

SPECIFICATION FOR APPROVAL

CUSTOMER	:	
PRODUCT TYPE	:	SMD SEAM SEALING X'TAL 3.2×2.5
NOMINAL FREQ.	:	40.000000MHz
TXC P/N	:	7M40000108
REVISION	:	A3
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.

MSL:Level 1
RoHS Compliant

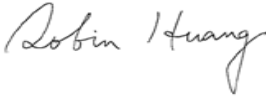
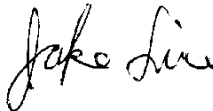
PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD SEAM SEALING X'TAL 3.2×2.5

NOMINAL FREQ. : 40.000000MHz

TXC P/N : 7M40000108

REVISION : A3

PE/RD	QA	MFG
 Robin Huang	 Samson Xiong	 Jake Liu
21-Mar-16	21-Mar-16	21-Mar-16

NOTE:

#####

(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

MSL:Level 1
RoHS Compliant

[illegible]

Spec Sheet Contents

No.	Content	Page
1	ELECTRICAL SPECIFICATIONS	P.3
2	DIMENSIONS	P.4
3	MARKING	P.4
4	FACTORY LOCATION	P.4
5	SUGGESTED REFLOW PROFILE& MANUAL SOLDER CONDITION	P.4
6	STRUCTURE ILLUSTRATION	P.5
7	EMBOSS CARRIER TAPE & REEL	P.6
8	PACKING	P.7
9	RELIABILITY SPECIFICATIONS	P.8~9

■ 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±5℃
Relative humidity : 40%~70%

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

Ambient temperature : 25±3℃
Relative humidity : 40%~70%

Measure equipment

Electrical characteristics measured by S&A250B or equivalent.

Crystal cutting type

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

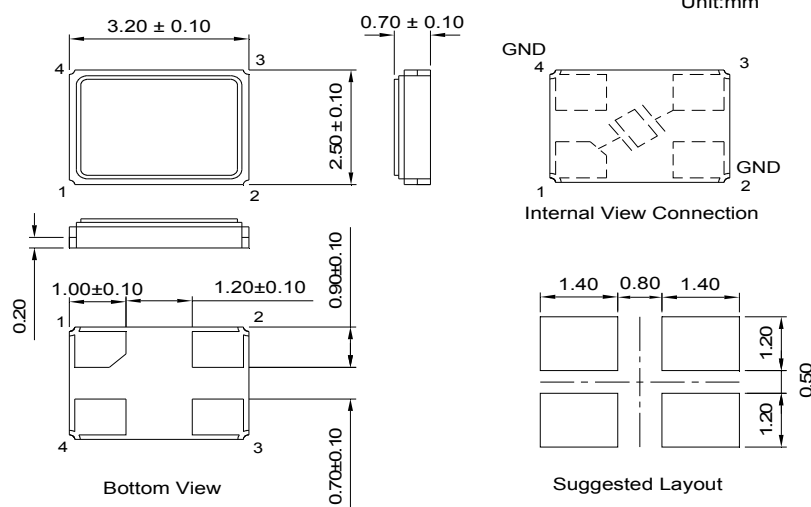
Unit Weight:

0.018±0.001 g/pcs

	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	FL	40.000000			MHz	-
2	Oscillation Mode	-	Fundamental			-	-
3	Load Capacitance	CL	10			pF	-
4	Frequency Tolerance	-	±10			ppm	at 25 °C ± 3 °C
5	Frequency Stability	-	-10	~	20	ppm	Over Operating Temp. Range (Reference 25 °C)
6	Operating Temperature	-	-20	~	100	°C	-
7	Aging	-	±1			ppm	1st Year
8	Drive Level	DL	-	100	500	uW	-
9	Effective Resistance Rr	Rr	-	-	30	Ω	-
10	Shunt Capacitance C0	C0	-	-	3	pF	-
11	Pulling Sensitivity	TS	-	12.6	-	ppm/pF	-
12	RLD2	-	-	-	30	Ohms	-
13	DLD2	-	-	-	10	Ohms	-
14	FDLD	-	-	-	10	ppm	-
15	SPDB	-	-	-	-3	dB	-
16	Insulation Resistance	-	500	-	-	MΩ	at DC 100V
17	Storage Temperature Range	-	-40	~	125	°C	-

