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Product/Process Change Notification

PCN#	Effective Date	Issue Date
2013-07-25C-01	2013/8/1	2013/7/25

PCN Classification	Product Category
Major	Transistor

Subject
Copper Bonding Wire Implementation

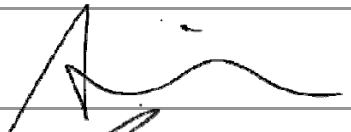
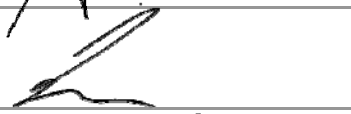
Affected Product(s)
2SC2873

Description of Change(s)
Copper wire has lower electrical resisting conductivity, and able to achieve lower Vce(set) with slight improvement in thermal performance, it's mechanical properties (vs gold wire)will help to reduce the wire defects (eg. sagging/ broken wire).

Content of Change(s)
Changing bonding wire material from gold to copper

Impact(s)
N/A

Attachment(s)
Reliability Test Report

Approval		
Issue by	Alice Lai	e-mail: alice@secosgmbh.com
Development Engineer		Alice Lai
QA Manager		Peter Yang
General Manger		Mathew Liu

For more information, please contact us directly or visit our website http://www.secosgmbh.com

SeCoS Corporation

Reliability Testing Summary Report

Date: 2013/07/22 Document No.: SG13 -07- 22

Test Item	P/N	Test Condition	(LTPD)	Sample Numbers	Allow Fall Numbers	Fall Numbers	Result
HTRB High Temp Reverse Bias	2SC2873	100 ± 10℃, 80%VR, T = 1000hrs		77	0	0	ACC
HTSL High Temperature Storage Life	2SC2873	150℃, T = 1000 hrs		77	0	0	ACC
PCT Pressure Cooker Test	2SC2873	121℃, 29.7PSIG, 168 hrs		77	0	0	ACC
TCT Temperature Cycle Test	2SC2873	-55℃/30min, 150℃/30min, For 1000 Cycle		77	0	0	ACC
THT High Temperature High Humidity Test	2SC2873	85 ± 2℃, RH=85±5%, 1000 hrs		77	0	0	ACC
Solder ability	2SC2873	245 ± 5℃, 5Sec the inspected area of each lead must have 95% solder coverage minimum		10	0	0	ACC

Judgment:

■ **qualified** □ **unqualified**

Testing Start Date: 2013.06.01 **Testing End Date:** 2013.07.22

Tester: Leo Hsia **Approval:** Peter Yang

SeCoS Corporation

High Temperature Reverse Bias Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 100 ± 10℃, 80%VR, T = 1000 hrs

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A108

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
1	63.28V	161	117.8mV	61.60V	145	122.7mV
2	61.09V	150	115.0mV	59.87V	170	117.5mV
3	66.37V	152	121.0mV	64.33V	141	113.3mV
4	64.12V	140	118.4mV	57.69V	170	122.5mV
5	65.04V	155	124.1mV	60.61V	139	121.1mV
6	64.55V	147	121.9mV	62.09V	160	113.1mV
7	66.56V	169	124.5mV	57.45V	140	115.7mV
8	62.71V	169	122.9mV	62.62V	159	124.0mV
9	57.26V	159	124.3mV	58.45V	158	118.6mV
10	63.83V	143	112.4mV	57.76V	159	115.8mV
11	58.02V	135	125.2mV	62.68V	164	118.6mV
12	63.70V	141	125.1mV	56.82V	155	113.9mV
13	62.18V	147	124.7mV	66.81V	147	119.1mV
14	63.34V	142	117.9mV	62.41V	148	125.5mV
15	56.71V	143	115.2mV	57.30V	144	115.8mV
16	66.03V	142	117.0mV	64.37V	151	123.7mV
17	65.89V	153	123.9mV	62.52V	162	120.6mV
18	57.40V	143	116.5mV	56.75V	150	115.4mV
19	61.77V	135	120.1mV	60.80V	169	122.9mV
20	64.33V	153	114.7mV	66.04V	152	124.0mV
21	62.05V	159	113.2mV	56.82V	161	116.9mV
22	65.26V	153	113.2mV	56.78V	158	120.8mV
23	62.10V	163	113.5mV	61.35V	152	112.5mV
24	66.26V	167	122.9mV	62.15V	142	113.0mV
25	61.11V	164	113.2mV	65.11V	160	125.8mV
26	58.93V	136	115.7mV	61.75V	166	113.8mV
27	64.12V	153	123.6mV	59.23V	142	121.4mV
28	59.63V	145	119.4mV	63.60V	166	124.2mV

