

SPECIFICATION FOR APPROVAL

CUSTOMER : _____

PRODUCT TYPE : SMD TCXO 7.0 * 5.0

NOMINAL FREQ. : 25 MHz

TXC P/N : 7N25000009

REVISION : S2

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 : _____

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PE/RD	QA	MFG
<i>Eric Tsao</i>		
2015/12/31		

NOTE:

- (1) The green product standard set by TXC is based upon the international standards. Related information is publicly described on the TXC's Website, and updated regularly. The document is compliant with the latest green product quality system directives at the time.
- (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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[illegible]

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ELECTRICAL SPECIFICATIONS

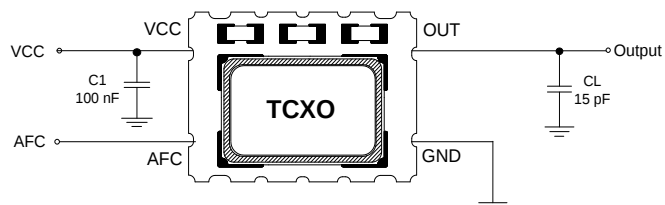
Item	Parameters		Condition	Electrical Specifications				Note
				MIN	TYP	MAX	UNITS	
1	Nominal Frequency			25.000000			MHz	
2	Operating Temperature Range			-40		+85	°C	
3	Storage Temperature			-40		+85	°C	
4	Supply Voltage			3.135	3.30	3.465	V	
5	Current Drain		With standard output load			6.0	mA	
6	Output Type			CMOS				
7	Output Low					0.1*Vdd	V	
8	Output High			0.9*Vdd			V	
9	Rise Time		10% to 90% output swing			8	ns	
10	Fall Time		90% to 10% output swing			8	ns	
11	Output Load		Capacitance			15	pF	
12	Duty Cycle			45		55	%	
13	Frequency Tolerance		After 2 times reflow			1.5	ppm	1
14	Frequency Stability	vs. Temperature	-40 °C to +85 °C			±0.28	ppm	2
15		vs. Load	Standard output load ±5%			±0.2	ppm	
16		vs. Supply Voltage	Standard Vcc ± 5%			±0.2	ppm	
17	Auto Frequency Control (AFC)		Vc = 3.0 V	+10		+15	ppm	
18	Range (Ref: Vc=1.65 V)		Vc = 0 V	-15		-10	ppm	
19	Free-run Accuracy					±4.6	ppm	3
20	Phase Noise	@ 10 Hz offset				-85	dBc/Hz	
21		@ 100 Hz offset				-110	dBc/Hz	
22		@ 1 kHz offset				-125	dBc/Hz	
23		@ 10 kHz offset				-135	dBc/Hz	

Note 1 Operation after reflow 2hrs, refer to nominal frequency

Note 2 Reference (Fmax - Fmin)/2

Note 3 Inclusive of calibration tolerance at 25°C, frequency vs. change in temperature, change in supply voltage (±5%), load change 15 pF (±5%), reflow soldering process and 20 years aging.

■ TESTING CIRCUIT

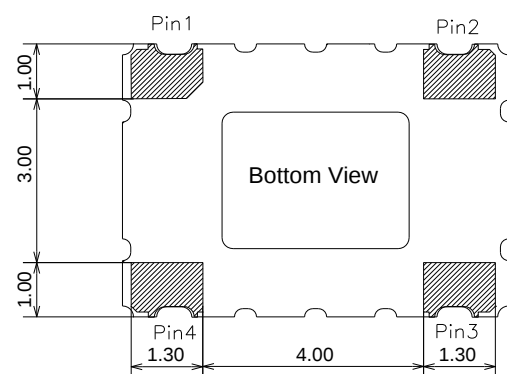
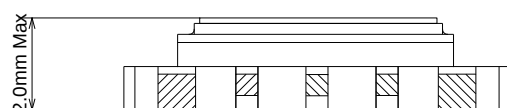
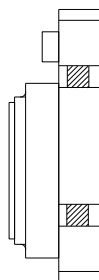
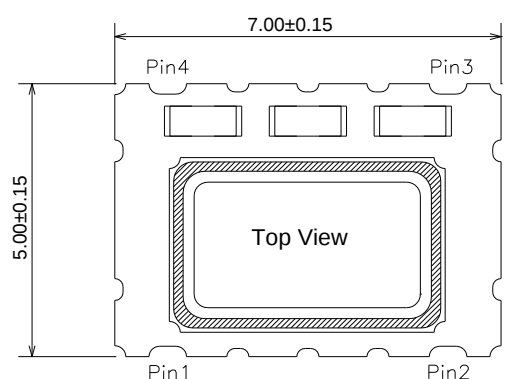