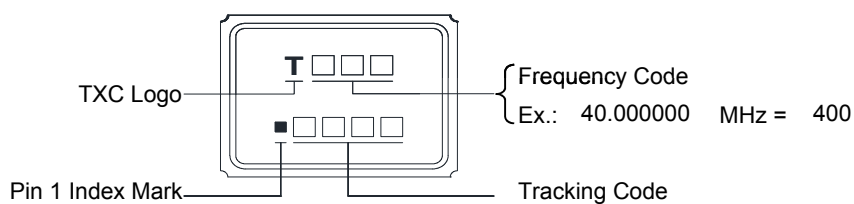
■ DIMENSIONS

(Unit:mm)



*Coplanarity of solderable areas Camber 0.10 mm Max

■ MARKING

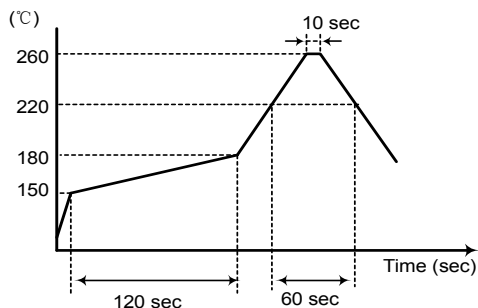


Production Location: Taiwan, China(Ningbo), China(Chungking).

■ SUGGESTED REFLOW PROFILE

Solder melting point : 220 ± 10 °C, 60 sec. Min.

Peak Temperature: 260 ± 5 °C, 10 sec. Max.



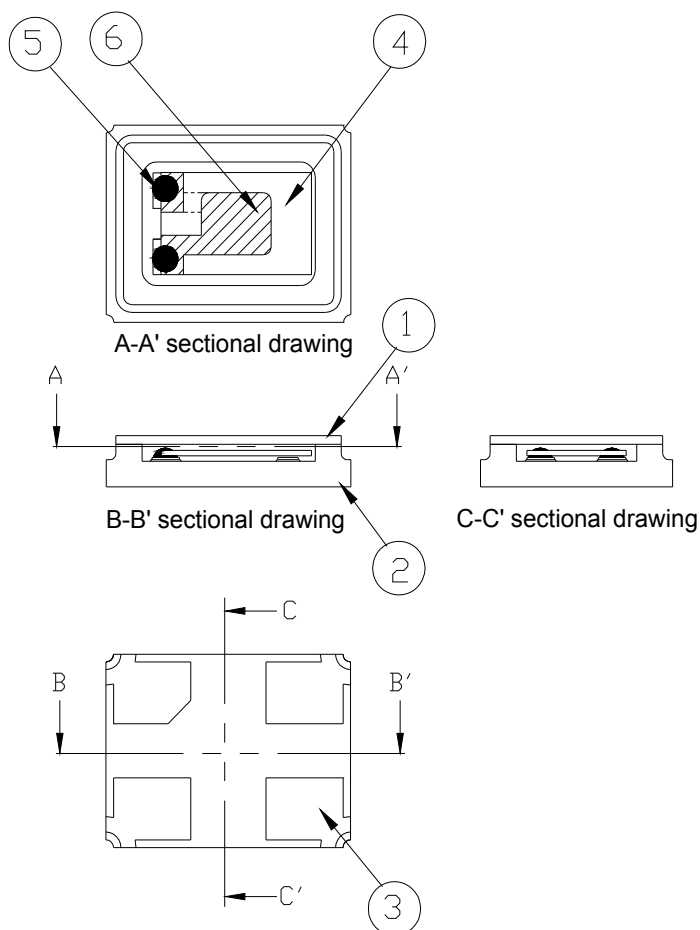
■ SUGGESTED MANUAL SOLDER CONDITION

Temperature: 350 ± 10 °C

Time: 3 sec.