SeCoS Corporation

High Temperature Reverse Bias Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 100 ± 10℃, 80%VR, T = 1000 hrs

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A108

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
29	65.67V	146	116.8mV	64.18V	144	120.2mV
30	62.36V	171	122.6mV	64.82V	136	122.6mV
31	61.74V	169	115.7mV	63.25V	142	113.6mV
32	60.17V	140	119.9mV	59.65V	136	112.4mV
33	62.87V	156	125.3mV	65.18V	148	112.5mV
34	61.11V	137	121.6mV	59.34V	151	121.2mV
35	65.41V	158	119.3mV	56.61V	138	120.9mV
36	61.53V	136	124.2mV	59.22V	144	119.6mV
37	63.52V	146	115.6mV	65.20V	169	119.9mV
38	64.69V	163	119.9mV	64.26V	147	118.0mV
39	61.19V	150	116.6mV	60.72V	136	119.3mV
40	56.61V	144	113.7mV	61.70V	156	124.4mV
41	64.03V	137	122.0mV	57.94V	146	118.4mV
42	59.71V	157	114.8mV	59.00V	142	123.6mV
43	64.64V	159	115.8mV	58.60V	169	114.5mV
44	60.21V	137	115.4mV	59.36V	153	120.7mV
45	64.33V	135	124.3mV	66.53V	151	125.5mV
46	66.54V	157	115.7mV	61.96V	153	117.3mV
47	61.16V	156	123.6mV	65.41V	165	122.5mV
48	64.60V	161	115.7mV	64.94V	138	120.6mV
49	59.26V	158	120.0mV	61.82V	152	122.7mV
50	59.53V	162	117.3mV	66.17V	165	116.4mV
51	62.39V	156	125.6mV	58.93V	160	115.9mV
52	58.60V	149	126.0mV	65.53V	137	120.9mV
53	63.12V	141	115.6mV	63.75V	135	116.3mV
54	56.92V	138	118.1mV	65.77V	162	119.1mV
55	62.15V	158	120.9mV	58.57V	167	113.2mV
56	63.42V	139	122.6mV	58.28V	139	122.0mV
57	58.40V	140	116.7mV	64.95V	170	121.9mV

SeCoS Corporation

High Temperature Reverse Bias Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 100 ± 10℃, 80%VR, T = 1000 hrs

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A108

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
58	63.41V	170	117.2mV	63.00V	167	124.1mV
59	66.40V	161	115.4mV	64.91V	137	112.9mV
60	64.29V	170	125.0mV	59.66V	164	125.7mV
61	64.24V	145	124.7mV	57.52V	170	123.0mV
62	64.75V	160	126.2mV	65.16V	167	120.6mV
63	61.73V	137	119.3mV	66.53V	165	119.6mV
64	62.17V	143	118.8mV	64.23V	163	122.2mV
65	66.72V	135	123.7mV	57.95V	137	125.9mV
66	63.65V	148	112.7mV	61.47V	151	117.2mV
67	60.46V	159	125.4mV	60.55V	145	124.7mV
68	64.29V	149	122.9mV	65.33V	144	119.5mV
69	59.34V	167	119.6mV	57.94V	165	116.4mV
70	61.13V	155	118.6mV	57.70V	159	122.7mV
71	65.43V	164	125.4mV	57.64V	150	114.5mV
72	66.94V	142	112.6mV	60.39V	156	118.5mV
73	58.40V	155	117.9mV	65.31V	134	114.5mV
74	56.62V	148	117.8mV	66.15V	141	116.9mV
75	62.08V	156	115.6mV	58.83V	167	116.4mV
76	59.62V	136	121.9mV	61.22V	142	122.4mV
77	62.55V	158	112.6mV	63.35V	150	116.1mV
MAX	66.56V	171	125.2mV	66.81V	170	125.8mV
MIN	56.71V	135	112.4mV	56.75V	136	112.4mV
AVG	62.61V	151	119.1mV	61.18V	153	118.8mV

