



HOSONIC ELECTRONIC CO., LTD.



SMD CRYSTAL UNIT SPECIFICATIONS

Customer	FOXCONN
Customer P/N	
Product	3225 Seam Sealing Crystal
Nominal Frequency	25.000000MHz
HOSONIC P/N	E3SB25.0000F12NGY
Version	1.01
Issue Date	2017/11/9

HOSONIC		
Drawn	Checked	Approved
LUCY	ZOE	JOHN

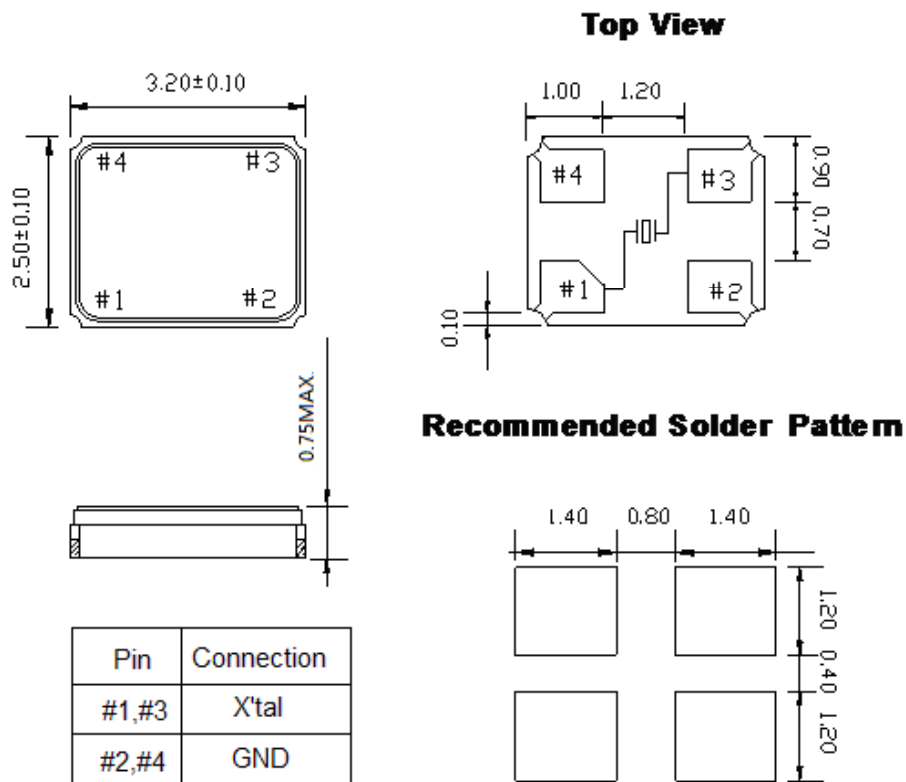
Approved By Customer : _____

I ELECTRICAL PARAMETERS

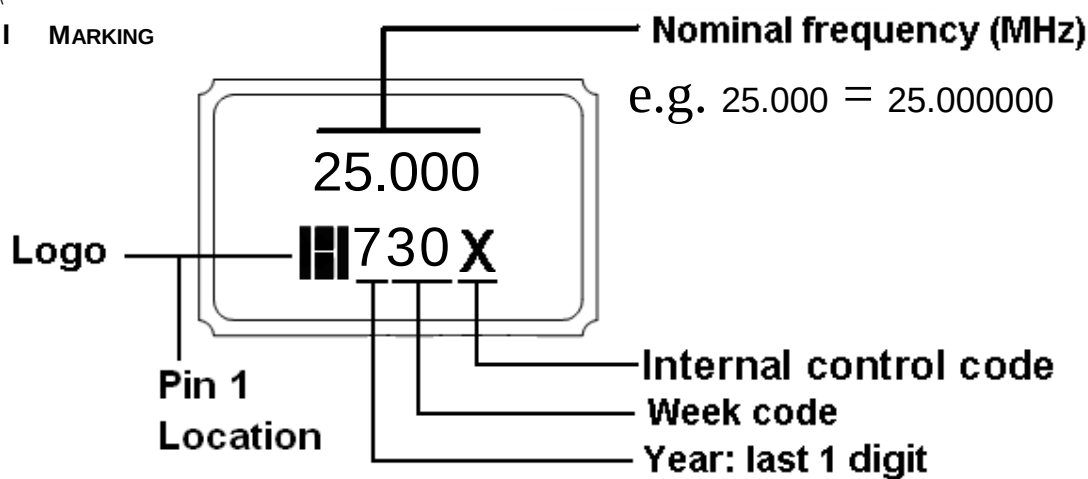
Electrical characteristics measured by S&A250B or equivalent.

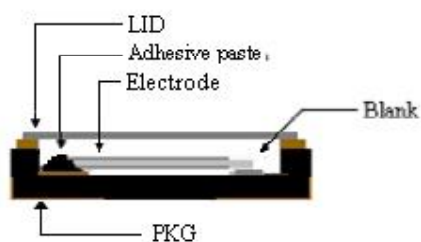
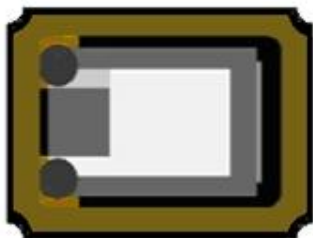
No.	Item	Symb.	Electrical Specification				Remark
			Min.	Typ.	Max.	Units	
1	Nominal Frequency	F0	25.000000				MHz
2	Crystal cutting type		AT cut				
3	Mode of Vibration		Fundamental				
4	Frequency Tolerance	$\Delta F/F0$	-7	-	7	ppm	At 25°C±3°C
5	Operating Temperature Range	T _{OPR}	-40	-	105	°C	
6	Frequency Stability Ref. to 25°C	TC	-15	-	15	ppm	-40~100°C
7	Storage Temperature	T _{STG}	-55	-	125	°C	
8	Load capacitance	CL	-	12	-	pF	
9	Equivalent Series Resistance	ESR	-	-	50	Ω	
10	Drive Level	DL	-	100	200	μW	
11	Insulation Resistance	IR	500	-	-	MΩ	At 100V _{DC}
12	Shunt Capacitance	C0	-	1	5	pF	
13	Pulling Sensitivity	TS	-	9.5	-	ppm/pF	
14	RLD2		-	-	50	Ω	
15	DLD2		-	-	15	Ω	
16	SPDB		-	-	-3	dB	±5000ppm
17	Aging Per Year	Fa	-2	-	2	ppm	First Year
18	Unit weight		-	0.017	-	g/pcs	±15%
19	Package type	E3SB					

NOTE: Storage Temperature is only for the product itself,the temperature for the packing material is -4~40°C.