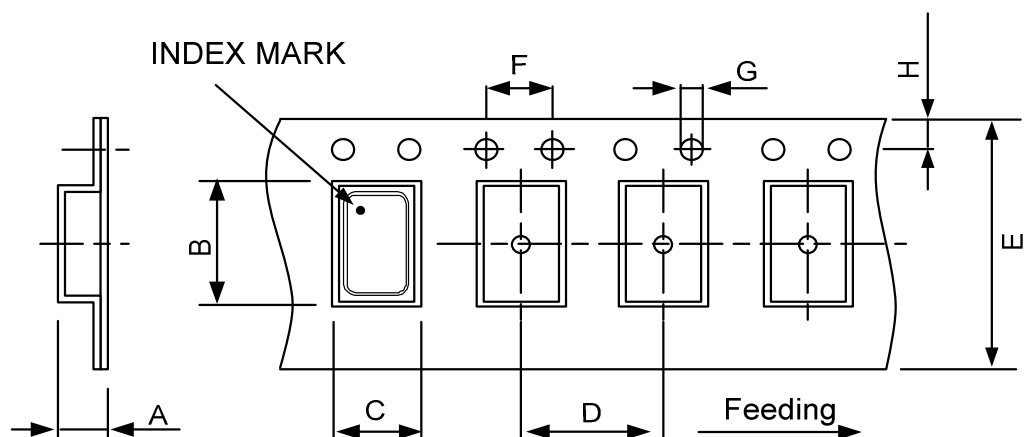
Re-solder times: twice

■ STRUCTURE ILLUSTRATION



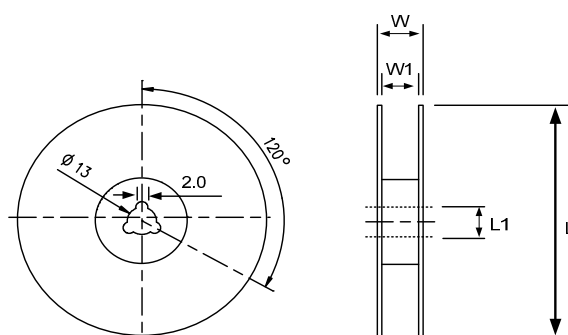
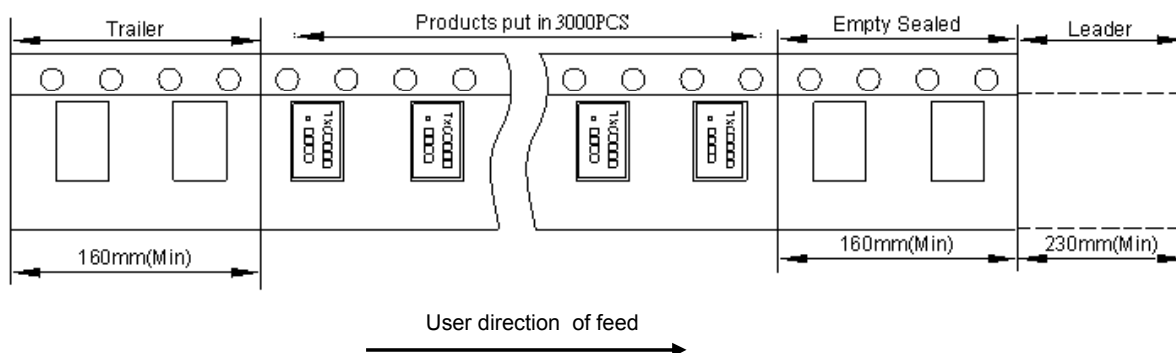
NO	COMPONENTS	MATERIALS	FINISH/SPECIFICATIONS
1	Lid	Kovar (Fe/Co/Ni)	-
2	Package	Ceramic (Al ₂ O ₃) + Kovar (Fe/Co/Ni)+ Ag/Cu	-
3	PAD	Au	Tungsten metalize + Ni plating + Au plating
4	Crystal blank	SiO ₂	-
5	Conductive adhesive	Resin+Ag	-
6	Electrode	Noble Metal	-

