

# SPECIFICATION FOR APPROVAL

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

PRODUCT TYPE : SMD SEAM SEALING CXO 5.0 × 3.2

NOMINAL FREQ. : 12.000000MHz

TXC P/N : 7C12002001

REVISION : A1

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

PRODUCT TYPE : SMD SEAM SEALING CXO 5.0 × 3.2

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NOMINAL FREQ. : 12.000000MHz

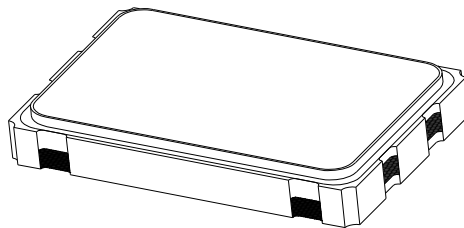
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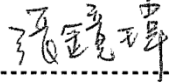
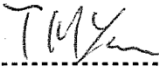

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PE/RD	QA	MFG
 8/27'09	 9/2'09	 8/28'09

**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**





TXC CORPORATION

PRODUCT TYPE :SMD SEAM SEALING CXO 5.0 × 3.2

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### ELECTRICAL SPECIFICATIONS

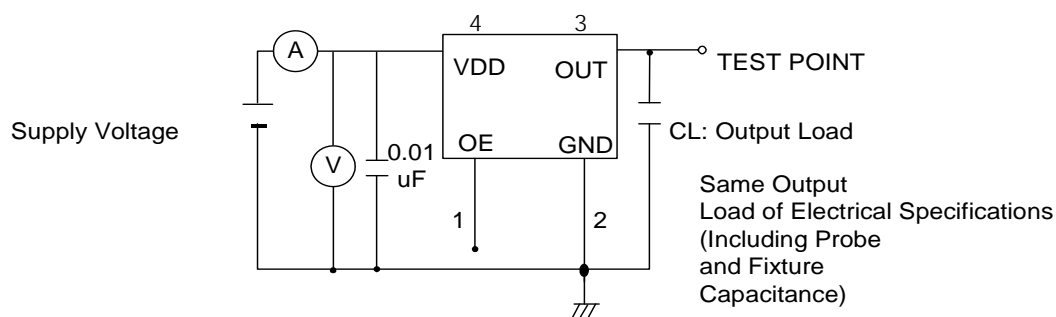
	Parameters	Condition	Electrical Specifications			
			MIN	TYP	MAX	UNITS
1	Nominal Frequency		12.000000			MHz
2	Oscillation Mode		Fundamental			
3	Operating Temperature		-40	~	85	°C
4	Storage Temperature		-55	~	125	°C
5	Frequency Stability	Note 1	-	-	±50	ppm
6	Supply Voltage (+3.3 V)		2.97	3.3	3.63	V
7	Current Consumption		-	-	20	mA
8	Standby Function		YES			
9	Output Type		CMOS			
10	Output Load		15			pF
11	Output Voltage High +25 °C		90%VDD	-	-	V
12	Output Voltage Low +25 °C		-	-	10%VDD	V
13	Rise Time	10%~90% Output Swing	-	-	5	nS
14	Fall Time	90%~10% Output Swing	-	-	5	nS
15	Symmetry or Duty Cycle		45	50	55	%
16	Start-up Time	To 90% of Final Amplitude	-	-	10	mS
17	Enable Voltage High (Logic 1)	Note 2	70%VDD	-	-	V
18	Enable Voltage Low (Logic 0)	Note 2	-	-	30%VDD	V
19	Output Enable Delay Time		-	-	150	uS
20	Output Disable Delay Time		-	-	150	uS
21	Aging	1st. Year at 25°C	-	-	±3	ppm
22	Phase Jitter	12kHz - 20MHz	-	-	1	pS rms

Note 1:Inclusive of frequency tolerance at 25°C, variation over temperature, supply voltage variation, aging and vibration

Note 2:Output will be enable if OE is Logic 1 or open ; Output will be disable if OE is Logic 0.

Note 3:The standard testing environment except temperature test is 25±5°C, 40%~70% relative humidity.