I OUTLINE DIMENSIONS (UNIT: mm)


*unlabeled tolerance: $\pm 0.1\text{mm}$

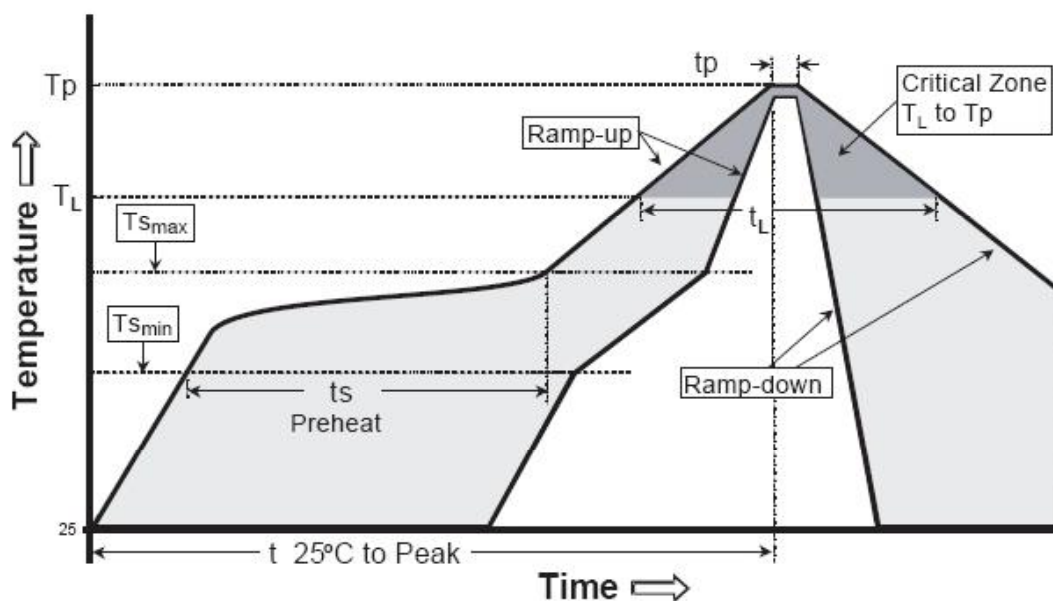
I MARKING


I PRODUCT LAYOUT


NO.	Part	Material	Remark
1	LID	KOVAR(Fe+Co+Ni alloy)	
2	PKG	Al ₂ O ₃	Base Surface plating(Pad): Nickel:1.27~8.89μm Au:0.2~1.0μm
3	Blank	SiO ₂	Quartz
4	Adhesive paste	Ag/Silicon	Support
5	Electrode	Noble metal	

I REFLOW PROFILES

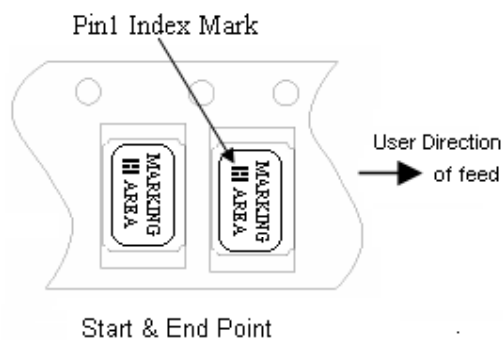
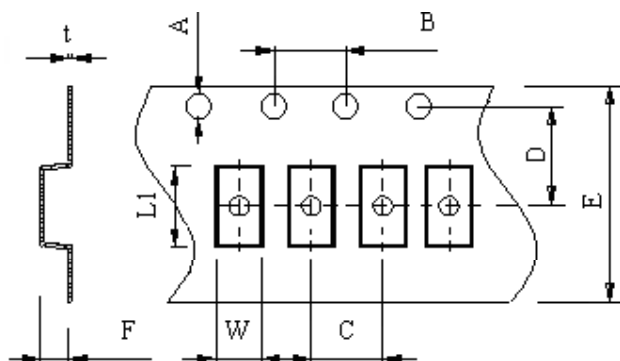
Profiles Feature	Pb-Free Assembly
Average Ramp-up Rate (Ts max to Tp)	3°C/second max.
Preheat ■ Temperature Min (Ts min) ■ Temperature Max (Ts max) ■ Time (ts min to ts max)	125°C 200°C 60~180 Sec.
Time maintained above ■ Temperature (T_L) ■ Time (t_L)	217°C 60~150 Sec.
Peak/Classification Temperature (Tp)	260°C
Time within 5°C of actual Peak Temperature (t _p)	20~40 Sec.
Ramp-down rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.
Suggest reflow times	3 Times max



Remark: To reference JEDEC J-STD-020C

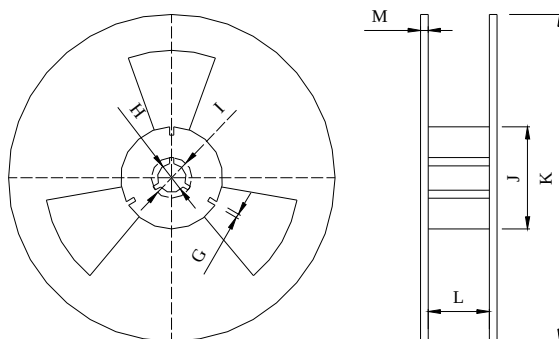
I PACKAGE(reference to EIA-481)

Tape Dimensions(unit : mm)



A	B	C	D	E	F	L1	W	t
1.50	4.0	4.0	3.5	8.0	1.0	3.4	2.7	0.3

Reel Dimensions(unit: mm)



