



SPECIFICATION FOR APPROVAL

CUSTOMER	:	
PRODUCT TYPE	:	SMD SEAM SEALING CXO 5.0*3.2
NOMINAL FREQ.	:	24.000000MHz
TXC P/N	:	7C24000012
REVISION	:	A5
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: Product Specification Sheet

- 1
- 2
- 3
- 4
- 5

RoHS Compliant



TXC CORPORATION

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PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD SEAM SEALING CXO 5.0*3.2

NOMINAL FREQ. : 24.000000MHz

TXC P/N : 7C24000012

REVISION : A5

PE/RD	QA	MFG
		
27-Sep-07	27-Sep-07	27-Sep-07

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



<u>Rev</u>	<u>Revise page</u>	<u>Revise contents</u>	<u>Date</u>	<u>Ref.No.</u>	<u>Reviser</u>
A1	N/A	Initial released	17-Mar-05	N/A	Yachuan Miao
A2	5	Suggested Reflow Profile Change	2-Jun-05	ECN-05P050501	Yachuan Miao
A3	-	Document version chang C to D	21-Sep-06	DCN-06P030701	Yachuan Miao
A4	3	Marking 取消 “Administrative Symbol”	10-Aug-07	DCN-07P072403	Yachuan Miao
A5	2	Output Disable Delay Time,Output Enable Delay Time Change(100ns to 150 us)	27-Sep-07	ECN-07P091202	Yachuan Miao



ELECTRICAL SPECIFICATIONS

Standard atmospheric conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature : $25\pm5^{\circ}\text{C}$
Relative humidity : 40%~70%

If there is any doubt about the results, measurement shall be made within the following limits:

Ambient temperature : $25\pm3^{\circ}\text{C}$
Relative humidity : 40%~70%

Measure equipment

Electrical characteristics measured by MD 37WX-05M or equivalent.

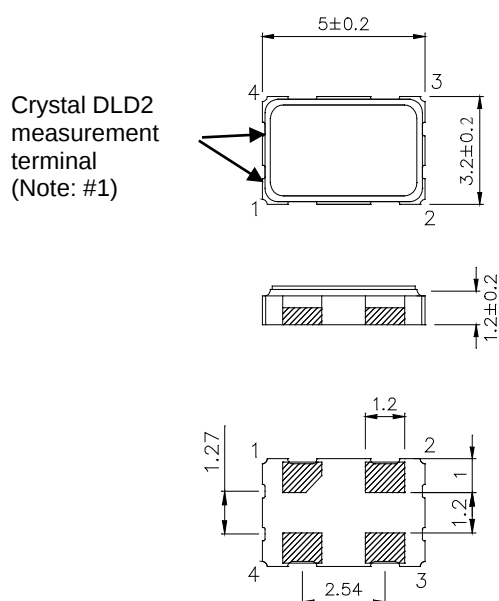
Crystal cutting type

The crystal is using AT CUT (thickness shear mode).

Unit Weight:

0.058±0.001 g/pcs

	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	-	24.000000			MHz	-
2	Frequency Stability	-	± 30			ppm	-
3	Operating Temperature	Topr	-10	25	70	$^{\circ}\text{C}$	-
4	Storage Temperature	Tstg	-55	~	125	$^{\circ}\text{C}$	-
5	Supply Voltage	VDD	$3.3 \pm 10\%$			V	-
6	Input Current	Icc	-	-	50	mA	-
7	Enable Control	-	Yes			-	Pad 1
8	Output Load : CMOS	CL	15			pF	-
9	Output Voltage High	VoH	90%Vdd	-	-	V	-
10	Output Voltage Low	VoL	-	-	10%Vdd	V	-
11	Rise Time	Tr	-	-	3	ns	10%→90%VDD Level
12	Fall Time	Tf	-	-	3	ns	90%→10%VDD Level
13	Symmetry (Duty ratio)	TH/T	45	~	55	%	-
14	Start-up Time	Tosc	-	-	10	ms	-
15	Enable Voltage High	Vhi	70%Vdd	-	-	V	-
16	Disable Voltage Low	Vlo	-	-	30%Vdd	V	-
17	Aging	-	± 3			ppm/yr.	1st. Year at 25°C
18	Output Disable Delay Time	T off	-	-	150	us	-
19	Output Enable Delay Time	T on	-	-	150	us	-