Note: Bypass capacitor (C1) should be placed.

External Components

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

■ DIMENSIONS

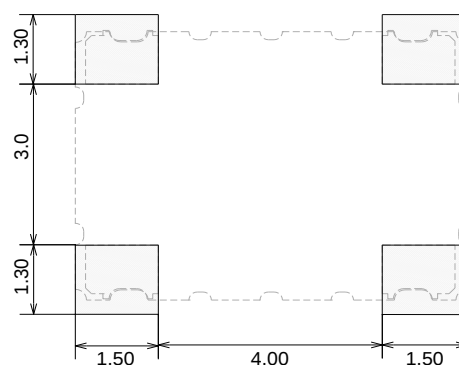


Unit : mm

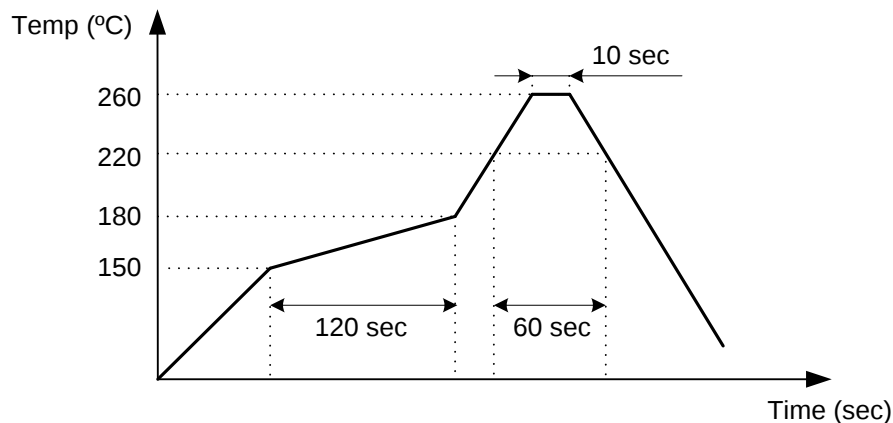
Pin Connection

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

Recommended Land Pattern



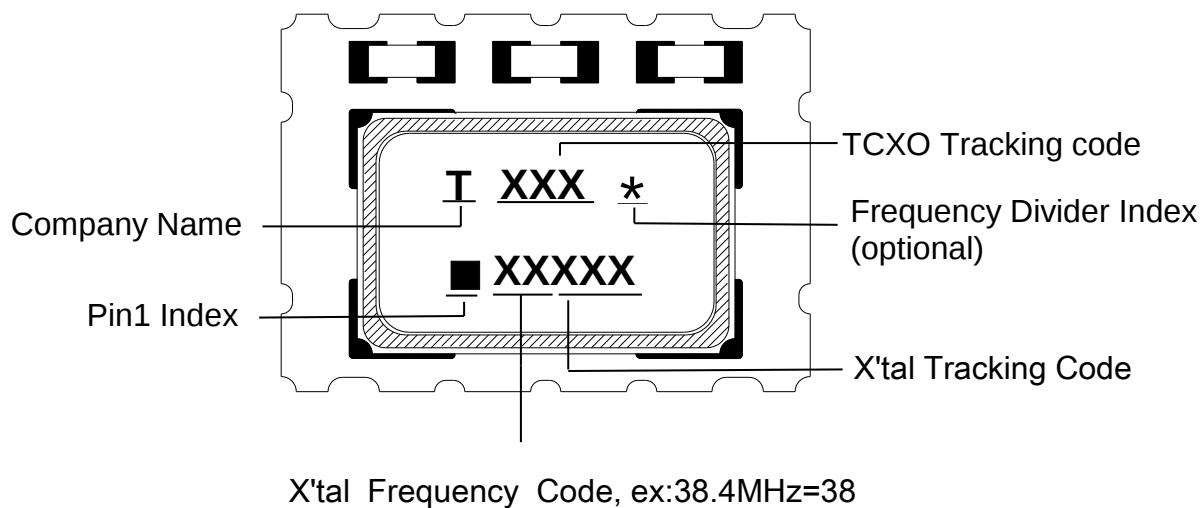
