TXC CORPORATION

5F, NO. 16, Sec. 2 Chungyang S Rd., Peitou, Taipei, Taiwan, R. O. C..
TEL : 886-2-2894-1202 , 886-2-2895-2201 FAX : 886-2-2894-1206 , 886-2-2895-6207 www.txc.com.tw

SPECIFICATION FOR APPROVAL

CUSTOMER	:	
PRODUCT TYPE	:	SMD SEAM SEALING X'TAL 3.2*2.5
NOMINAL FREQ.	:	32.000000MHz
TXC P/N	:	7M32000035
REVISION	:	A2
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.

Attachment: Product Specification Sheet

1
2
3
4
5

RoHS Compliant

TXC CORPORATION

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PRODUCT SPECIFICATION SHEET

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NOMINAL FREQ.	:	32.000000MHz
TXC P/N	:	7M32000035
REVISION	:	A2

PE/RD	QA	MFG
Scott. Chen	Randy Chang	
16-May-05	*16-May-05*	*16-May-05*

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

Rev	Revise page	Revise contents	Date	Ref.No.	Reviser	Page	Ver.
A1	N/A	Initially revised	16-Mar-05	N/A	Sharon Miao	1	A2
A2	1,3	Suggested Reflow Profile Change	16-May-05	ECN-05P050501	Sharon Miao	2	A1
						3	A2
						4	A1
						5	A1
						6	A1

ELECTRICAL SPECIFICATIONS

Standard atmospheric conditions

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

Ambient temperature : 22±5℃

Relative humidity : 40%~70%

If there is no doubt about the results, measurement shall be made within the following limits:

Ambient temperature : 22±1℃

Relative humidity : 40%~70%

Measure equipment

Electrical characteristics measured by HP E5100A or equivalent.

Crystal cutting type

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

Unit Weight:

0.018±0.001 g/pcs

	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	FL		32.000000		MHz	-
2	Oscillation Mode	-		Fundamental		-	-
3	Load Capacitance	CL		12		pF	-
4	Frequency Tolerance	-		±10		ppm	at 25 ℃ ± 3 ℃
5	Frequency Tolerance	-		±10		ppm	Over Operating Temp. Range (Reference 25℃)
6	Operating Temperature	-	-20	~	70	℃	-
7	Aging	-		±2		ppm	1st Year
8	Drive Level	DL	-	50	-	uW	-
9	Effective Resistance Rr	Rr	-	-	50	Ω	-
10	Shunt Capacitance C0	C0	-	-	5	pF	-
11	Motional Capacitance C1	C1	-	-	NA	fF	-
12	Insulation Resistance	-	500	-	-	MΩ	at DC 100V
13	Storage Temperature Range	-	-55	~	125	℃	-