G	H	I	J	K	L	M
2.5	13.5	21.6	60.0	178	9.5	1.6

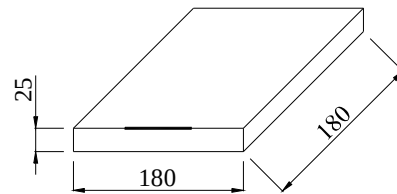
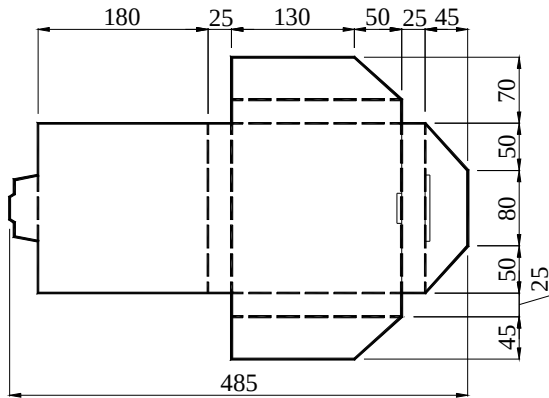
*3000pcs/Reel



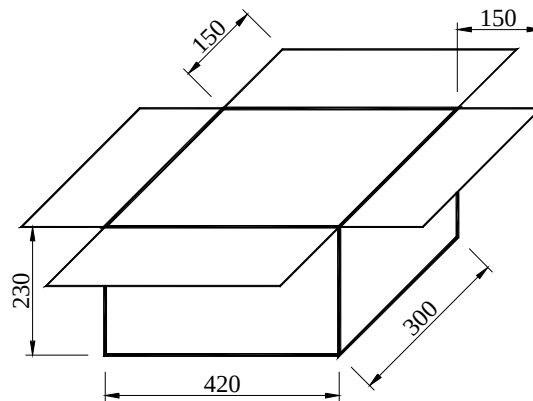
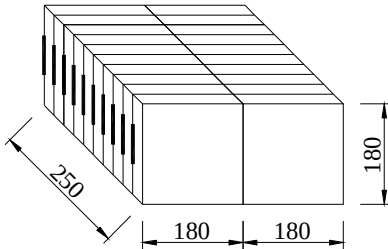
HOSONIC ELECTRONIC CO., LTD.



Carton Dimension (unit : mm)



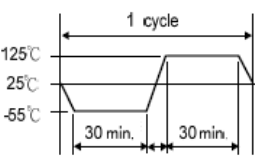
1 reel = 1 Inner box



20 Inner boxes = 1 Carton

60kpcs = 1 Carton

I RELIABILITY SPECIFICATIONS

No.	Test Item	Test Conditions	Reference
1	High Temp. Storage	Temp.: 125°C±5°C Time: 1000±12Hrs	MIL-STD-883 Method 108
2	Low Temp. Storage	Temp.: -40°C±5°C Time: 1000±12Hrs	JIS-C7021 B-12
3	Solder Heat Resistance	Pre-heat: 125°C 60~120 Sec. Solder Temp.: 260°C±5°C Time: 30 Sec.	MIL-STD-202 Method 210
4	High Temp., High Humidity Storage	Temp.: 85°C±5°C Relative Humidity: 80%~85% Time: 1000Hrs	MIL-STD-202 Method 103
5	Thermal Shock	Temp.1: -55°C±5°C Temp.2: 125°C±5°C Temp. change: 1min. max. 1000 cycles, maintain T1 and T2 for 30min.max each in one cycle 	JESD22 JA-104
6	Pressure Cooker Storage	121 ± 3°C , RH100% , 2 bar , 240Hrs	EIA-JESD22 A102
7	Drop Test	3 Times Free Fall from 150cm height table to concrete floor	IEC60068-2-32
8	Vibration	Frequency Range: 10Hz~2000Hz Amplitude: 1.52mm or 20G 4Hrs in each direction, total 12Hrs	MIL-STD-202 Method 204
9	Mechanical Shock	Peak value:1000(g's) Normal duration: 0.5mS Waveform : Half-sine shock Pulse:6axis*3times	MIL-STD-202 Method 213
10	Gross Leak	Test Pressure: 2kg /cm ²	MIL-STD-883 Method 1014
11	Fine Leak	Helium Bombing 5kg/cm ² for 2 Hrs	MIL-STD-883 Method 1014
12	Solderability	Dip in flux 5~10 Sec. Temp.: 245°C±5°C Time: 10 Sec.	J-STD-002