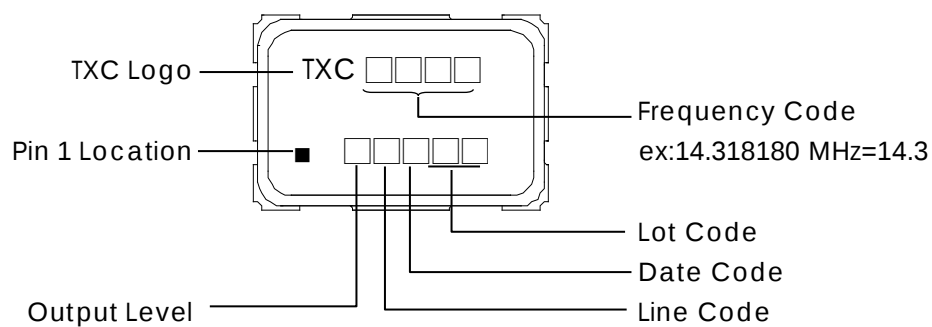
**DIMENSIONS****Pin Functions:**

1. ENABLE CONTROL
2. GND
3. OUT PUT
4. VDD

Note: #1. DLD2 / Drive Level Dependency 2

Maximum resistance minus minimum resistance.

Unit:mm

MARKING

Output Level:

VDD	5.0V	3.3V	2.8V	2.5V	1.8V	2.9V	3.0V	2.85V	2.6V
CODE	A	B	C	D	E	F	G	H	J

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

Production location: Taiwan

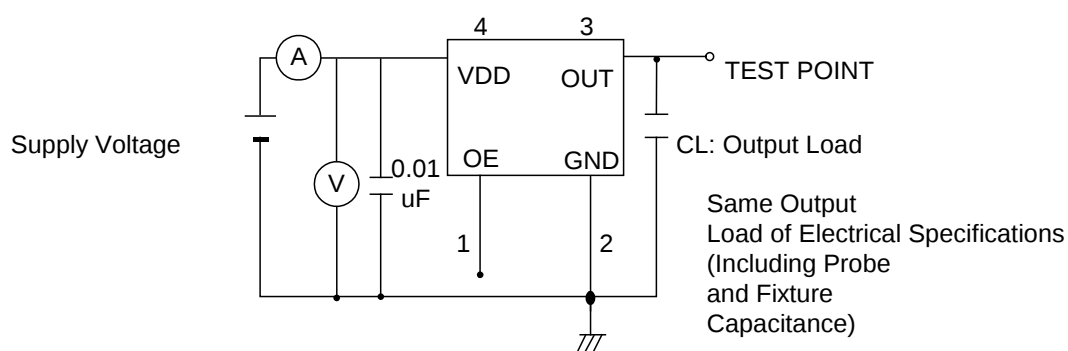


TEST DIAGRAM

Control input (output enable/disable)

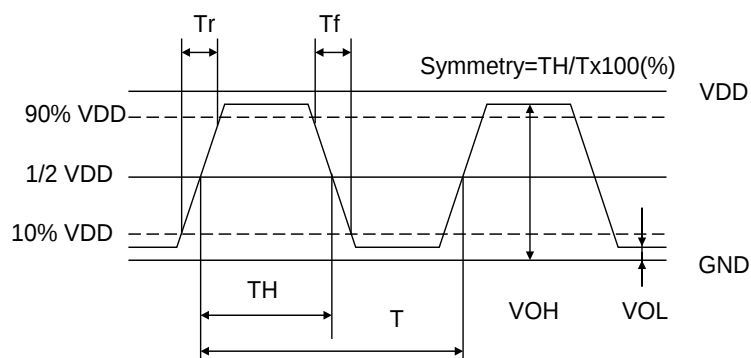
Logic 1 or open on pad 1: Oscillator output

Logic 0 on pad 1 : Disable output to high impedance



WAVEFORM CONDITIONS

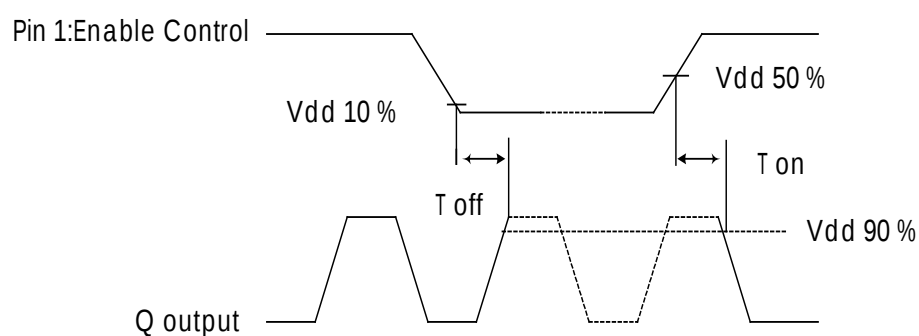
Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.