Made By: Leo Hsia

Approval: Peter Yang

SeCoS Corporation

High Temperature Storage Life Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 150℃, T = 1000 hrs

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A103

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
1	61.08V	168	120.0mV	60.07V	139	117.2mV
2	63.28V	169	116.5mV	58.62V	156	116.4mV
3	61.69V	155	118.7mV	63.62V	158	122.6mV
4	58.32V	168	112.7mV	62.41V	134	120.9mV
5	57.40V	168	116.1mV	57.89V	155	123.9mV
6	57.93V	154	119.8mV	63.05V	136	115.6mV
7	57.68V	163	113.8mV	65.95V	167	121.4mV
8	61.26V	161	118.8mV	56.82V	147	117.3mV
9	60.50V	147	115.2mV	63.62V	168	115.9mV
10	63.36V	154	122.4mV	61.53V	161	115.6mV
11	59.01V	138	119.3mV	66.24V	158	121.7mV
12	60.13V	140	112.5mV	62.87V	166	115.6mV
13	57.80V	168	122.6mV	57.78V	158	122.5mV
14	61.98V	150	121.3mV	63.20V	150	120.8mV
15	59.24V	164	118.4mV	61.21V	167	120.5mV
16	62.31V	155	122.0mV	63.59V	148	116.4mV
17	64.99V	144	112.7mV	66.60V	161	112.4mV
18	57.87V	147	115.6mV	61.34V	147	120.0mV
19	62.74V	151	119.2mV	66.07V	157	115.7mV
20	57.25V	156	117.6mV	62.77V	150	125.7mV
21	57.38V	161	124.7mV	59.99V	139	113.3mV
22	64.43V	161	114.8mV	62.23V	149	117.2mV
23	61.99V	170	117.9mV	56.84V	157	121.1mV
24	63.49V	156	123.1mV	60.20V	135	119.8mV
25	60.96V	136	118.4mV	56.71V	152	116.1mV
26	58.98V	148	123.3mV	58.50V	159	124.7mV
27	59.80V	134	122.6mV	61.71V	153	121.0mV
28	58.06V	146	125.2mV	65.49V	167	114.6mV

SeCoS Corporation

High Temperature Storage Life Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 150℃, T = 1000 hrs

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A103

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
29	60.77V	156	116.5mV	65.13V	134	120.7mV
30	67.00V	156	120.5mV	58.66V	144	115.6mV
31	66.35V	151	113.9mV	61.78V	157	114.3mV
32	61.92V	161	119.0mV	58.82V	162	125.8mV
33	61.86V	160	121.0mV	58.93V	163	123.4mV
34	62.86V	154	122.1mV	64.08V	164	120.0mV
35	61.02V	138	116.9mV	61.17V	143	124.9mV
36	58.77V	165	120.0mV	57.78V	136	124.1mV
37	60.83V	169	123.6mV	56.62V	155	118.5mV
38	61.00V	139	118.2mV	62.78V	134	124.2mV
39	63.12V	171	112.9mV	56.91V	139	113.4mV
40	57.39V	170	112.8mV	63.15V	151	120.9mV
41	57.05V	166	121.2mV	56.61V	134	121.3mV
42	57.11V	147	119.9mV	58.92V	152	125.9mV
43	64.70V	163	118.8mV	63.47V	148	122.8mV
44	57.60V	171	120.4mV	57.15V	137	124.9mV
45	63.08V	164	121.5mV	57.98V	169	123.9mV
46	56.71V	148	118.8mV	66.96V	159	126.1mV
47	60.70V	170	114.3mV	59.42V	164	114.2mV
48	64.07V	140	123.8mV	59.51V	146	124.3mV
49	64.87V	146	116.2mV	57.97V	136	118.4mV
50	63.86V	145	114.3mV	57.34V	139	123.2mV
51	60.02V	140	126.1mV	57.92V	138	117.8mV
52	58.65V	135	117.4mV	64.73V	144	119.8mV
53	56.92V	166	125.2mV	65.78V	165	125.7mV
54	57.99V	155	112.7mV	60.63V	155	120.2mV
55	60.30V	139	123.8mV	62.68V	148	115.5mV
56	66.70V	166	112.7mV	61.53V	157	118.9mV
57	66.60V	144	116.5mV	60.45V	139	118.5mV

