
8	Frequency Tolerance After Reflow		Two reflow soldering			±2.0	ppm	2
9	Frequency Stability	vs. Temperature	-30 to +85℃			±2.0	ppm	3
10		vs. Load	±10% output load			±0.2	ppm	
11		vs. Supply Voltage	± 5% standard Vcc			±0.2	ppm	
12	Auto-Frequency-Control(AFC) Range (Ref : Vcon=1.4V)		Vcont = 2.4 V	+8		+14	ppm	
13			Vcont = 0.4 V	-14		-8	ppm	
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	
19	Harmonics					-7	dBc	
20	Phase Noise	@ 10 Hz offset			-80		dBc/Hz	
21		@ 100 Hz offset			-110		dBc/Hz	
22		@ 1 kHz offset			-130		dBc/Hz	
23		@ 10 kHz offset			-145		dBc/Hz	

Note 1 Decoupling capacitor (1000 pF) is required in external circuit

Note 2 Refer to nominal frequency

Note 3 Refer to frequency at 25±2℃

■ TESTING CIRCUIT



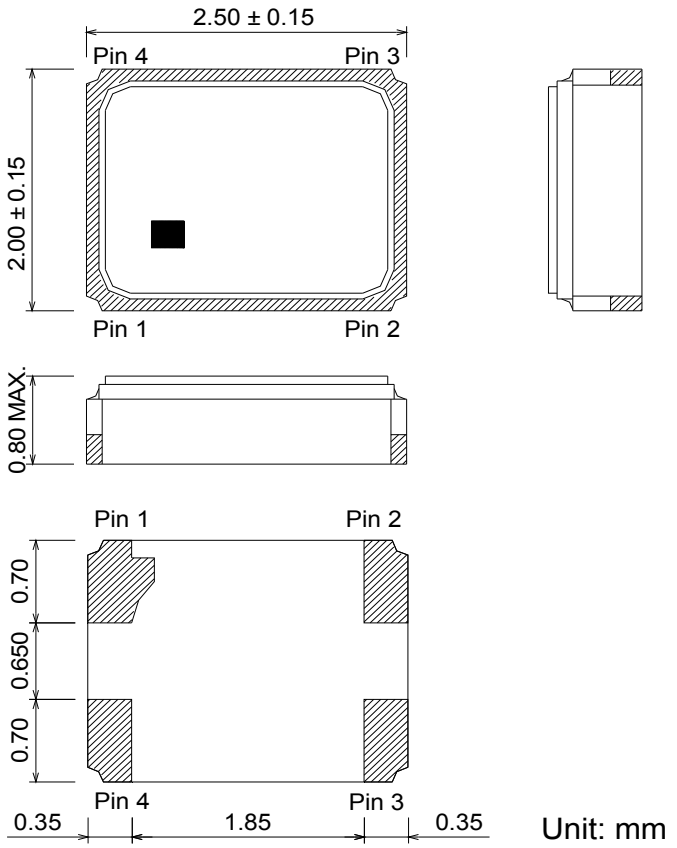
External Components

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.