■ SUGGESTED REFLOW PROFILE



Note 1: Period while temperature exceeds the solder melting point : 220°C should be less than 200 sec.

Note 2: Period while temperature stays at the top melting point : 260°C should be less than 30 sec.

■ MARKING

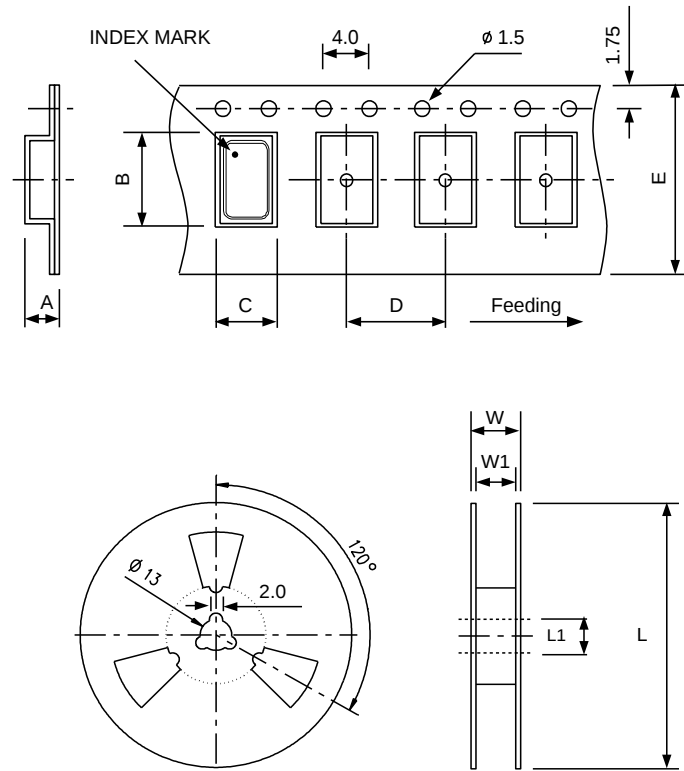


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PACKING : (EIA-481-2)