Description:E3SB25.0000F12NGY

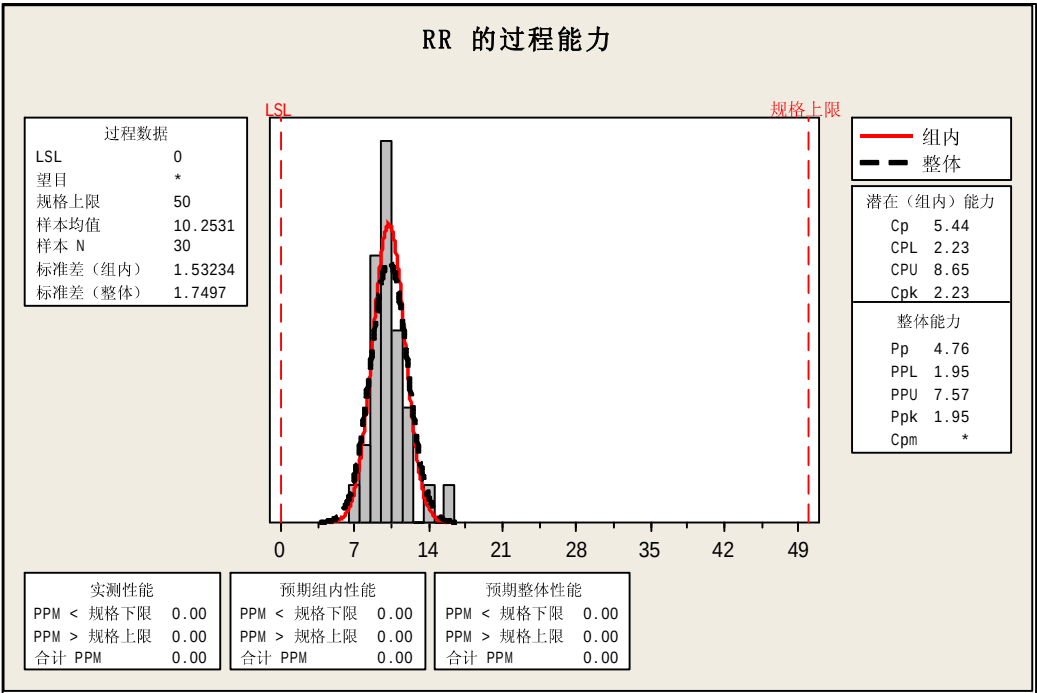
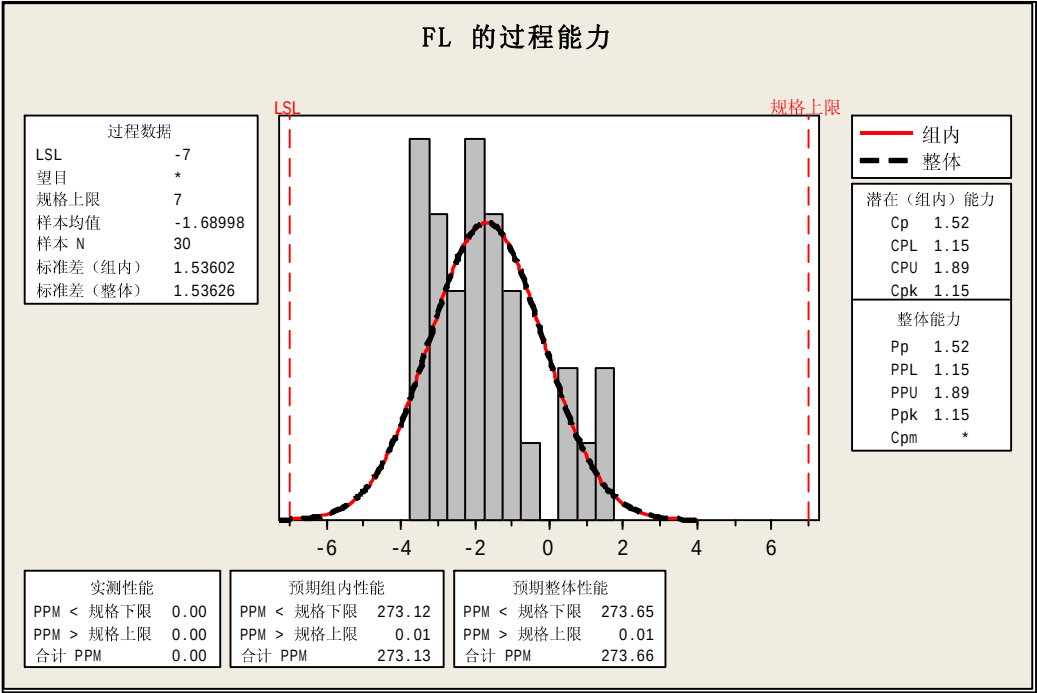
Reference Fr:40000000 (Using Measured FL)

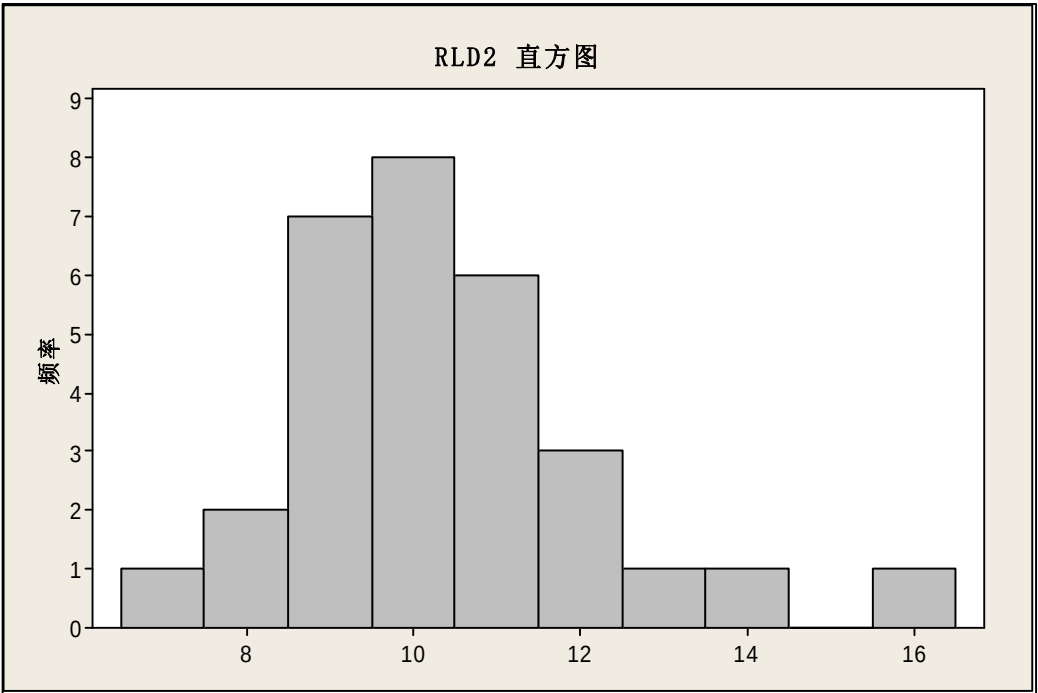
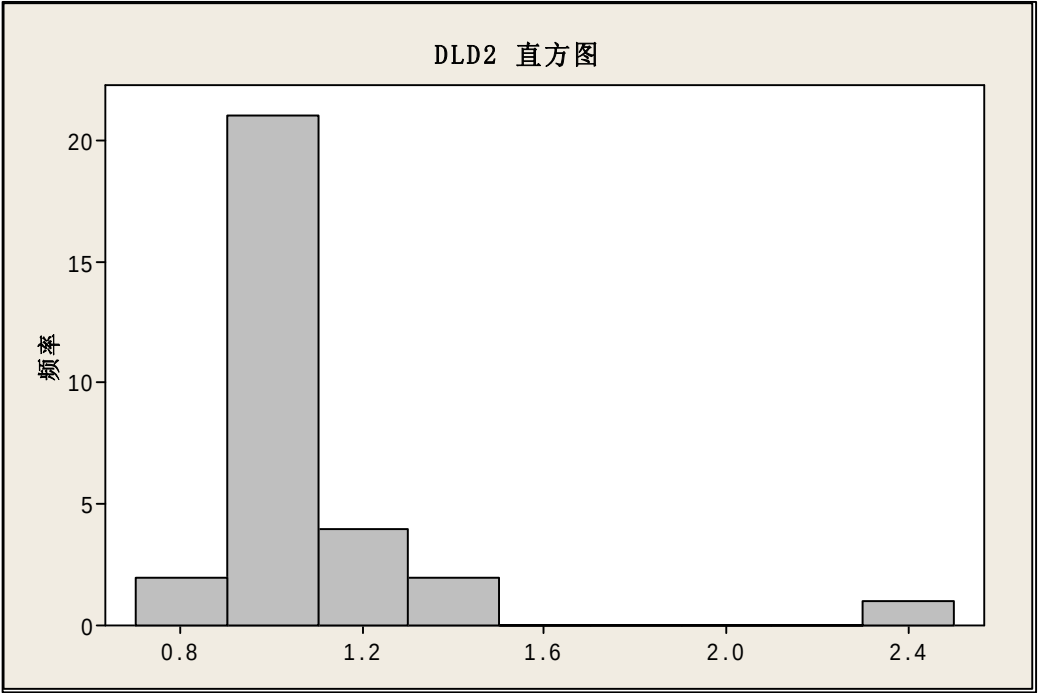
回流焊试验前