ELECTRICAL SPECIFICATIONS

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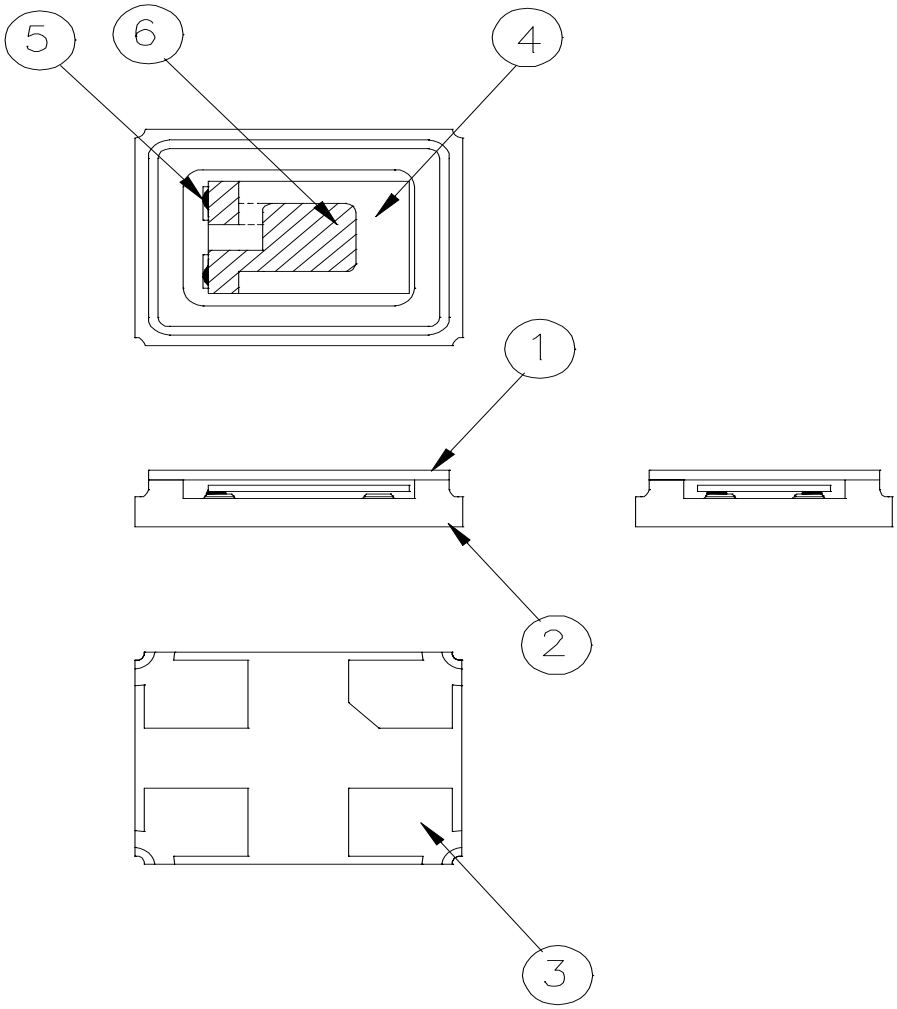
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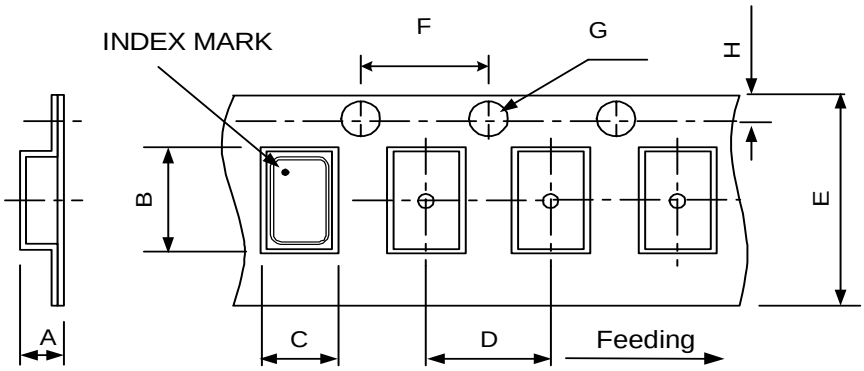
	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	FL		32.000000		MHz	-
2	Oscillation Mode	-		Fundamental		-	-
3	Load Capacitance	CL		12		pF	-
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7	Aging	-		±2		ppm	1st Year
8	Drive Level	DL	-	50	-	uW	-
9	Effective Resistance Rr	Rr	-	-	50	Ω	-
10	Shunt Capacitance C0	C0	-	-	5	pF	-
11	Motional Capacitance C1	C1	-	-	NA	fF	-
12	Insulation Resistance	-	500	-	-	MΩ	at DC 100V
13	Storage Temperature Range	-	-55	~	125	℃	-

STRUCTURE ILLUSTRATION



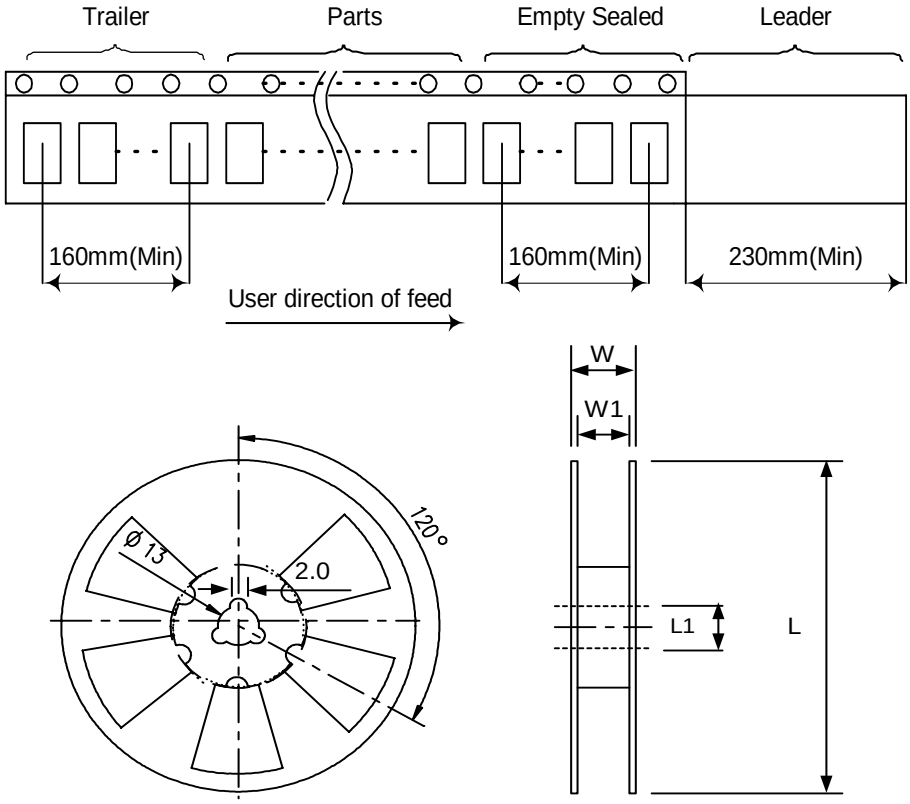
NO	COMPONENTS	MATERIALS	QTY	FINISH/SPECIFICATIONS
1	Cap	Metal (Fe)	1	-
2	Base	Ceramic	1	Color black
3	PAD	Au	4	Tungsten metalize + Ni plating + Au plating
4	Crystal blank	SiO2	1	-
5	Conductive adhesive	Ag	4	Epoxy resin
6	Electrode	Ag + Cr	2	-