SeCoS Corporation

High Temperature Storage Life Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 150℃, T = 1000 hrs

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A103

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
58	61.76V	142	118.2mV	59.36V	137	118.7mV
59	66.72V	162	115.8mV	58.04V	135	114.4mV
60	63.32V	148	123.0mV	57.74V	140	123.2mV
61	64.37V	160	113.0mV	58.61V	134	125.9mV
62	65.82V	141	116.8mV	65.13V	149	117.2mV
63	58.94V	136	112.6mV	61.40V	164	121.0mV
64	59.76V	151	123.9mV	65.30V	154	124.4mV
65	65.05V	144	124.1mV	60.36V	170	120.8mV
66	59.27V	139	125.6mV	58.96V	161	112.4mV
67	66.08V	153	116.9mV	63.33V	158	115.1mV
68	65.77V	138	117.3mV	65.25V	145	113.6mV
69	63.43V	151	119.6mV	66.83V	162	116.0mV
70	58.60V	158	115.2mV	66.89V	156	117.5mV
71	58.35V	160	117.2mV	57.31V	154	113.5mV
72	61.15V	135	117.7mV	57.87V	143	125.8mV
73	63.20V	157	124.5mV	66.46V	169	122.9mV
74	60.89V	167	114.9mV	64.23V	161	123.7mV
75	66.64V	169	125.0mV	61.20V	159	120.3mV
76	66.79V	145	123.9mV	60.90V	148	121.6mV
77	63.34V	150	118.8mV	58.13V	162	119.4mV
MAX	67.00V	170	125.2mV	66.60V	168	125.8mV
MIN	57.25V	134	112.5mV	56.71V	134	112.4mV
AVG	60.84V	155	118.6mV	61.60V	153	118.8mV

Made By: Leo Hsia

Approval: Peter Yang

SeCoS Corporation

Pressure Cooker Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 121℃, 100%RH, 29.7PSIG, 168Hrs

Test Date: 2013.07.09 ~ 2013.07.17

Test Standard : JESD22 STANDER Method-A102

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
1	64.15V	151	116.9mV	57.62V	160	119.2mV
2	59.14V	143	124.2mV	63.88V	155	117.9mV
3	58.25V	133	125.3mV	58.98V	166	120.5mV
4	64.72V	154	115.4mV	63.85V	135	115.6mV
5	62.48V	149	116.4mV	66.35V	165	114.2mV
6	59.40V	141	120.9mV	60.39V	143	118.3mV
7	60.91V	149	124.9mV	63.44V	166	119.8mV
8	61.76V	158	119.5mV	56.96V	158	115.1mV
9	63.73V	149	124.9mV	60.75V	155	114.0mV
10	63.77V	167	126.1mV	57.04V	171	123.5mV
11	67.00V	139	112.7mV	60.82V	158	121.2mV
12	57.27V	155	120.3mV	64.24V	147	125.7mV
13	66.10V	162	114.0mV	60.42V	169	117.2mV
14	61.59V	142	112.9mV	59.81V	157	118.7mV
15	62.69V	138	116.5mV	62.36V	159	115.3mV
16	62.70V	161	116.3mV	61.09V	159	119.8mV
17	62.33V	151	125.0mV	59.72V	158	120.1mV
18	59.35V	163	125.1mV	65.60V	137	115.4mV
19	58.77V	145	124.4mV	59.11V	168	114.4mV
20	61.80V	159	112.7mV	65.52V	152	114.6mV
21	62.25V	165	121.9mV	58.26V	156	124.6mV
22	60.31V	164	123.2mV	57.84V	155	125.3mV
23	66.00V	147	117.1mV	58.67V	151	121.6mV
24	59.33V	136	118.3mV	66.27V	146	122.1mV
25	57.35V	169	116.2mV	63.54V	140	120.0mV
26	63.84V	163	119.7mV	66.72V	157	122.2mV
27	58.68V	147	119.8mV	61.50V	147	124.8mV
28	56.60V	156	113.3mV	56.94V	153	121.5mV

SeCoS Corporation

Pressure Cooker Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 121℃, 100%RH, 29.7PSIG, 168Hrs