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DIMENSIONS

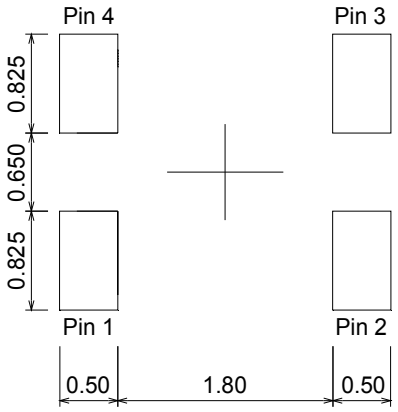


Unit: mm

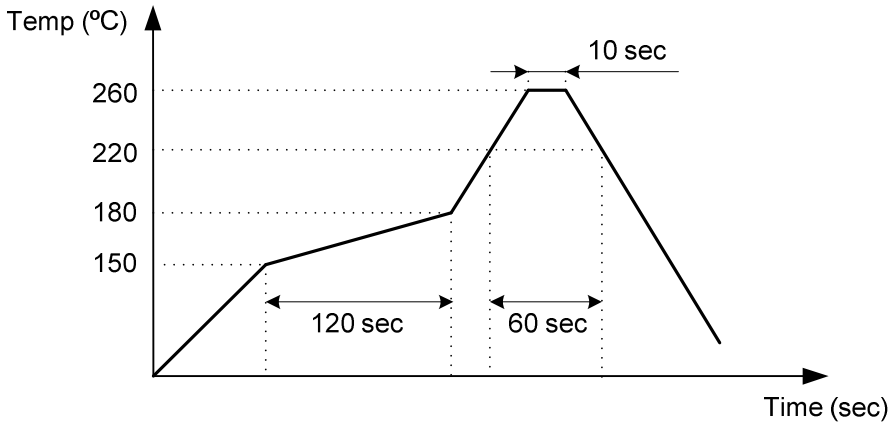
Pin Connection

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

Recommended Land Pattern

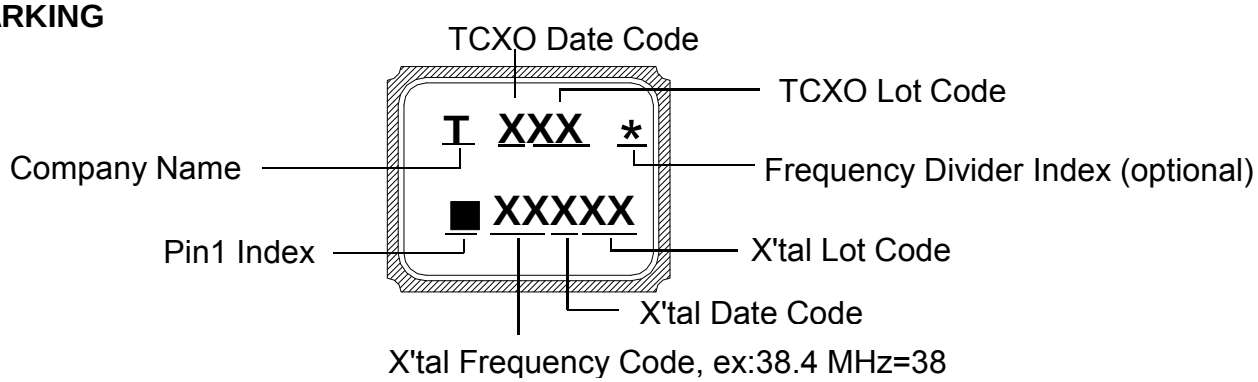


SUGGESTED REFLOW PROFILE



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

■ MARKING



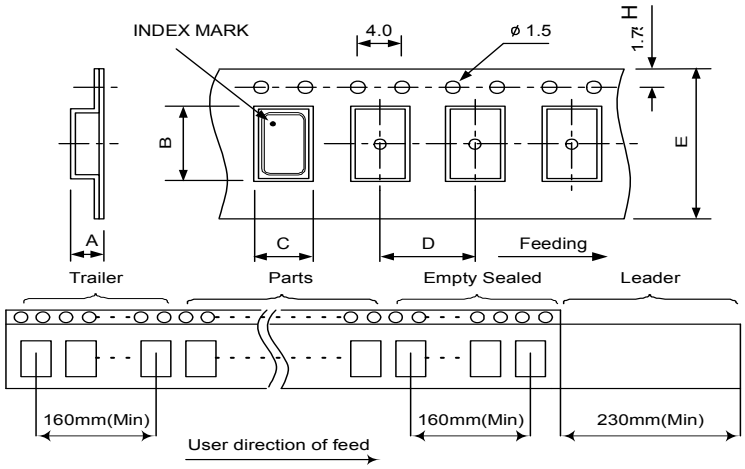
DATE CODE

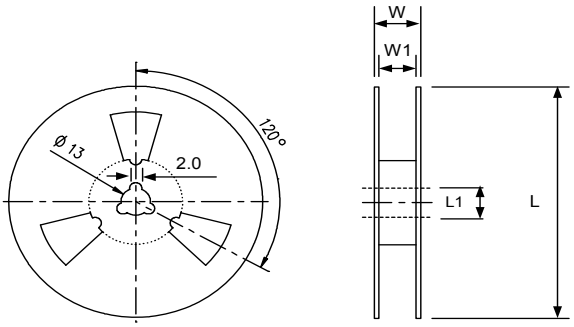
YEAR \ MONTH				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2005	2009	2013	2017	A	B	C	D	E	F	G	H	J	K	L	M
2006	2010	2014	2018	N	P	Q	R	S	T	U	V	W	X	Y	Z
2007	2011	2015	2019	a	b	c	d	e	f	g	h	j	k	l	m
2008	2012	2016	2020	n	p	q	r	s	t	u	v	w	x	y	z

