SERIES NO: VER A

SPECIFICATION FOR APPROVAL

CUSTOMER	
PRODUCT TYPE	HC-49/S SMD
NOMINAL FREQ.	14.318180 MHz
TXC P/N	9C14300068
CUSTOMER P/N	
ISSUE DATE	08/14/2007

CUSTOMER'S APPROVAL
(Please return one copy with approval)

APPROVED	QA
	

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

SGS

Test Report

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

Report No. : CE/2004/C0620
Date : 2004/12/10

Test Result

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

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), 83/264/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	36.8			

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

The content of this PDF file is in accordance with the original issued reports for reference only. This Test Report cannot be reproduced, except in full, without prior written permission of the Company

SMD QUARTZ CRYSTAL UNIT

(9C SERIES) HC-49/S SMD PACKAGE

PREPARED	APPROVED	QA
SHU-CHEN KO	SIMON	TON KSIEH

CONTENT

SPECIFICATIONS PAGE

- ELECTRICAL SPECIFICATIONS 2
- DIMENSIONS 3
- SUGGESTED REFLOW PROFILE 3
- MARKING 4
- RELIABILITY SPECIFICATIONS 5
- PACKING 6

ATTACHMENT(S) (optional)

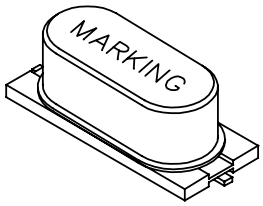
TESTING DATA

- ELECTRICAL CHARACTERISTICS TEST A ☐ YES ☑ NO
- TEMPERATURE CHARACTERISTICS TEST B ☐ YES ☑ NO

SMD QUARTZ CRYSTAL UNIT

(9C SERIES) HC-49/S SMD PACKAGE

PREPARED	APPROVED	QA
SHU-CHEN KO	SIMON	TON KSIEH



*The detail marking spec.
please refer to marking code page

ELECTRICAL SPECIFICATIONS

1.	Nominal Frequency	14.318180 MHz
2.	Oscillation Mode	Fundamental
3.	Load Capacitance	18.0 pF
4.	Frequency Tolerance (25 ^{o}C)	+/- 20 ppm
5.	Effective Series Resistance	20 Ohms Max.
6.	Shunt Capacitance (C0)	7.0 pF Max.
7.	Motional Capacitance (C1)	N/A
8.	Drive Level	500 uW
9.	Operation Temperature Range	-10 ^{o}C ~ +60 ^{o}C
10.	Stability Over Temperature Range	+/- 20 ppm (related to 25 ^{o}C)
11.	Insulation Resistance	500 MOhms Min. at DC 100V
12.	Attenuation of Spurious Frequency Amplitude	N/A
13.	Ratio of Holder to Motional (C0/1)	N/A
14.	Storage Temperature	-40 ^{o}C ~ +85 ^{o}C
15.	Aging	+/- 5.0 ppm/year

* Measured by SAUNDERS 250A/250B CRYSTAL IMPEDANCE METER.