Test Date: 2013.07.09 ~ 2013.07.17

Test Standard : JESD22 STANDER Method-A102

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
29	62.51V	170	125.1mV	65.42V	154	114.3mV
30	61.11V	158	120.3mV	65.16V	153	125.5mV
31	58.87V	154	119.6mV	63.73V	151	116.0mV
32	63.44V	157	123.2mV	66.40V	135	113.0mV
33	58.94V	160	121.8mV	56.92V	139	113.0mV
34	58.70V	161	114.7mV	58.01V	134	124.5mV
35	61.43V	153	119.2mV	63.51V	145	114.9mV
36	61.19V	136	114.6mV	58.97V	155	120.6mV
37	60.69V	160	125.3mV	64.19V	134	112.5mV
38	65.21V	165	123.2mV	61.14V	169	115.3mV
39	58.13V	162	124.4mV	64.03V	170	118.3mV
40	58.41V	144	125.1mV	64.66V	149	123.3mV
41	58.56V	139	122.1mV	64.94V	134	125.0mV
42	57.73V	152	121.6mV	59.54V	153	115.9mV
43	60.27V	155	122.1mV	56.88V	157	116.0mV
44	60.94V	144	121.5mV	59.35V	140	121.7mV
45	63.41V	145	115.1mV	63.15V	141	119.2mV
46	66.37V	154	119.0mV	56.87V	147	123.4mV
47	62.12V	170	116.9mV	57.58V	155	123.9mV
48	64.25V	138	124.9mV	65.73V	141	123.7mV
49	57.66V	145	123.2mV	59.52V	144	115.9mV
50	63.10V	152	114.7mV	59.32V	155	119.2mV
51	59.75V	146	114.0mV	65.69V	167	113.9mV
52	57.09V	152	120.3mV	66.92V	159	124.2mV
53	63.71V	167	116.6mV	60.61V	160	125.5mV
54	65.65V	169	125.8mV	56.80V	151	124.4mV
55	58.36V	168	125.7mV	59.58V	143	123.9mV
56	58.93V	165	120.7mV	65.55V	149	116.9mV
57	65.06V	167	120.9mV	63.25V	136	121.0mV

SeCoS Corporation

Pressure Cooker Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 121℃, 100%RH, 29.7PSIG, 168Hrs

Test Date: 2013.07.09 ~ 2013.07.17

Test Standard : JESD22 STANDER Method-A102

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
58	62.55V	169	121.7mV	58.37V	148	124.0mV
59	60.84V	158	113.3mV	61.36V	163	117.7mV
60	57.69V	168	119.1mV	64.94V	164	114.7mV
61	61.09V	167	113.7mV	62.27V	149	119.3mV
62	57.33V	143	118.5mV	58.47V	167	124.7mV
63	62.59V	152	124.2mV	63.00V	139	115.8mV
64	62.32V	154	125.8mV	57.94V	161	123.7mV
65	57.06V	161	125.8mV	61.19V	135	123.8mV
66	60.83V	138	114.0mV	60.36V	155	126.1mV
67	61.32V	168	124.3mV	62.33V	144	122.2mV
68	66.18V	139	121.4mV	60.90V	151	114.6mV
69	63.46V	162	122.0mV	59.04V	171	121.9mV
70	65.02V	148	122.1mV	64.95V	168	114.8mV
71	59.38V	136	117.2mV	66.04V	161	122.5mV
72	58.78V	151	112.6mV	58.81V	140	123.8mV
73	65.03V	156	117.8mV	64.51V	156	114.7mV
74	60.03V	162	124.1mV	61.35V	136	124.3mV
75	60.56V	133	120.7mV	57.16V	170	119.0mV
76	58.21V	145	119.2mV	66.74V	168	117.5mV
77	65.94V	168	118.8mV	64.46V	165	122.5mV
MAX	67.00V	170	126.1mV	66.72V	171	125.7mV
MIN	56.60V	133	112.7mV	56.94V	135	113.0mV
AVG	61.51V	153	119.7mV	61.83V	154	119.1mV

Made By: Leo Hsia

Approval: Peter Yang

SeCoS Corporation

Temperature Cycle Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: -55℃/30min, 150℃/30min, for 1000 Cycle