* 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

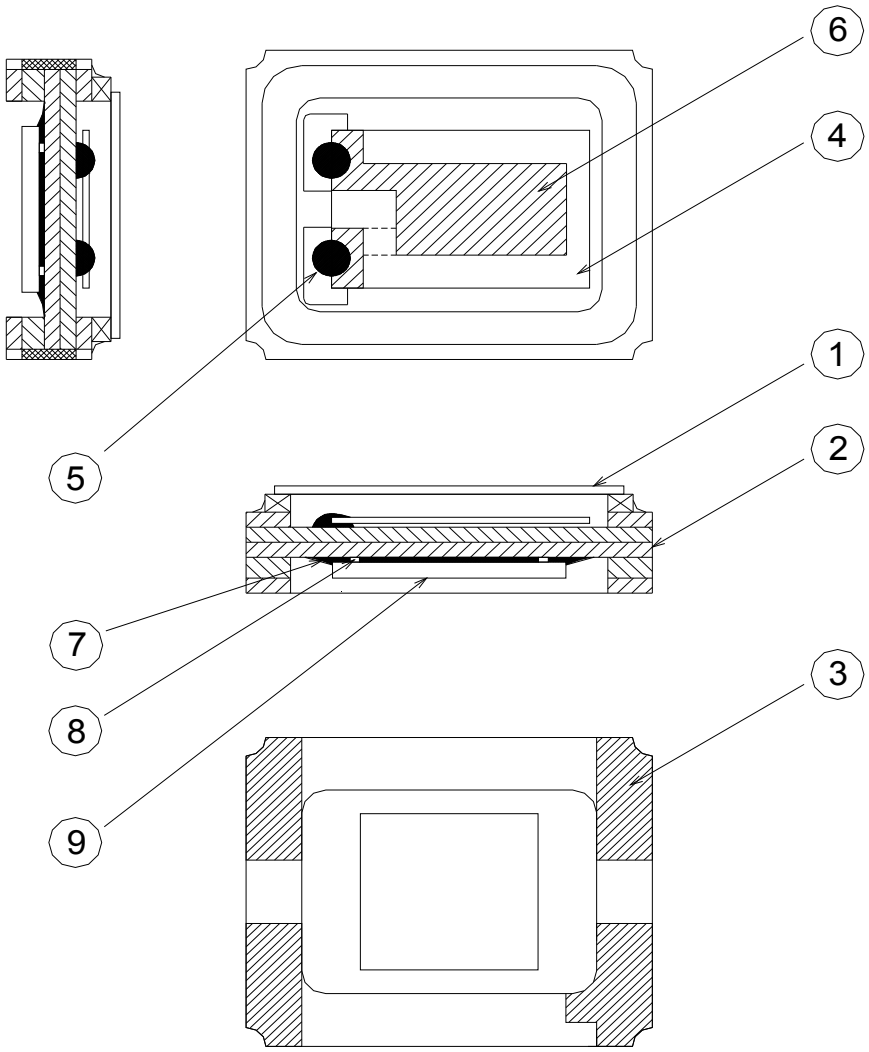
DIMENSIONS (mm)	A	B	C	D	E	F	G	H	L	L1	W	W1	Standard Reel Quantity is 3,000 pcs per reel
	1.15	2.70	2.25	4.00	8.00	4.00	1.55	1.75	178	13.0	11.6	8.4	

■ 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	

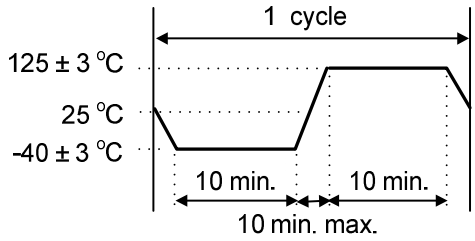
■ RELIABILITY SPECIFICATIONS

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	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^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 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℃.