■ OUTPUT ENABLE / DISABLE DELAY

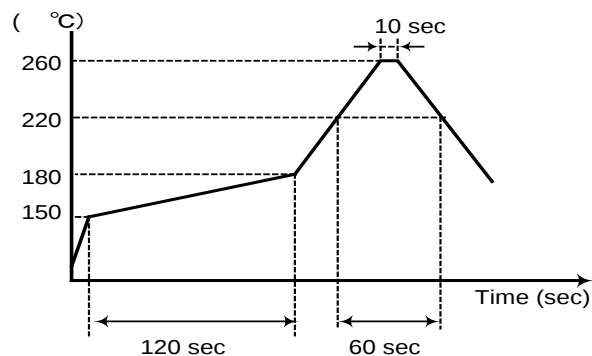
The following figure shows the oscillator timing during normal operation . Note that when the device is in standby, the oscillator stops. When standby is released, the oscillator starts and stable oscillator output occurs after a short delay.

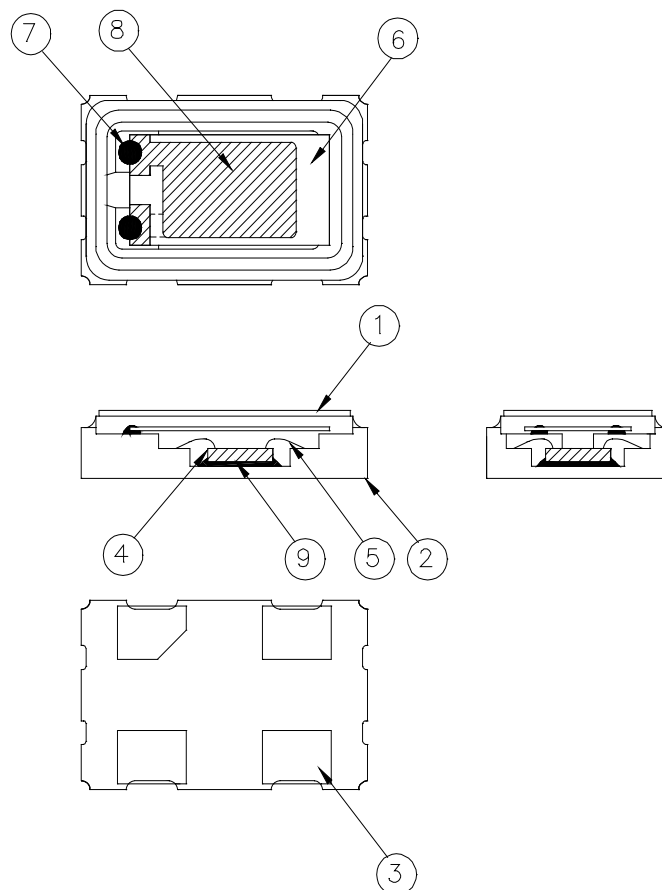


■ SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

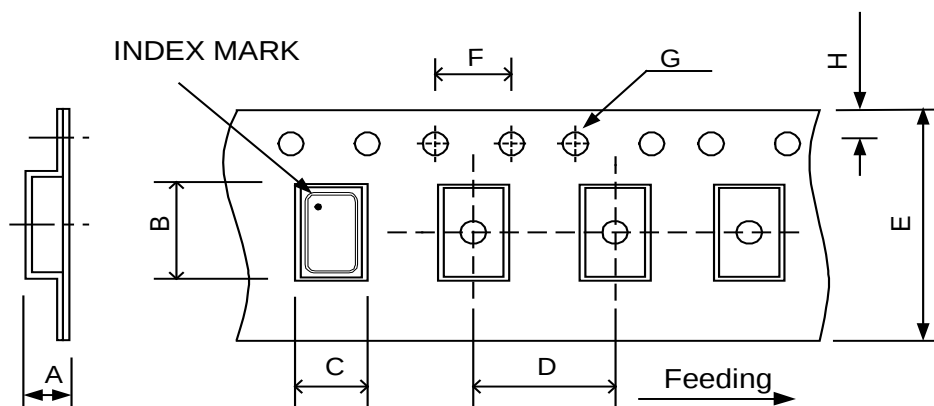
Solder melting point : 220 °C



**■ STRUCTURE ILLUSTRATION**

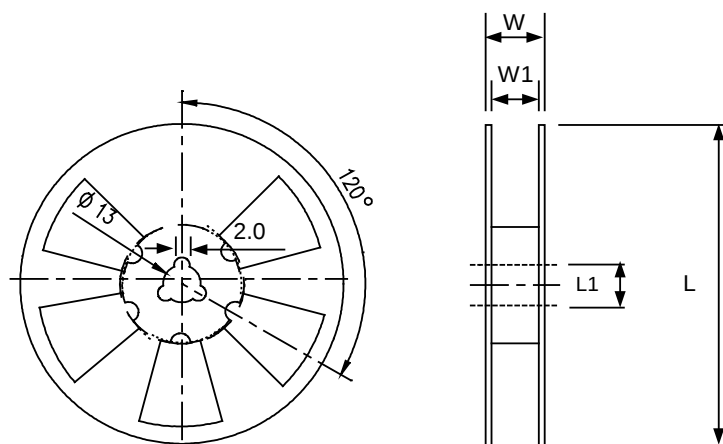
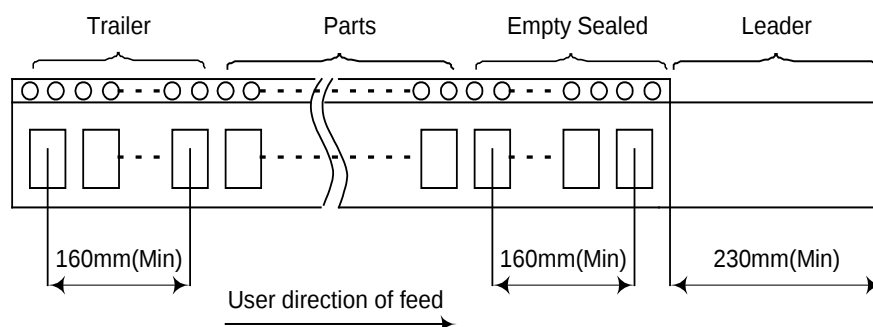
NO	COMPONENTS	MATERIALS	QTY	FINISH/SPECIFICATIONS
1	Lid	Kovar (Fe/Co/Ni)	1	-
2	Base (Package)	Ceramic (Al_2O_3) + Kovar (Fe/Co/Ni)+ Ag/Cu	1	-
3	PAD	Au	4	Tungsten metalize + Ni plating + Au plating
4	IC chip	-	1	-
5	Bonding wire	Au	5 or 6	Pad 1 options : NC is 5 wires , EN is 6 wires.
6	Crystal blank	SiO_2	1	-
7	Conductive adhesive	Ag	4	Silicon resin
8	Electrode	Cr & Ag	2	-
9	Conductive adhesive	Ag	1	Epoxy resin

■ PACKING : (EIA-481-2)



DIMENSIONS	A	B	C	D	E	F	G	H	
	1.40	5.40	3.60	8.00	12.00	4.00	1.55	1.75	(UNIT : mm)

REMARK :