Power: 1000.00 uW Into RR

PL: No Load CL: 12.00 pF

Crystal	First Failu	DLD2	RLD2	FDLD	FL	RR	C0	C1	L	Q	TS	SPDB
		Ohms	Ohms	ppm	ppm	Ohms	pF	fF	mH	k	ppm/pF	dB
High Limit		15.00	50.00	10.00	7.00	50.00	3.00					
Low Limit					-7.00							
1	PASS	1.29	16.02	1.95	-1.96	15.70	1.08	3.19	12.73	127.34	9.31	-9,999.00
2	PASS	0.91	10.23	3.21	-1.63	10.17	1.13	3.25	12.49	192.89	9.42	-9,999.00
3	PASS	2.48	11.49	1.06	-1.41	12.21	1.10	3.21	12.64	89.43	9.35	-9,999.00
4	PASS	0.97	12.70	2.55	-3.18	12.44	1.12	3.08	13.18	166.35	8.94	-9,999.00
5	PASS	1.10	11.55	2.20	0.59	11.37	1.12	3.32	12.21	168.66	9.64	-9,999.00
6	PASS	0.97	10.05	2.49	-3.48	9.97	1.08	3.16	12.84	202.15	9.23	-9,999.00
7	PASS	0.98	8.85	3.10	-0.40	8.83	1.09	3.19	12.73	226.43	9.29	-9,999.00
8	PASS	0.87	7.82	4.19	-1.70	7.82	1.10	3.19	12.69	254.82	9.31	-9,999.00
9	PASS	0.90	11.26	2.69	-3.38	10.64	1.11	3.22	12.59	185.86	9.37	-9,999.00
10	PASS	1.05	11.08	2.80	-2.14	10.94	1.12	3.22	12.59	180.75	9.35	-9,999.00
11	PASS	0.96	10.06	2.94	-0.76	9.97	1.12	3.25	12.49	196.68	9.43	-9,999.00
12	PASS	1.15	11.52	2.10	-3.26	11.35	1.10	3.30	12.30	170.18	9.61	-9,999.00
13	PASS	0.96	10.60	2.20	-1.85	10.46	1.08	3.23	12.56	188.73	9.43	-9,999.00
14	PASS	1.01	8.85	3.64	-2.45	8.87	1.08	3.19	12.71	225.16	9.32	-9,999.00
15	PASS	1.07	9.67	3.16	-1.96	9.64	1.11	3.18	12.74	207.64	9.26	-9,999.00
16	PASS	0.91	8.99	3.47	1.72	8.99	1.12	3.24	12.51	218.58	9.42	-9,999.00
17	PASS	0.99	10.68	2.84	1.54	10.58	1.08	3.23	12.56	186.41	9.43	-9,999.00
18	PASS	0.89	7.41	3.74	-2.85	7.38	1.15	3.33	12.17	259.17	9.62	-9,999.00
19	PASS	1.35	14.38	0.52	-2.25	13.96	1.09	3.29	12.32	138.64	9.60	-9,999.00
20	PASS	1.00	9.46	2.26	0.87	9.39	1.11	3.31	12.25	204.98	9.62	-9,999.00
21	PASS	1.03	10.03	2.68	-1.52	9.97	1.08	3.20	12.67	199.69	9.35	-9,999.00
22	PASS	0.95	8.06	3.47	-1.87	8.07	1.08	3.17	12.80	249.11	9.25	-9,999.00
23	PASS	1.44	11.16	3.21	-0.94	10.28	1.10	3.26	12.42	189.70	9.51	-9,999.00
24	PASS	1.07	9.91	1.59	-0.85	9.80	1.10	3.24	12.52	200.62	9.43	-9,999.00
25	PASS	1.22	12.16	1.60	-2.99	11.90	1.10	3.28	12.37	163.22	9.55	-9,999.00
26	PASS	1.01	9.09	2.48	-3.70	9.04	1.08	3.23	12.56	218.30	9.43	-9,999.00
27	PASS	1.02	10.16	2.90	-3.69	10.10	1.10	3.21	12.64	196.64	9.34	-9,999.00
28	PASS	0.99	9.72	2.44	-2.55	9.63	1.09	3.24	12.51	204.11	9.45	-9,999.00
29	PASS	0.98	9.27	2.56	0.49	9.22	1.09	3.22	12.58	214.36	9.39	-9,999.00
30	PASS	0.94	8.90	3.26	-3.14	8.90	1.11	3.22	12.60	222.16	9.37	-9,999.00
MAX		2.48	16.02	4.19	1.72	15.70	1.15	3.33	13.18	259.17	9.64	-9,999.00
MIN		0.87	7.41	0.52	-3.70	7.38	1.08	3.08	12.17	89.43	8.94	-9,999.00
AVER		1.08	10.37	2.64	-1.69	10.25	1.10	3.23	12.57	194.96	9.40	-9,999.00