EMBOSS CARRIER TAPE & REEL



DIMENSIONS	A	B	C	D	E	F	G	H	
	1.65±0.10	3.40±0.10	2.70±0.10	4.00±0.10	8.00±0.20	4.00±0.10	1.55±0.10	1.75±0.10	(UNIT : mm)

REMARK :



DIMENSIONS	L	L1	W	W1	
	178±1.00	13±0.50	11.5±0.20	8±0.10	(UNIT : mm)

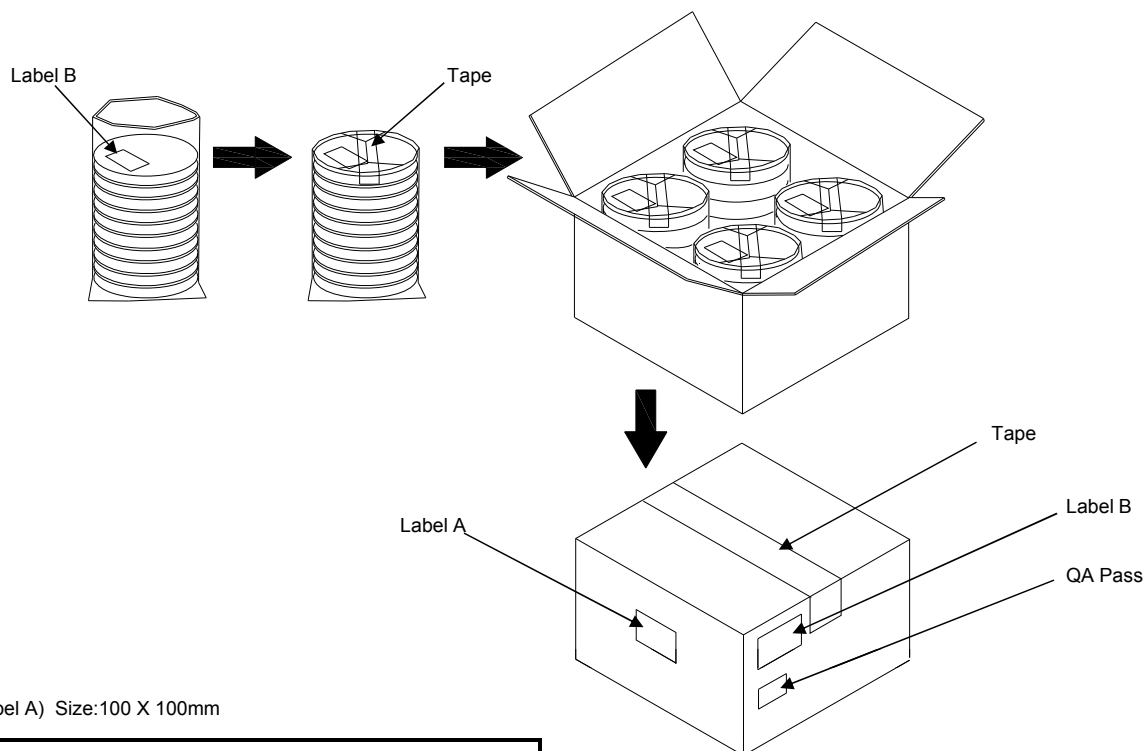
■ PACKING

Reel Quantity :

1. Reel X 6 (6 Reels)
2. Reel X 12 (12 Reels)
3. Reel X 25 (12 Reels + 13 Reels)
4. Reel X 50 (12 Reelsx2 + 13 Reelsx2)

Box Size:

1. L200 X W200 X H140mm
2. L200 X W200 X H250mm
3. L400 X W200 X H250mm
4. L400 X W400 X H280mm



(Label A) Size:100 X 100mm

TXC	
Inv No: 00096815	
Po No: 21106326- 24- 1	
Part No: 	
Q'ty: 40000 PCS	
C/No: 157- 44	

(Label B) Size:80 X 40mm

TXC CORPORATION		QA PASS
DATE CODE: 	QTY: 	2011/09/02
LOT NO: 	RoHS	
PART NO: 	HF	
FREQ: 		