### TESTING CIRCUIT



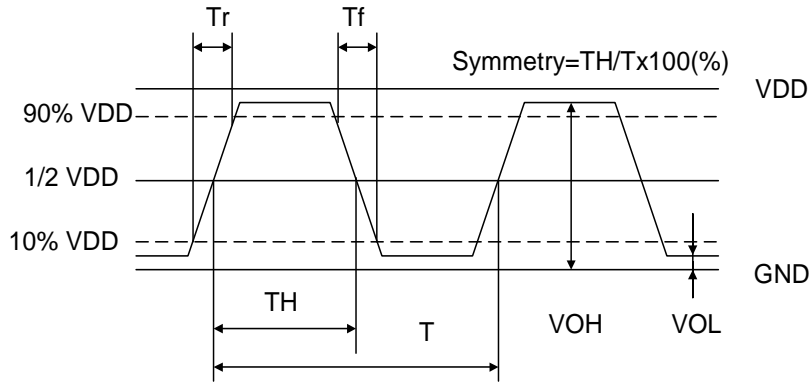
Testing Circuit Note:

- (1) Above testing circuits cover all the specifications except temperature test & Jitter measurement.
- (2) All the testing equipments are 50Ohm terminal.
- (3) OE terminal is open connection except OE function test.



**WAVEFORM CONDITIONS**

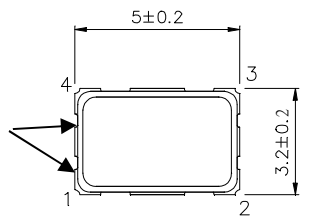
Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.



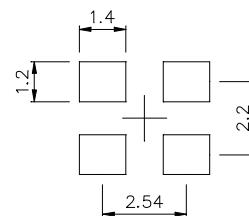
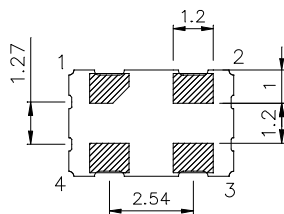
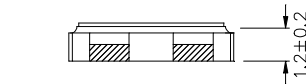
**DIMENSIONS**

(Unit:mm)

Crystal DLD2 measurement terminal (Note: #1)



- Pad Functions:
1. ENABLE CONTROL
  2. GND
  3. OUT PUT
  4. VDD

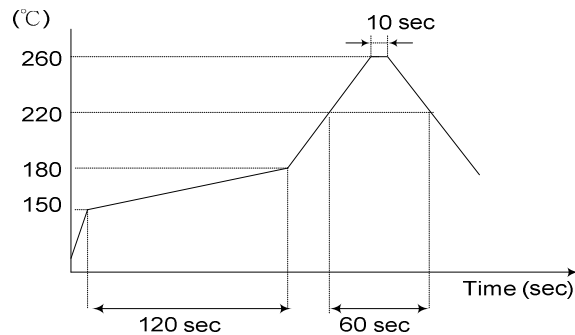


Note: #1. DLD2 / Drive Level Dependency 2 Maximum resistance minus minimum resistance.

**SUGGESTED REFLOW PROFILE**

Total time : 200 sec. Max.

Solder melting point :220 °C

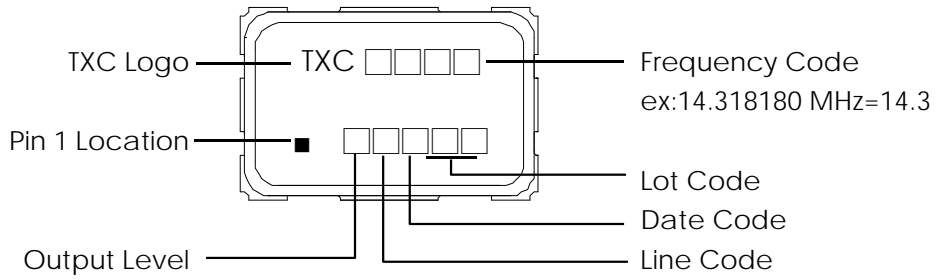




**TXC CORPORATION**

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**MARKING**



Output Level:

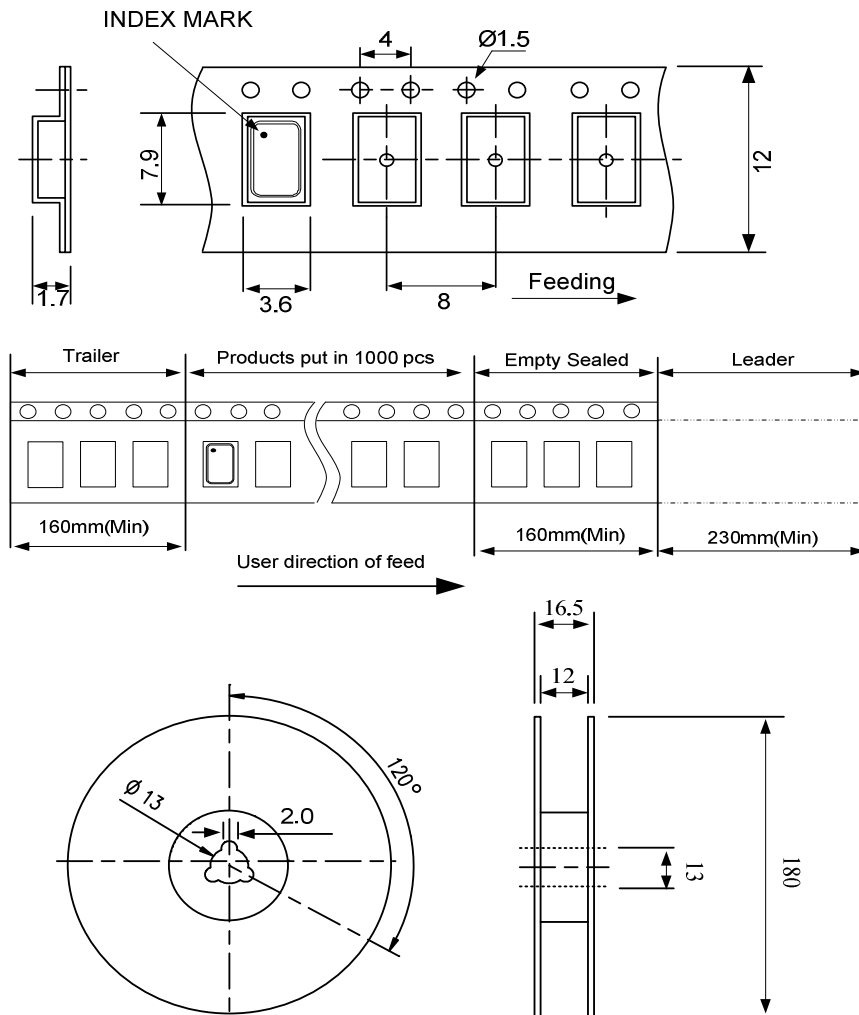
VDD(V)	5	3.3	2.8	2.5	1.8	2.9	3.0	2.85	2.6	2.55	2	1.5	2.7
CODE	A	B	C	D	E	F	G	H	J	K	L	M	N

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
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