Description:E3SB25.0000F12NGY

Reference Fr:40000000 (Using Measured FL)

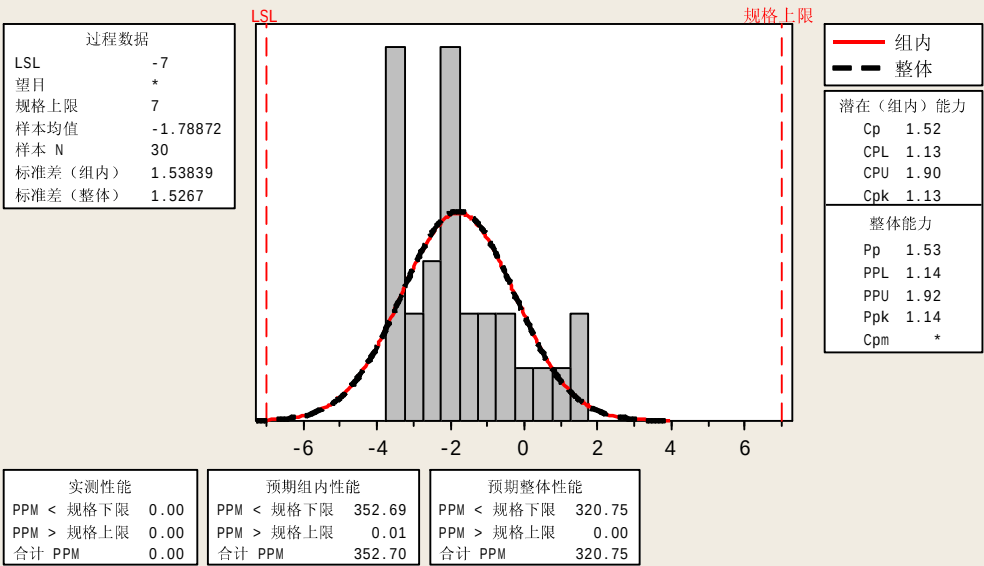
一次回流焊试验后

Power: 1000.00 uW Into RR

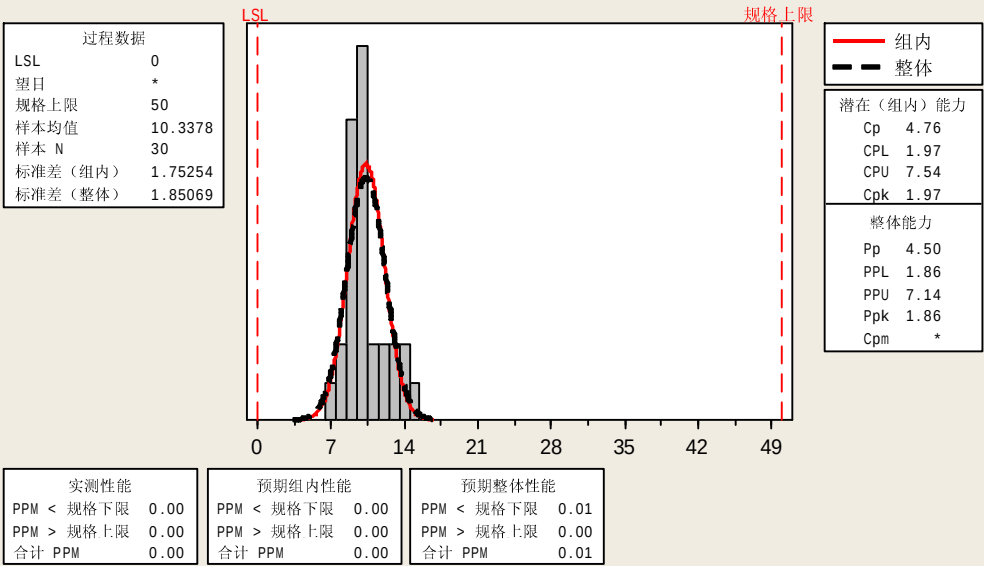
PL: No Load CL: 12.00 pF

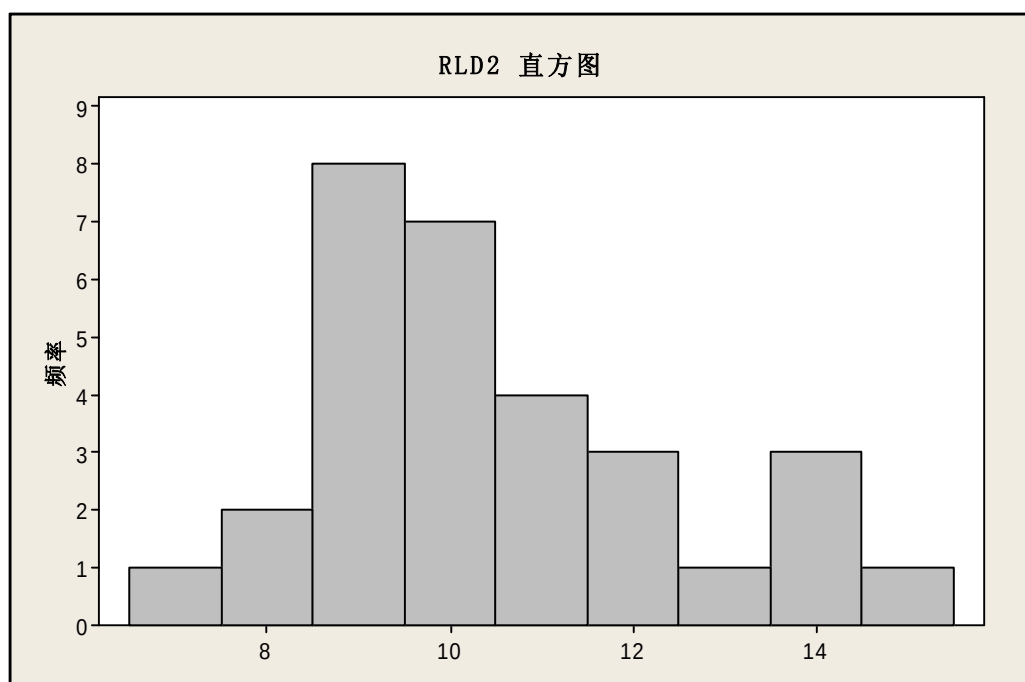
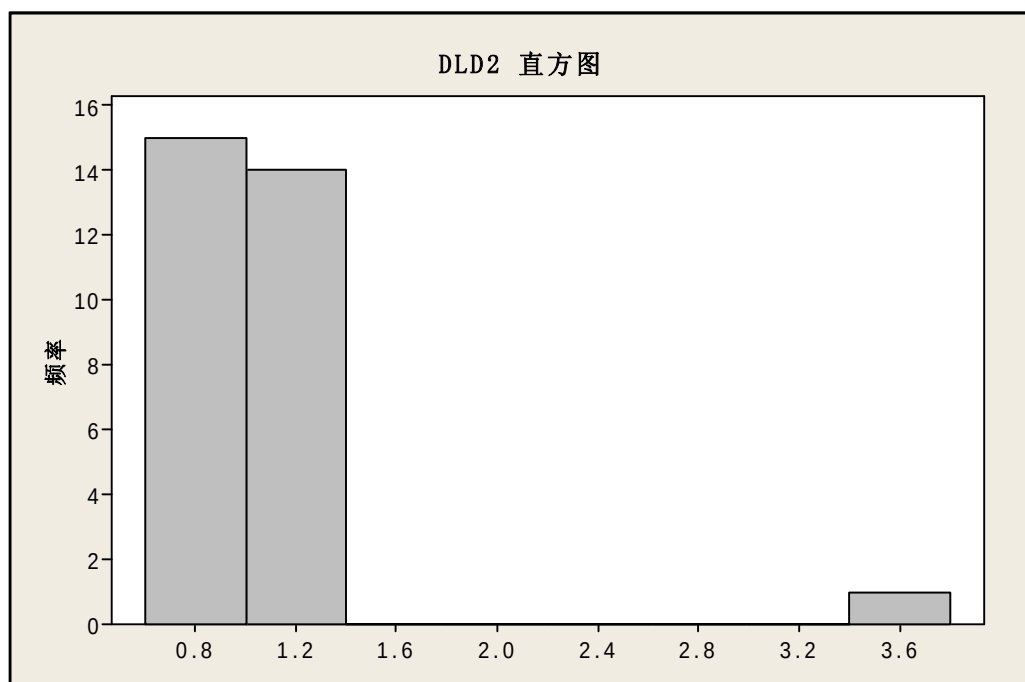
Crystal	First Failu	DLD2	RLD2	FDLD	FL	RR	C0	C1	L	Q	TS	SPDB
		Ohms	Ohms	ppm	ppm	Ohms	pF	fF	mH	k	ppm/pF	dB
High Limit		15.00	50.00	10.00	7.00	50.00	3.00					
Low Limit					-7.00							
1	PASS	1.19	13.88	2.20	-1.94	13.61	1.09	3.18	12.73	146.88	9.30	-9,999.00
2	PASS	0.96	10.21	3.22	-1.78	10.14	1.13	3.24	12.50	193.72	9.41	-9,999.00
3	PASS	0.76	10.38	2.03	-1.35	10.28	1.10	3.20	12.66	193.29	9.33	-9,999.00
4	PASS	1.15	12.25	2.61	-3.32	12.04	1.12	3.08	13.16	171.66	8.95	-9,999.00
5	PASS	0.88	7.86	3.10	0.75	7.90	1.12	3.32	12.20	242.63	9.65	-9,999.00
6	PASS	1.01	10.03	2.50	-3.43	9.94	1.08	3.16	12.83	202.69	9.24	-9,999.00
7	PASS	0.94	8.83	3.14	-0.57	8.81	1.10	3.18	12.74	227.07	9.27	-9,999.00
8	PASS	0.87	8.35	3.87	-1.96	8.39	1.11	3.19	12.69	237.48	9.30	-9,999.00
9	PASS	0.85	10.57	2.83	-3.69	10.13	1.11	3.22	12.58	195.17	9.37	-9,999.00
10	PASS	1.04	10.71	2.88	-2.10	10.64	1.12	3.22	12.59	185.91	9.35	-9,999.00
11	PASS	1.03	10.34	2.89	-0.90	10.26	1.12	3.24	12.52	191.59	9.41	-9,999.00
12	PASS	1.12	11.52	2.09	-3.38	11.34	1.10	3.29	12.32	170.76	9.58	-9,999.00
13	PASS	0.84	13.42	1.75	-2.16	12.92	1.08	3.23	12.55	152.59	9.44	-9,999.00