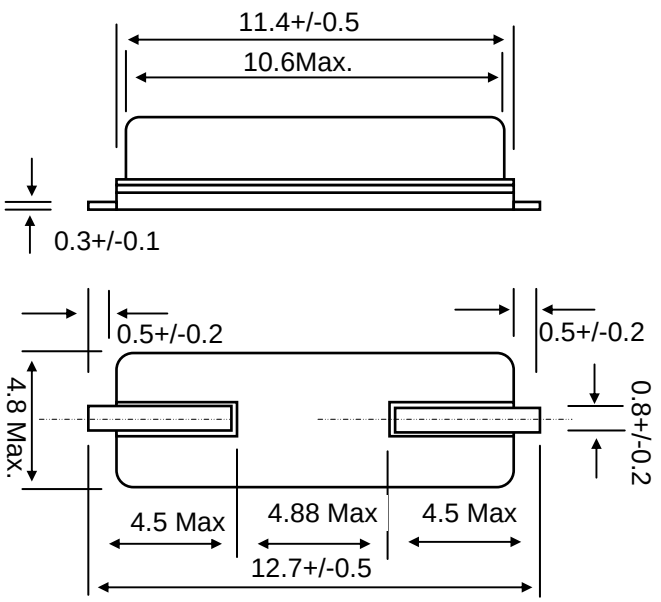
SMD QUARTZ CRYSTAL UNIT

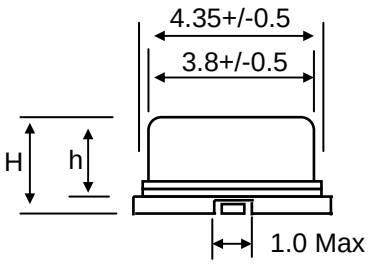
(9C SERIES) HC-49/S SMD PACKAGE

PREPARED	APPROVED	QA
SHU-CHEN KO	SIMON	TON KSIEH

DIMENSIONS

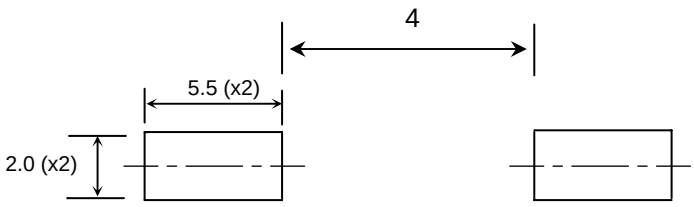
UNIT:mm





CHOOSE	TYPE	H(SMDHIGH)	h(BODY HIGH)
■	S3	3.8+/-0.3	3.3+/-0.3
□	S2	3.0+/-0.3	2.3+/-0.3

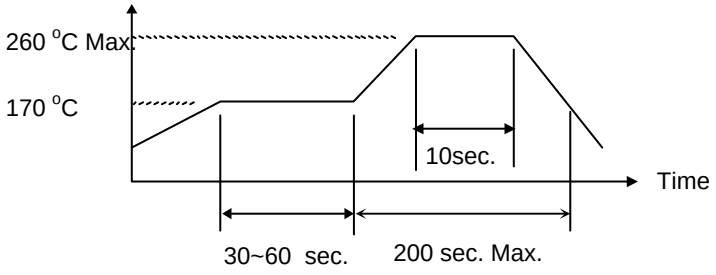
Suggested Layout



SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

Solder melting point :220 °C



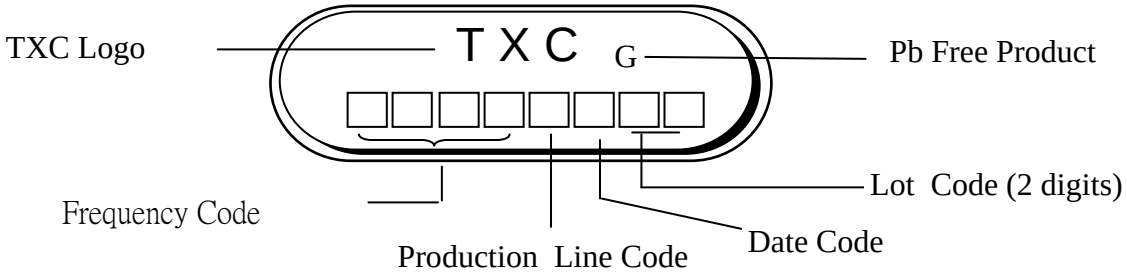
SMD QUARTZ CRYSTAL UNIT

(9C SERIES) HC-49/S SMD PACKAGE

PREPARED	APPROVED	QA
SHU-CHEN KO	SIMON	TON KSIEH

MARKING

MARKING For Pb Free Parts：



Date Code:

YEAR \ MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2001 2005 2009 2013 2017	A	B	C	D	E	F	G	H	J	K	L	M
2002 2006 2010 2014 2018	N	P	Q	R	S	T	U	V	W	X	Y	Z
2003 2007 2011 2015 2019	a	b	c	d	e	f	g	h	j	k	l	m
2004 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.