**PACKING**





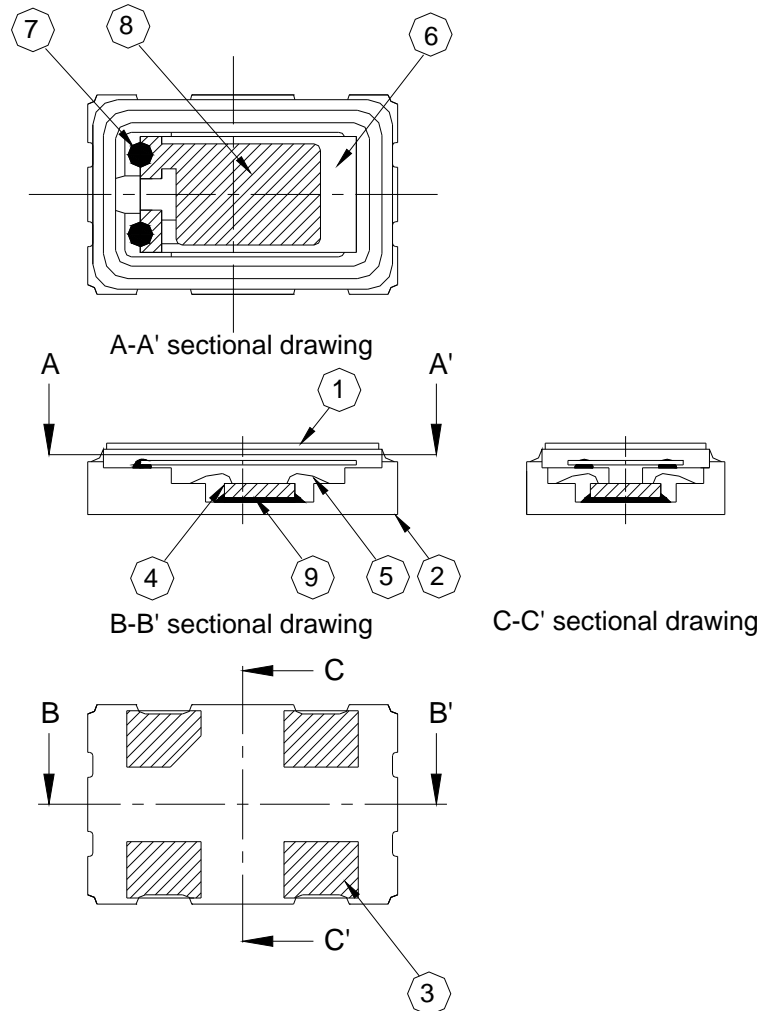
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### ■ STRUCTURE ILLUSTRATION



NO	COMPONENTS	MATERIALS	FINISH/SPECIFICATIONS
1	Lid	Kovar (Fe/Co/Ni)	-
2	Base (Package)	Ceramic (Al <sub>2</sub> O <sub>3</sub> ) + Kovar (Fe/Co/Ni)+ Ag/Cu	-
3	PAD	Au	Tungsten metalize + Ni plating + Au plating
4	IC chip	-	-
5	Bonding wire	Au	Pad 1 options : NC is 5 wires , EN is 6 wires.
6	Crystal blank	SiO <sub>2</sub>	-
7	Conductive adhesive	Ag	Silicon resin
8	Electrode	Noble Metal	-
9	Die attached	Conductive (Ag)	Epoxy resin

### ■ WEIGHT:

0.058±0.001 g/pcs

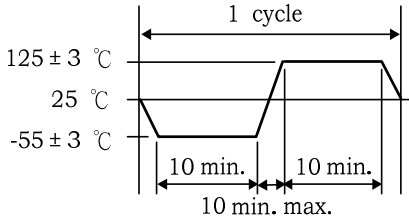


## ■ RELIABILITY SPECIFICATIONS

### 1.Mechanical Endurance

No.	Test Item	Test Methods	REF. DOC
1	Drop Test	75 cm height, fall freely onto concrete floor 3 times.	JIS C6701
1	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	Vibration	Frequency range 10 ~ 2000 Hz Amplitude 1.52 mm Sweep time 20 minutes Perpendicular axes each test time 4 Hrs (Total test time 12 Hrs)	MIL-STD-883E
1	Gross Leak	Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2kg / cm <sup>2</sup>	MIL-STD-883E
2	Fine Leak	Pre-condition - Helium Bomging 4.5 Kgf / cm <sup>2</sup> for 2 hrs Tested by mass-spectrometer	
2	Solderability	Temperature 245 °C ± 5°C 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	Resistance To Soldering Heat	Pre-heat temperature 125 °C Pre-heat time 60 ~ 120 sec. Test temperature 260 ± 5 °C Test time 10 ± 1 sec.	MIL-STD-202F
2	High Temp. Storage	+ 125 °C ± 3 °C for 1000 Hrs	MIL-STD-883E
2	Low Temp. Storage	- 40 °C ± 3 °C for 1000 Hrs	
2	Thermal Shock (Air to Air)	Total 100 cycles of the following temperature cycle 	MIL-STD-883E
3	Pressure Cooker Test	120 ± 3°C , RH100% , 2 bar ,for 240 Hrs	JESD22-A102-C
3	High Temp & Humidity	85°C ± 3°C, RH 85% , 1000 Hrs	JIS C5023
3	Aging	85°C ± 3°C, Voltage input by specification, 1000 Hrs	JIS C6701



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