14	PASS	0.96	8.73	3.60	-2.65	8.73	1.08	3.19	12.72	228.87	9.32	-9,999.00
15	PASS	0.95	9.44	3.26	-2.05	9.39	1.12	3.18	12.76	213.45	9.23	-9,999.00
16	PASS	1.06	9.71	3.26	1.57	9.68	1.12	3.24	12.51	203.07	9.41	-9,999.00
17	PASS	1.02	10.57	2.89	1.48	10.48	1.09	3.23	12.54	187.91	9.44	-9,999.00
18	PASS	0.93	7.39	3.77	-2.93	7.36	1.15	3.33	12.18	260.02	9.62	-9,999.00
19	PASS	1.39	14.17	0.52	-2.48	13.77	1.10	3.29	12.32	140.57	9.59	-9,999.00
20	PASS	3.48	13.82	1.69	0.47	13.40	1.12	3.31	12.26	143.75	9.61	-9,999.00
21	PASS	0.96	9.04	2.92	-1.61	9.04	1.08	3.20	12.65	219.74	9.37	-9,999.00
22	PASS	1.02	8.73	3.27	-2.02	8.86	1.08	3.16	12.81	227.19	9.24	-9,999.00
23	PASS	1.14	10.72	2.93	-0.92	10.12	1.10	3.26	12.43	193.00	9.50	-9,999.00
24	PASS	1.03	9.67	1.60	-0.57	9.56	1.10	3.24	12.52	205.66	9.44	-9,999.00
25	PASS	1.18	12.08	1.60	-3.07	11.82	1.11	3.28	12.37	164.37	9.54	-9,999.00
26	PASS	0.99	9.00	2.48	-3.55	8.96	1.08	3.23	12.55	219.89	9.45	-9,999.00
27	PASS	0.99	14.93	1.96	-3.74	14.75	1.10	3.21	12.63	134.52	9.35	-9,999.00
28	PASS	1.03	9.74	2.46	-2.64	9.64	1.09	3.24	12.52	204.07	9.45	-9,999.00
29	PASS	0.95	9.34	2.60	0.15	9.27	1.10	3.22	12.59	213.40	9.38	-9,999.00
30	PASS	0.98	8.97	3.23	-3.27	8.93	1.12	3.22	12.60	221.58	9.35	-9,999.00
MAX		3.48	14.93	3.87	1.57	14.75	1.15	3.33	13.16	260.02	9.65	-9,999.00
MIN		0.76	7.39	0.52	-3.74	7.36	1.08	3.08	12.18	134.52	8.95	-9,999.00
AVER		1.09	10.48	2.64	-1.79	10.34	1.10	3.23	12.57	196.42	9.40	-9,999.00