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A104

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
1	64.21V	142	118.4mV	57.69V	144	117.6mV
2	58.37V	147	115.3mV	61.51V	150	116.7mV
3	65.73V	133	125.5mV	61.37V	160	121.8mV
4	58.74V	151	121.2mV	62.02V	138	117.8mV
5	60.15V	164	116.2mV	57.88V	144	122.1mV
6	66.49V	164	125.2mV	62.59V	153	121.5mV
7	61.33V	168	117.8mV	61.14V	155	115.7mV
8	61.76V	154	122.4mV	61.90V	169	118.9mV
9	57.79V	144	116.8mV	62.83V	144	113.4mV
10	61.87V	137	124.1mV	64.39V	159	123.6mV
11	64.24V	154	125.1mV	58.56V	146	118.6mV
12	65.20V	143	117.3mV	56.80V	156	115.2mV
13	63.97V	170	116.1mV	64.68V	159	125.0mV
14	64.46V	169	120.5mV	65.93V	166	115.7mV
15	57.22V	163	115.3mV	63.60V	163	118.9mV
16	57.93V	154	122.4mV	66.55V	162	125.8mV
17	61.60V	161	114.8mV	62.40V	157	114.2mV
18	62.88V	160	116.6mV	61.16V	158	119.5mV
19	62.08V	135	118.9mV	65.68V	153	116.9mV
20	64.35V	149	118.4mV	57.37V	145	112.7mV
21	66.36V	156	120.3mV	64.06V	165	122.9mV
22	60.93V	150	120.9mV	59.96V	147	123.0mV
23	60.97V	147	113.6mV	65.02V	155	118.2mV
24	59.35V	152	122.2mV	60.31V	165	115.4mV
25	59.71V	139	122.0mV	58.80V	152	122.5mV
26	66.69V	156	124.9mV	61.95V	155	116.7mV
27	57.73V	168	121.3mV	66.54V	153	122.9mV
28	59.04V	146	115.2mV	65.81V	149	116.5mV

SeCoS Corporation

Temperature Cycle Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: -55℃/30min, 150℃/30min, for 1000 Cycle

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A104

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
29	64.88V	156	120.0mV	62.90V	156	120.9mV
30	61.13V	162	118.6mV	57.42V	134	112.4mV
31	60.13V	158	119.2mV	61.33V	155	121.6mV
32	57.23V	134	124.5mV	65.00V	134	114.1mV
33	57.19V	152	122.7mV	62.07V	167	124.1mV
34	64.08V	145	125.5mV	66.20V	165	122.9mV
35	58.84V	146	120.4mV	61.99V	149	121.9mV
36	60.45V	165	120.2mV	57.29V	146	118.7mV
37	61.22V	148	116.8mV	60.49V	134	119.0mV
38	57.34V	147	119.3mV	64.82V	155	125.8mV
39	64.85V	169	119.2mV	62.05V	166	123.1mV
40	58.10V	138	116.0mV	60.06V	150	116.9mV
41	61.55V	146	116.4mV	60.47V	143	123.2mV
42	59.07V	154	125.0mV	65.67V	134	123.0mV
43	65.16V	147	122.5mV	64.61V	167	117.1mV
44	62.56V	143	117.5mV	61.62V	142	114.3mV
45	57.63V	142	122.7mV	57.81V	144	112.8mV
46	62.43V	148	117.8mV	66.41V	153	119.2mV
47	57.64V	152	113.6mV	59.30V	135	126.1mV
48	59.06V	145	121.9mV	57.15V	134	114.5mV
49	56.91V	140	119.6mV	63.63V	153	122.4mV
50	63.18V	134	114.5mV	57.01V	152	117.9mV
51	63.38V	136	124.8mV	59.98V	144	113.4mV
52	56.74V	146	124.4mV	57.43V	150	113.1mV
53	60.51V	139	115.2mV	63.80V	169	120.6mV
54	64.56V	139	113.3mV	65.97V	133	122.0mV
55	65.22V	141	120.4mV	65.71V	158	114.5mV
56	59.41V	147	114.1mV	64.47V	168	113.7mV
57	62.54V	170	125.7mV	63.48V	160	113.3mV

SeCoS Corporation

Temperature Cycle Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: -55℃/30min, 150℃/30min, for 1000 Cycle