[STORAGE]

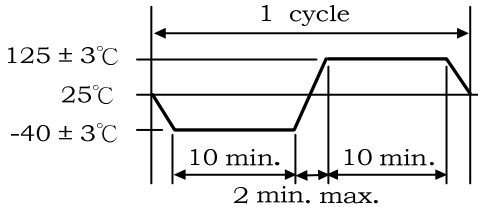
1. The storage time to be 1 year maximum.
2. Don't be caught in the rain.
3. The storage environment shall be 5℃ ~40℃ temperature and 30% ~ 75%RH humidity and free from the sun shine.
4. If customers have special requirements, we can paste labels according to it.

■ RELIABILITY SPECIFICATIONS

1.Mechanical Endurance

No.	Test Item	Test Methods	Test Criteria
1.1	Drop Test	150 cm height,3 times on concrete floor .	A . C
1.2	Mechanical Shock	Device are shocked to half sine wave (1000 G) three mutually perpendicular axes each 3 times. 0.5 ms duration time	A . C
1.3	Vibration	Frequency range 10 ~ 2000 Hz Amplitude 1.52 mm/20G Sweep time 20 minutes Perpendicular axes each test time 4 Hrs (Total test time 12 Hrs)	A . C
1.4	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)	E

2.Environmental Endurance

No.	Test Item	Test Methods	Test Criteria
2.1	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.	B . C . D
2.2	High Temp. Storage	+ 125 °C ± 3 °C for 500 ± 12 Hrs	B . C . D
2.3	Low Temp. Storage	- 40 °C ± 3 °C for 500 ± 12 Hrs	B . C . D
2.4	Temperature cycle	Total 100 cycles of the following temperature cycle 	B . C . D
2.5	High Temp&Humidity	85°C ± 3°C , RH 85% , 500 Hrs	B . C . D

RELIABILITY SPECIFICATIONS

Specifications	
A	Frequency change: Within ± 5 ppm or in customer's specification.
B	Frequency change: Within ± 10 ppm or in customer's specification.
C	Equivalent series resistance(E.S.R) change: Within $\pm 15\%$ or 10Ω (larger value).
D	After conditioning , quartz crystal units shall be subjected to standard atmospheric conditions for 2 hour, and measured.
E	Minimum 95% of immersed terminal shall be covered with new uniform solder.

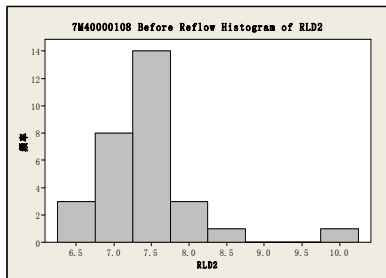
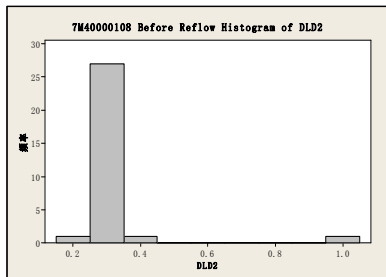
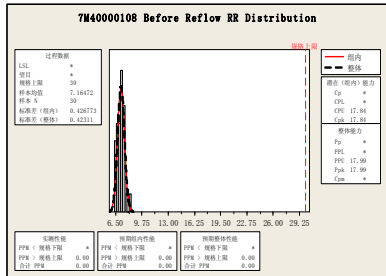
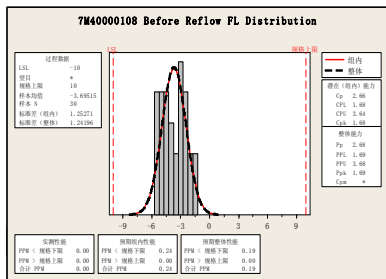
Measurement condition

Electrical characteristics measured by S&A250B or equivalent.