■ PACKING : (EIA-481-2)



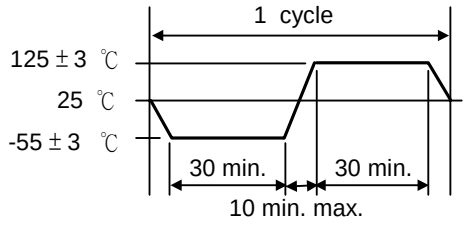
DIMENSIONS	A	B	C	D	E	F	G	H	
	1.40	3.40	2.70	4.00	8.00	4.00	1.50	1.75	(UNIT : mm)

REMARK :



DIMENSIONS	L	L1	W	W1	pcs / Reel (UNIT : mm)
	178	13	11.5	8	Standard Reel Quantity is 3,000 pcs per reel

■ RELIABILITY SPECIFICATIONS

No.	Test Item	Test Methods		REF.DOC
1	Drop Test	150 cm height, fall freely onto stainless plate 3 times.		
2	Mechanical Shock	Device are shocked to half sine wave (1000 G) three mutually pendicular axes each 3 times. 0.5m sec. duration time		
3	Vibration	Frequency range Amplitude Sweep time Pendicular axes each test time	10 ~ 2000 Hz 1.52 mm 20 minute 4 hours (Total test time 12 hours)	MIL-STD-883E
4	Solderability	Temperature Immersing depth Immersion time Flux	255 ℃ ± 5℃ 0.5 mm minimum 10 ± 0.5 seconds Rosin resin methyl alcohol solvent (1 : 4)	MIL-STD-883E
5	Resistance To Soldering Heat	Pre-heat temperature Pre-heat time Test temperature Test time	125 ℃ 60 ~ 120 sec. 260 ± 5 ℃ 5 ± 1 sec.	MIL-STD-202F
6	High Temp. Storage	+ 125 ℃ ± 3 ℃ for 5000 ± 12 hours		JIS C 0021
7	Low Temp. Storage	- 40 ℃ ± 3 ℃ for 500 ± 12 hours		JIS C 0020
8	Thermal Cycles	Total 100 cycles of the following temperature cycle 		

Test Report

TXC COROPATION
NO. 4, KUNG YEH 6TH ROAD, PING CHENG INDUSTRIAL DISTRICT, PING CHENG CITY, TAO YUAN HSIEN, TAIWAN, R. O. C.

Report No. : CE/2004/B4941
Date : 2004/12/03
Page : 1 of 3

The following merchandise was (were) submitted and identified by the client as :

Type of Product	:	QUARTZ CRYSTAL UNIT
Style/Item No	:	SMD X' TAL
Sample Received	:	2004/11/26
Testing Date	:	2004/11/26 TO 2004/12/03

==========

Test Result : - Please see the next page -

Daniel Yen, M.R. / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.

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SGS

Test Report

TXC COROPATION
NO. 4, KUNG YEH 6TH ROAD, PING CHENG INDUSTRIAL DISTRICT, PING CHENG CITY, TAO YUAN HSIEN, TAIWAN, R. O. C.

Report No. : CE/2004/B4941
Date : 2004/12/03

Test Result

PART NAME NO.1 : PLEASE REFER TO THE PHOTO(S) ATTACHED.(MIXED ALL PARTS)

Test Item (s):	Unit	Method	MDL	Result				
				No.1				
PBBs(Polybrominated biphenyls)(CAS NO:059536-65-1)	%	With reference to USEPA3540 or USEPA3550. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/261/EEC, and 76/769/EEC)	0.0005	N.D.				
PBBEs(PBDEs)(Polybrominated biphenyl ethers)	%	With reference to USEPA3540 or USEPA3550. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.				

Test Item (s):	Unit	Method	MDL	Result				
				No.1				
Chromium VI (Cr+6)	ppm	As per US EPA 7196A and US EPA 3060A.	2	N.D.				
Cadmium (Cd)	ppm	ICP-AES after as per EN 1122, method B:2001 or other acid digestion.	2	N.D.				
Mercury (Hg)	ppm	ICP-AES after as per US EPA 3052 or other acid digestion.	2	N.D.				
Lead (Pb)	ppm	ICP-AES after as per US EPA 3050B or other acid digestion.	2	N.D.				

NOTE: (1) N.D. = Not detected (<MDL)
(2) ppm = mg/kg
(3) MDL = Method Detection Limit

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