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A104

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
58	62.07V	161	116.9mV	60.85V	166	115.0mV
59	65.49V	141	121.0mV	59.15V	138	124.7mV
60	60.79V	144	122.6mV	62.83V	157	121.2mV
61	65.73V	161	119.3mV	61.71V	144	117.0mV
62	56.63V	167	116.6mV	59.68V	163	112.5mV
63	64.00V	165	124.9mV	64.13V	140	121.9mV
64	62.64V	158	121.0mV	62.81V	151	120.3mV
65	61.31V	154	117.1mV	56.92V	156	121.3mV
66	63.21V	150	117.3mV	62.80V	151	115.0mV
67	61.56V	153	112.8mV	66.15V	161	117.6mV
68	65.61V	162	113.8mV	64.27V	143	118.0mV
69	61.42V	169	124.1mV	64.09V	149	125.7mV
70	64.55V	156	120.6mV	65.39V	137	121.0mV
71	62.02V	157	113.3mV	57.45V	141	123.4mV
72	62.60V	165	122.6mV	61.55V	158	124.6mV
73	66.80V	144	122.2mV	56.76V	150	113.6mV
74	56.71V	157	118.5mV	59.74V	163	116.7mV
75	60.85V	141	119.6mV	62.20V	158	122.5mV
76	58.17V	133	124.7mV	61.89V	135	118.3mV
77	65.67V	147	112.9mV	63.54V	153	121.4mV
MAX	66.69V	170	125.5mV	66.55V	169	125.8mV
MIN	57.22V	133	113.6mV	56.80V	134	112.4mV
AVG	61.70V	153	119.7mV	62.04V	153	118.7mV

Made By: Leo Hsia

Approval: Peter Yang

SeCoS Corporation

High Temperature High Humidity Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 85±2℃, 85±5%RH, 1000Hrs

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A101

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
1	60.62V	156	120.9mV	65.37V	170	121.5mV
2	62.43V	155	122.5mV	62.28V	152	121.8mV
3	64.60V	165	121.0mV	63.96V	162	112.9mV
4	62.26V	151	112.6mV	61.49V	133	124.3mV
5	57.89V	151	113.0mV	66.93V	133	115.9mV
6	66.46V	157	125.1mV	63.48V	151	114.8mV
7	61.88V	168	112.5mV	58.29V	168	112.4mV
8	59.68V	153	119.6mV	63.69V	162	118.1mV
9	59.01V	166	125.0mV	58.86V	151	125.0mV
10	57.98V	144	117.1mV	57.00V	144	119.7mV
11	64.31V	167	125.9mV	58.82V	164	114.5mV
12	59.80V	168	113.9mV	58.39V	162	117.4mV
13	62.16V	141	123.0mV	60.91V	151	122.7mV
14	60.08V	148	117.8mV	59.28V	134	113.3mV
15	60.69V	138	114.9mV	58.93V	145	117.1mV
16	60.67V	167	114.2mV	56.73V	151	114.8mV
17	64.83V	143	115.0mV	65.16V	155	118.2mV
18	62.91V	149	122.3mV	62.55V	156	116.2mV
19	60.69V	145	117.4mV	64.46V	165	120.3mV
20	60.28V	168	122.8mV	66.75V	164	126.1mV
21	60.70V	136	123.2mV	64.23V	153	119.7mV
22	56.88V	153	117.8mV	58.74V	135	113.8mV
23	60.78V	165	123.4mV	62.32V	135	116.9mV
24	65.63V	161	119.8mV	59.95V	168	120.1mV
25	65.99V	157	115.3mV	58.78V	134	124.5mV
26	62.56V	154	120.0mV	62.83V	142	121.2mV
27	57.78V	167	121.4mV	58.89V	145	121.3mV
28	57.62V	164	120.0mV	59.85V	137	119.1mV

SeCoS Corporation

High Temperature High Humidity Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 85±2℃, 85±5%RH, 1000Hrs