■ELECTRICAL CHARACTERISTICS TEST (Before Reflow)

Frequency: 40.000000 MHz
Load Capacitance: 10 pF
QTY: 30 PCS

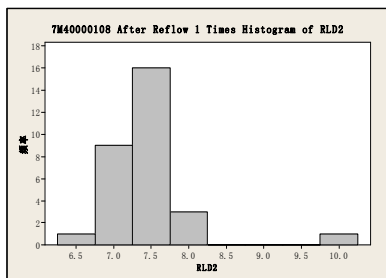
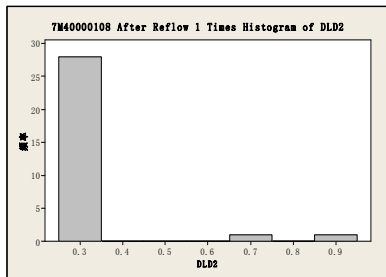
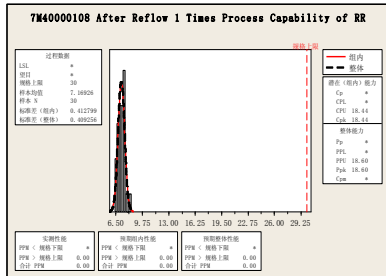
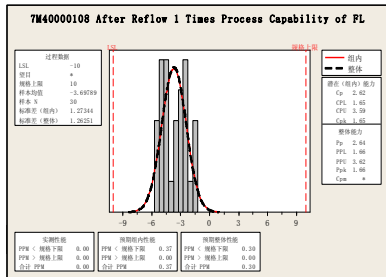
No.	FL Hz	RL ppm	RR Ohms	C0 pF	C1 fF	DLD2 Ohms	RLD2 Ohms	TS ppm/pF	SPD8
1	39999845	-3.9	6.9	0.9	3.0	0.3	7.0	12.6	-9999
2	39999823	-4.4	7.3	0.9	2.9	0.3	7.5	12.4	-9999
3	39999818	-4.5	8.4	0.8	2.9	0.3	9.9	12.5	-9999
4	39999917	-2.1	6.6	0.9	3.0	0.2	6.7	12.8	-9999
5	39999874	-3.2	7.3	0.9	3.0	0.3	7.5	12.8	-9999
6	39999864	-3.4	6.8	0.9	3.0	0.3	7.0	12.7	-9999
7	39999880	-3.0	7.1	0.9	3.0	0.3	7.3	12.5	-9999
8	39999925	-1.6	7.6	0.8	3.0	0.3	7.8	12.8	-9999
9	39999849	-3.8	7.5	0.9	3.0	0.3	7.7	12.7	-9999
10	39999789	-5.3	7.1	0.8	2.9	0.3	7.3	12.6	-9999
11	39999900	-2.5	7.0	0.8	3.0	0.3	7.3	12.6	-9999
12	39999781	-5.5	7.2	0.8	2.9	0.3	7.3	12.4	-9999
13	39999796	-5.1	7.0	0.8	2.9	0.3	7.2	12.4	-9999
14	39999937	-1.6	6.9	0.8	3.0	0.3	7.1	12.9	-9999
15	39999888	-2.8	7.5	0.9	3.0	0.3	7.7	12.7	-9999
16	39999793	-5.2	6.6	0.8	2.9	0.3	6.8	12.4	-9999
17	39999790	-5.3	7.4	0.8	3.0	0.3	7.6	12.6	-9999
18	39999860	-3.5	6.4	0.9	3.0	0.3	6.6	12.6	-9999
19	39999825	-4.4	6.8	0.9	3.0	0.3	7.0	12.8	-9999
20	39999797	-5.1	6.8	0.9	3.0	0.3	7.0	12.7	-9999
21	39999840	-4.0	7.5	0.8	2.9	0.3	7.7	12.4	-9999
22	39999895	-2.6	7.6	0.8	3.0	1.0	8.6	12.8	-9999
23	39999774	-5.6	7.6	0.8	2.9	0.3	7.8	12.3	-9999
24	39999928	-1.8	6.5	0.9	3.0	0.3	6.7	12.9	-9999
25	39999870	-3.2	7.2	0.8	3.0	0.3	7.4	12.7	-9999
26	39999896	-2.6	7.8	0.8	3.0	0.3	8.0	12.8	-9999
27	39999896	-2.6	7.2	0.8	3.0	0.3	7.5	12.8	-9999
28	39999811	-4.7	7.0	0.8	3.0	0.3	7.2	12.6	-9999
29	39999887	-2.8	7.2	0.8	3.0	0.4	7.6	12.9	-9999
30	39999808	-4.8	7.2	0.8	2.9	0.3	7.4	12.3	-9999
MAX	39999937	-1.6	8.4	0.9	3.0	1.0	9.9	12.9	-
MIN	39999774	-5.6	6.4	0.8	2.9	0.2	6.6	12.3	-
AVG	39999852	-3.7	7.2	0.8	3.0	0.3	7.4	12.6	-
STD	50	1.2	0.4	0.0	0.0	0.1	0.6	0.2	-