FL 的过程能力



RR 的过程能力





Description:E3SB25.0000F12NGY

Reference Fr:40000000 (Using Measured FL)

二次回流焊试验后

Power: 1000.00 uW Into RR

PL: No Load CL: 12.00 pF

Crystal	First Failu	DLD2	RLD2	FOLD	FL	RR	C0	C1	L	Q	TS	SPDB
		Ohms	Ohms	ppm	ppm	Ohms	pF	fF	mH	k	ppm/pF	dB
High Limit		15.00	50.00	10.00	7.00	50.00	3.00					
Low Limit					-7.00							
1	PASS	1.22	14.46	2.12	-2.22	14.16	1.09	3.18	12.75	141.36	9.28	-9,999.00
2	PASS	1.00	10.40	3.14	-1.94	10.34	1.14	3.24	12.50	189.87	9.40	-9,999.00
3	PASS	1.10	11.00	1.97	-1.59	10.81	1.10	3.21	12.64	183.64	9.34	-9,999.00
4	PASS	1.19	12.27	2.62	-3.42	12.06	1.12	3.08	13.18	171.66	8.94	-9,999.00
5	PASS	0.90	7.87	3.18	1.18	7.86	1.12	3.32	12.21	243.82	9.65	-9,999.00
6	PASS	1.10	11.22	2.26	-3.61	11.05	1.08	3.15	12.85	182.64	9.22	-9,999.00
7	PASS	0.89	8.87	3.06	-0.67	8.88	1.09	3.18	12.76	225.71	9.27	-9,999.00
8	PASS	0.87	7.86	4.13	-1.89	7.87	1.09	3.19	12.71	253.63	9.30	-9,999.00
9	PASS	0.81	10.48	2.88	-3.70	10.10	1.10	3.21	12.61	196.09	9.36	-9,999.00
10	PASS	1.00	10.66	2.89	-2.31	10.56	1.12	3.22	12.59	187.24	9.36	-9,999.00
11	PASS	1.01	10.37	2.89	-1.01	10.31	1.11	3.24	12.52	190.77	9.42	-9,999.00
12	PASS	1.15	11.57	2.12	-3.38	11.39	1.10	3.29	12.32	169.96	9.59	-9,999.00
13	PASS	1.02	9.34	2.48	-2.04	9.27	1.08	3.22	12.57	212.98	9.42	-9,999.00
14	PASS	0.96	8.73	3.65	-2.69	8.72	1.08	3.19	12.70	228.80	9.33	-9,999.00
15	PASS	0.93	9.46	3.29	-2.00	9.41	1.11	3.18	12.75	212.82	9.24	-9,999.00
16	PASS	0.94	8.91	3.48	1.65	8.85	1.12	3.24	12.52	222.21	9.41	-9,999.00
17	PASS	0.94	10.12	2.98	1.56	10.03	1.08	3.23	12.56	196.65	9.44	-9,999.00
18	PASS	0.86	7.50	3.75	-3.12	7.48	1.15	3.33	12.17	255.72	9.62	-9,999.00
19	PASS	1.40	14.26	0.52	-2.44	13.84	1.09	3.29	12.34	140.01	9.59	-9,999.00
20	PASS	1.56	12.47	1.73	0.43	13.03	1.12	3.30	12.27	147.89	9.60	-9,999.00
21	PASS	0.98	8.92	3.02	-1.62	8.88	1.08	3.20	12.67	224.00	9.35	-9,999.00
22	PASS	0.97	7.84	3.53	-1.97	7.81	1.08	3.16	12.81	257.54	9.25	-9,999.00
23	PASS	1.77	12.34	1.29	-0.58	11.30	1.09	3.26	12.45	69.06	9.50	-9,999.00
24	PASS	1.00	9.74	1.57	-0.81	9.64	1.10	3.23	12.53	204.14	9.43	-9,999.00
25	PASS	1.14	12.00	1.59	-3.10	11.82	1.10	3.27	12.38	164.51	9.54	-9,999.00
26	PASS	1.07	9.60	2.36	-3.81	9.51	1.08	3.22	12.57	207.74	9.42	-9,999.00
27	PASS	0.99	10.19	2.84	-3.70	10.13	1.10	3.21	12.64	195.96	9.34	-9,999.00
28	PASS	1.02	9.80	2.46	-2.65	9.71	1.09	3.24	12.51	202.27	9.45	-9,999.00
29	PASS	1.04	10.61	2.24	0.12	10.46	1.10	3.22	12.60	189.20	9.37	-9,999.00
30	PASS	1.02	9.50	3.03	-3.23	9.43	1.11	3.21	12.61	209.98	9.35	-9,999.00
MAX		1.77	14.46	4.13	1.65	14.16	1.15	3.33	13.18	257.54	9.65	-9,999.00
MIN		0.81	7.50	0.52	-3.81	7.48	1.08	3.08	12.17	69.06	8.94	-9,999.00
AVER		1.06	10.28	2.64	-1.82	10.16	1.10	3.22	12.58	195.93	9.39	-9,999.00