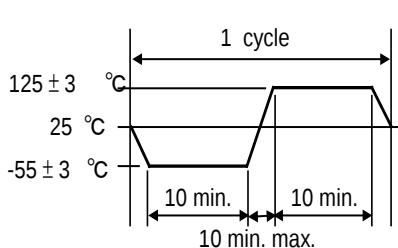
DIMENSIONS	L	L1	W	W1	pcs / Reel (UNIT : mm)
	180	13	16.5	12	Standard Reel Quantity is 1,000 pcs per reel

■ 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/20G Sweep time 20 minute perpendicular axes each test time 4 hours (Total test time 12 hours)	MIL-STD-883E
1	Gross Leak	Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2Kg / cm ²	MIL-STD-883E
2	Fine Leak	Helium Bomging 4.5 Kg / cm ² for 2 hr	
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 ± 12 hours	MIL-STD-883E
2	Low Temp. Storage	- 40 °C ± 3 °C for 1000 ± 12 hours	
2	Thermal Shock	Total 100 cycles of the following temperature cycle  The diagram shows a temperature cycle with three levels: 125 ± 3 °C, 25 °C, and -55 ± 3 °C. A '1 cycle' is defined as a transition from 125 °C to 25 °C, a dwell at 25 °C for 10 min., a transition from 25 °C to -55 °C, a dwell at -55 °C for 10 min., and a transition back to 125 °C. The dwell times at the extreme temperatures are specified as 10 min. max.	MIL-STD-883E
3	High Temp & Humidity	85°C ± 3°C, RH 85% , 1000Hrs	JIS C5023
3	Pressure Cooker Storage	121 ± 3°C , RH100% , 2 bar , 240Hrs	JIS C6701