■ELECTRICAL CHARACTERISTICS TEST (After Reflow 1 Times)

Frequency: 40.000000 MHz
Load Capacitance: 10 pF
QTY: 30 PCS

No.	FL Hz	RL ppm	RR Ohms	C0 pF	C1 fF	DLD2 Ohms	RLD2 Ohms	TS ppm/pF	SPD8
1	39999843	-3.9	6.9	0.9	3.0	0.3	7.1	12.6	-9999
2	39999824	-4.4	7.4	0.9	2.9	0.3	7.6	12.5	-9999
3	39999814	-4.6	8.3	0.8	2.9	0.3	9.9	12.5	-9999
4	39999911	-2.2	6.6	0.9	3.0	0.3	6.9	12.8	-9999
5	39999873	-3.2	7.3	0.8	3.0	0.3	7.5	12.8	-9999
6	39999869	-3.3	6.8	0.9	3.0	0.3	7.0	12.7	-9999
7	39999883	-2.9	7.1	0.9	3.0	0.3	7.3	12.5	-9999
8	39999936	-1.6	7.4	0.8	3.0	0.3	7.7	12.8	-9999
9	39999899	-3.5	7.5	0.9	3.0	0.3	7.7	12.7	-9999
10	39999787	-5.3	7.1	0.8	2.9	0.3	7.3	12.5	-9999
11	39999901	-2.5	7.1	0.8	3.0	0.3	7.3	12.6	-9999
12	39999774	-5.7	7.2	0.8	2.9	0.3	7.3	12.4	-9999
13	39999793	-5.2	7.0	0.8	2.9	0.3	7.2	12.4	-9999
14	39999934	-1.7	6.6	0.9	3.0	0.3	6.8	12.9	-9999
15	39999890	-2.8	7.6	0.8	3.0	0.3	7.8	12.7	-9999
16	39999782	-5.2	6.6	0.8	2.9	0.8	7.2	12.4	-9999
17	39999791	-5.2	7.3	0.8	3.0	0.3	7.6	12.6	-9999
18	39999858	-3.6	6.5	0.9	3.0	0.3	6.7	12.6	-9999
19	39999826	-4.3	6.7	0.9	3.0	0.3	6.9	12.8	-9999
20	39999798	-5.0	6.8	0.9	3.0	0.3	7.1	12.7	-9999
21	39999829	-4.3	7.5	0.8	2.9	0.3	7.7	12.4	-9999
22	39999900	-2.5	7.5	0.8	3.0	0.7	8.1	12.9	-9999
23	39999771	-5.7	7.6	0.8	2.9	0.3	7.7	12.3	-9999
24	39999931	-1.7	6.7	0.8	3.0	0.3	6.9	12.9	-9999
25	39999875	-3.1	7.2	0.8	3.0	0.3	7.4	12.7	-9999
26	39999893	-2.7	7.7	0.8	3.0	0.3	7.9	12.8	-9999
27	39999890	-2.7	7.5	0.8	3.0	0.3	7.7	12.8	-9999
28	39999819	-4.5	7.1	0.8	3.0	0.3	7.3	12.6	-9999
29	39999891	-2.7	7.3	0.8	3.0	0.3	7.5	12.9	-9999
30	39999806	-4.8	7.2	0.8	2.9	0.3	7.4	12.3	-9999
MAX	39999936	-1.6	8.3	0.9	3.0	0.9	9.9	12.9	-
MIN	39999771	-5.7	6.5	0.8	2.9	0.3	6.7	12.3	-
AVG	39999852	-3.7	7.2	0.8	3.0	0.3	7.5	12.6	-
STD	51	1.3	0.4	0.0	0.0	0.1	0.6	0.2	-