Unit: mm

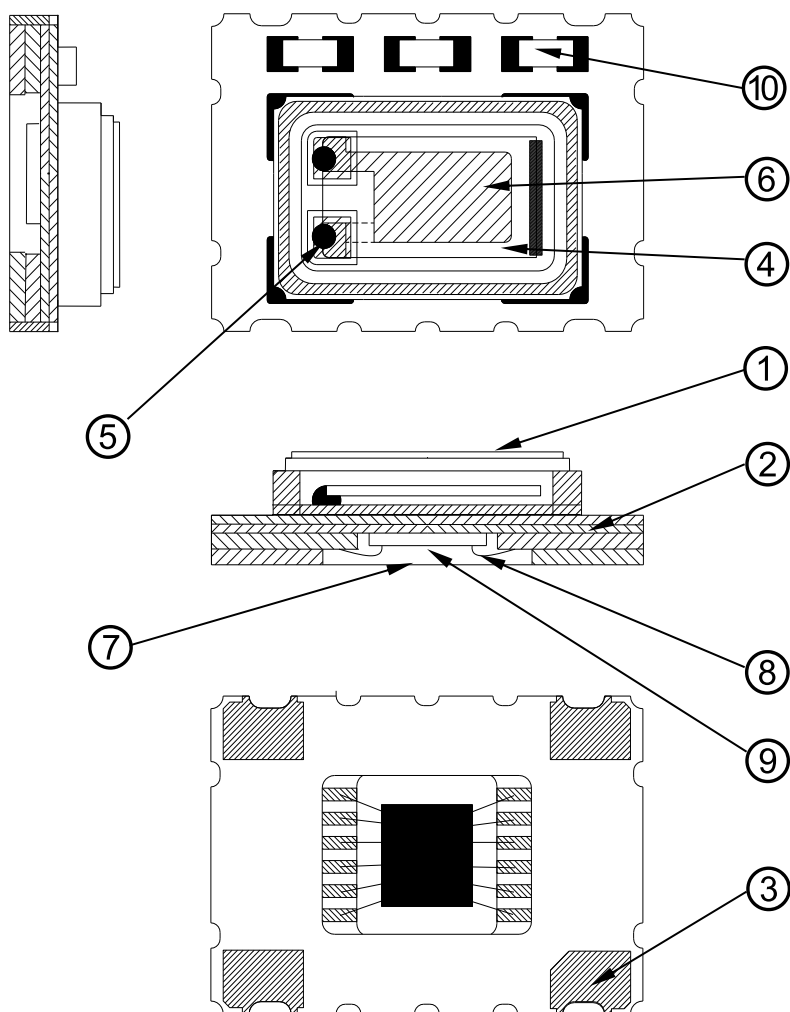
DIMENSIONS	A	B	C	D	E	L	L1	W	W1	Standard Reel Quantity is 1,000 pcs per reel
	2.00	7.90	5.45	8.00	16.0	180.0	13.0	20.5	16.0	

WEIGHT

0.149 g / piece(TYP)

■ 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	Bonding Wire	Au	
9	IC	Si	
10	Capacitor	Ceramic	

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■ RELIABILITY SPECIFICATIONS

1. Mechanical Endurance

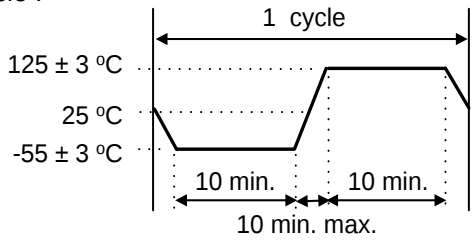
No.	Test Item	Test Methods	Standard
1.1	Drop Test	Hegiht : 75 cm height Test cycles : 3 cycles Fall freely on to wood floor	IEC-68-02-27
1.2	Mechanical Shock	Acceleration : 1000 g Duration : 0.5 ms Test cycles : 3 times for all 3 directions	MIL-STD-202 Method 213B
1.3	Vibration	Acceleration : 20 g Duration : 4 hours/each direction Frequency range : 10 ~ 2000 Hz Amplitude : 1.52 mm Direction : X,Y,Z 3 directions Sweep speed : 20 minutes/cycle	MIL-STD-883 Method 2007.3
1.4	Solderability	Preheate temperature : 125°C ± 5°C Preheate time : 120 sec Solding temperature : 245°C ± 5 °C Duration : 5 ± 1 sec Method : Solder bath method Criterion : >90% Coated	J-STD-002

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2. Environmental Endurance

No.	Test Item	Test Methods	Standard
2.1	High Temp. Storage	Temperature : $+125^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Duration : 1000 hours	MIL-STD-883 Method 1005.8
2.2	Low Temp. Storage	Temperature : $-40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Duration : 1000 hours	MIL-STD-883 Method 1013
2.3	Thermal Shock (Air to Air)	Total 500 cycles of the following temperature cycle : 	MIL-STD-883 Method 1011.9
2.4	High Temp & Humidity	Temperature : $85^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Humidity: RH 85% Duration : 1000 hours	EIA-JESD22-A101-B
2.5	Aging	Temperature : $85^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Duration : 1000 hours Voltage input by specification	JIS C6701
2.6	ESD	HBM : 2000 V	JESD22-A114-B
		CDM : 500 V	JESD22-C101-B
		MM : 200 V	JESD22-A115-B

[Note] This product is Level 1 for JEDEC J-STD-020D moisture sensitivity level.