For example : Marking



→

Introduction：

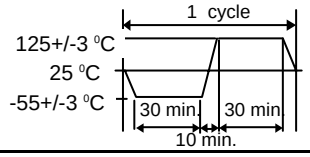
Pb Free Product
49S 14.31818 MHz
Fundamental
Made in NGB 2004/1 01Lot

SMD QUARTZ CRYSTAL UNIT

(9C SERIES) HC-49/S SMD PACKAGE

PREPARED	APPROVED	QA
SHU-CHEN KO	SIMON	TON KSIEH

RELIABILITY SPECIFICATIONS

No.	TEST ITEM	TEST METHODS	TEST CRITERIA	REF. DOC
1	Drop Test	50 cm Height, Fall freely onto firm wood for 3 Times.	dF/F<+/-5ppm dRs<+/-10%	JIS C6701
2	Fine Leak	Helium Bombing 5Kgf / cm^2 for 2 Hours .	Leak Rate Less Than $2x10^{-8}$ atm.cc/sec	MIL-STD-883E Method 1014.10
3	Gross Leak	125°C FC#40 ,120 Seconds.	No Continuous Bubble .	MIL-STD-883E Method 1014.10
4	Mechanical Shock	Device are shocked to half sine wave (1000 G) three mutually perpendicular axes each 3 times.	dF/F<+/-5ppm dRs<+/-10%	MIL-STD-883E Method 2002.4
5	Vibration	Frequency range 10 ~ 55 Hz Amplitude 10G Sweep Time 1 minute Test Time X,Y,Z Plan,each 2 hrs.	dF/F<+/-5ppm dRs<+/-10%	MIL-STD-883E Method 2007.3
6	Solderability	Temperature 260 °C +/- 5 °C Material H63A (Silver 2~3 %) Immersing depth 0.5 mm minimum Immersion time 5 +/- 0.5 seconds Flux Rosin resin methyl alcohol solvent (1 : 4)	Check by Microscope At Least 95% Coated	MIL-STD-883E Method 2003.7
7	Resistance To Soldering Heat	Test Temperature 260 +/- 5 °C Test Time 10 +/- 1 sec.	dF/F<+/-5ppm dRs<+/-10%	MIL-STD-202F Method 210D
8	Terminal Strength	2.5mm From terminal , bend 90°,3 times.	Lead without crack or broken.	MIL-STD-202F Method 208F
9	Thermal Shock	Total 5 cycles of the following temperature cycle 	dF/F<+/-5ppm dRs<+/-10%	MIL-STD-883E Method 1011.8

Measure in room temperature after each tests.