■ELECTRICAL CHARACTERISTICS TEST (After Reflow 2 Times)

Frequency: 40.000000 MHz
Load Capacitance: 10 pF
QTY: 30 PCS

No.	FL Hz	RL ppm	RR Ohms	C0 pF	C1 fF	DLD2 Ohms	RLD2 Ohms	TS ppm/pF	SPDR
1	39999951	-1.2	6.8	0.9	3.0	0.2	7.0	12.6	-9999
2	39999937	-1.6	7.3	0.9	2.9	0.2	7.6	12.5	-9999
3	39999920	-2.0	8.2	0.8	2.9	0.3	9.7	12.5	-9999
4	40000025	0.6	6.6	0.9	3.0	0.3	6.8	12.8	-9999
5	39999992	-0.2	7.3	0.9	3.0	0.2	7.5	12.8	-9999
6	39999986	-0.3	6.8	0.9	3.0	0.3	7.0	12.7	-9999
7	39999981	-0.5	7.1	0.9	3.0	0.3	7.3	12.5	-9999
8	40000048	1.2	7.7	0.9	3.0	0.3	7.9	12.8	-9999
9	39999996	-0.5	7.5	0.9	3.0	0.3	7.7	12.7	-9999
10	39999985	-0.8	7.5	0.8	2.9	0.3	7.7	12.5	-9999
11	40000017	0.4	7.2	0.8	3.0	0.3	7.4	12.6	-9999
12	39999988	-3.3	7.2	0.9	2.9	0.3	7.4	12.3	-9999
13	39999900	-2.5	7.0	0.8	2.9	0.3	7.2	12.4	-9999
14	40000044	1.1	6.6	0.9	3.0	0.3	6.8	12.9	-9999
15	40000011	0.3	7.5	0.9	3.0	0.3	7.7	12.7	-9999
16	39999907	-2.3	6.6	0.8	2.9	0.7	7.0	12.4	-9999
17	39999852	-2.7	7.3	0.9	3.0	0.3	7.6	12.6	-9999
18	39999968	-0.8	6.6	0.9	3.0	0.3	6.8	12.6	-9999
19	39999937	-1.6	6.7	0.9	3.0	0.2	6.9	12.8	-9999
20	39999896	-2.6	6.8	0.9	3.0	0.3	7.0	12.7	-9999
21	39999936	-1.6	7.4	0.8	2.9	0.3	7.6	12.4	-9999
22	40000029	0.7	7.5	0.9	3.0	0.4	7.7	12.8	-9999
23	39999874	-3.1	7.6	0.8	2.9	0.3	7.8	12.3	-9999
24	40000044	1.1	6.5	0.9	3.0	0.3	6.7	12.8	-9999
25	39999985	-0.4	7.2	0.8	3.0	0.3	7.5	12.7	-9999
26	40000009	0.2	7.8	0.9	3.0	0.3	8.0	12.8	-9999
27	40000011	0.3	7.5	0.9	3.0	0.2	7.7	12.8	-9999
28	39999936	-1.6	7.1	0.8	3.0	0.3	7.3	12.6	-9999
29	39999994	-0.2	7.3	0.8	3.0	0.3	7.5	12.9	-9999
30	39999905	-2.4	7.2	0.8	2.9	0.3	7.4	12.3	-9999
MAX	40000048	1.2	8.2	0.9	3.0	0.7	9.7	12.9	-
MIN	39999868	-3.3	6.5	0.8	2.9	0.2	6.7	12.3	-
AVG	39999962	-1.0	7.2	0.9	3.0	0.3	7.4	12.6	-
STD	55	1.4	0.4	0.0	0.0	0.1	0.6	0.2	-