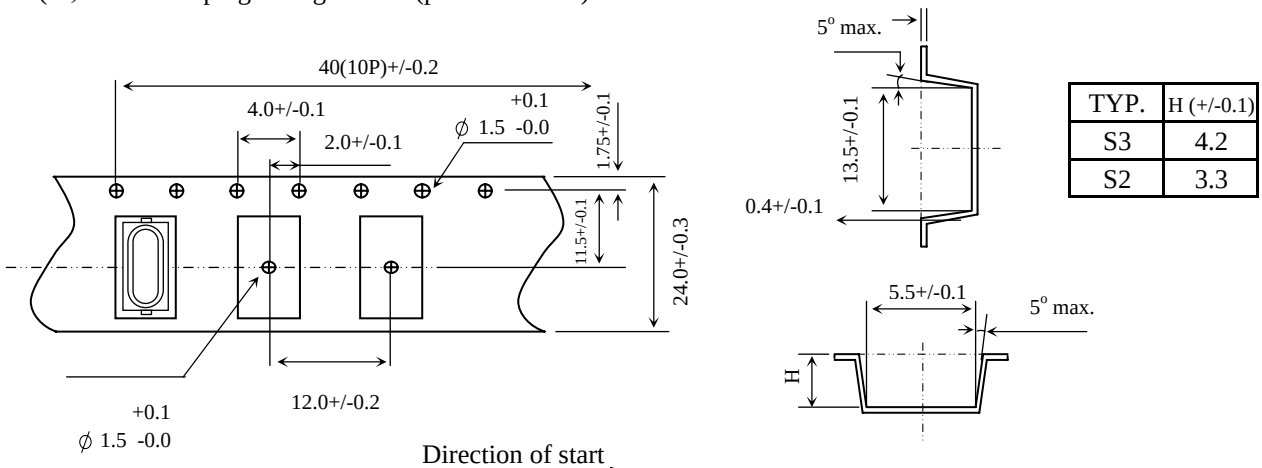
SMD QUARTZ CRYSTAL UNIT

(9C SERIES) HC-49/S SMD PACKAGE

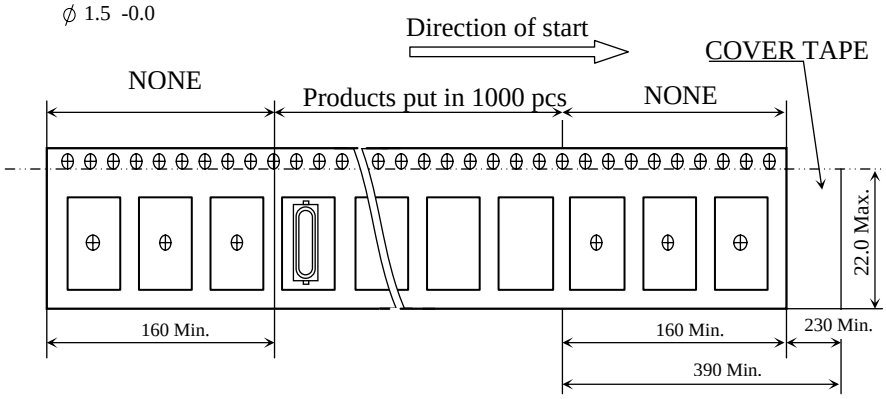
PREPARED	APPROVED	QA
SHU-CHEN KO	SIMON	TON KSIEH

(A) Tape and reel configuration:(Unit：mm)

(a) Emboss taping configuration. (per EIA-481-2)



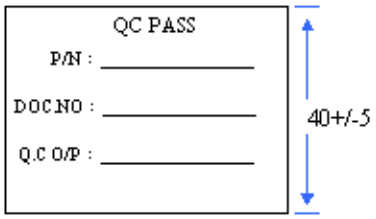
TYP.	H (+/-0.1)
S3	4.2
S2	3.3

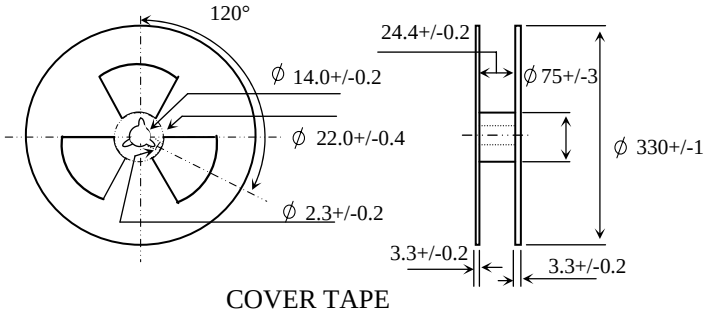


(b) Reel configuration.

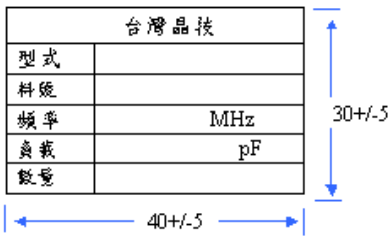
(B) Packing & Label :(Unit：mm)

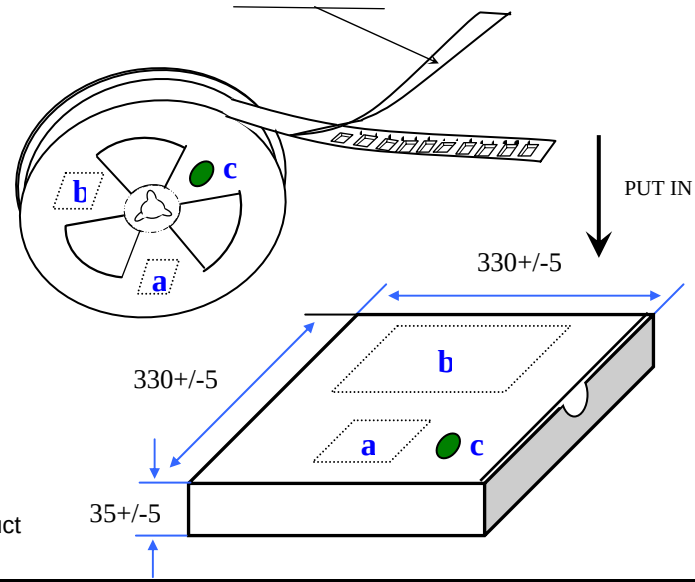
Label a



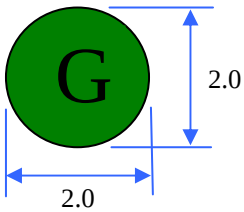


Label b





Label c



* "G" ： Pb-Free Product



TXC CORPORATION