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A101

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
29	63.77V	166	123.8mV	64.98V	156	114.5mV
30	63.16V	160	126.0mV	63.68V	164	123.9mV
31	58.40V	147	114.3mV	64.84V	160	121.5mV
32	61.47V	141	116.0mV	62.65V	156	122.5mV
33	64.15V	163	122.9mV	66.70V	155	114.1mV
34	58.76V	155	112.9mV	66.34V	147	124.3mV
35	58.53V	147	122.8mV	66.52V	134	124.2mV
36	65.69V	148	113.2mV	60.81V	140	115.6mV
37	62.17V	138	125.9mV	65.10V	139	122.1mV
38	65.78V	135	113.4mV	64.11V	142	121.3mV
39	60.72V	147	124.4mV	60.23V	167	116.0mV
40	64.16V	141	118.7mV	62.51V	144	115.5mV
41	61.81V	137	118.8mV	59.08V	133	118.0mV
42	57.72V	144	114.9mV	63.86V	147	118.6mV
43	60.99V	160	120.0mV	61.91V	168	119.0mV
44	66.13V	155	119.0mV	59.23V	141	115.0mV
45	57.12V	159	121.9mV	65.85V	164	115.1mV
46	59.65V	151	123.4mV	65.60V	155	119.0mV
47	66.91V	161	121.0mV	57.98V	138	124.8mV
48	61.81V	152	119.1mV	57.47V	160	124.8mV
49	61.01V	145	121.5mV	66.26V	157	122.8mV
50	64.14V	166	117.4mV	59.71V	147	116.3mV
51	57.84V	166	112.5mV	61.37V	161	123.9mV
52	65.06V	137	124.2mV	63.42V	169	124.6mV
53	59.76V	134	123.9mV	64.83V	169	115.9mV
54	56.61V	153	115.3mV	57.14V	143	121.8mV
55	63.84V	166	124.2mV	57.27V	143	119.4mV
56	60.00V	155	121.5mV	59.50V	159	117.7mV
57	63.11V	166	121.8mV	65.91V	163	116.5mV

SeCoS Corporation

High Temperature High Humidity Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 85±2℃, 85±5%RH, 1000Hrs

Test Date: 2013.06.03 ~ 2013.07.16

Test Standard : JESD22 STANDER Method-A101

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
58	57.39V	138	119.4mV	63.21V	147	121.3mV
59	56.62V	164	114.5mV	62.20V	153	122.2mV
60	58.63V	141	123.2mV	60.55V	141	118.7mV
61	64.52V	169	125.9mV	58.28V	147	117.3mV
62	59.81V	159	124.4mV	60.43V	138	117.5mV
63	64.23V	137	122.6mV	61.28V	170	116.0mV
64	63.65V	143	120.1mV	63.12V	149	115.7mV
65	57.80V	140	113.2mV	60.01V	149	117.9mV
66	63.10V	169	114.3mV	65.72V	143	123.3mV
67	62.03V	146	125.0mV	58.84V	154	123.5mV
68	62.81V	168	113.8mV	62.51V	137	117.5mV
69	63.67V	154	126.0mV	65.39V	148	114.6mV
70	62.11V	166	117.8mV	60.88V	140	121.6mV
71	64.59V	164	121.9mV	66.37V	163	123.2mV
72	65.39V	166	115.7mV	59.93V	135	122.4mV
73	64.86V	138	123.7mV	65.93V	147	116.1mV
74	64.48V	151	123.0mV	63.87V	144	116.1mV
75	62.52V	162	121.5mV	57.60V	162	124.7mV
76	63.15V	143	120.8mV	60.98V	151	115.5mV
77	57.65V	161	115.9mV	63.36V	148	118.6mV
MAX	66.46V	168	126.0mV	66.93V	170	126.1mV
MIN	56.88V	136	112.5mV	56.73V	133	112.4mV
AVG	61.37V	155	119.3mV	61.72V	152	118.9mV

Made By: Leo Hsia

Approval: Peter Yang

SeCoS Corporation

Solderability Test Data

Date: 2013/07/22

Report No : T130722-001

Part No : 2SC2873

Test Equipment: JUNO Test System DTS-1000

Test Condition : V(BR)CEO > 50V， 70 < HFE < 240， VCE(sat) < 500mV

Test Condition: 245 ± 5℃, 5Sec the inspected area of each lead must have 95% solder coverage minimu

Test Date: 2013.07.22 ~ 2013.07.22

Test Standard : JESD22 STANDER Method-B102

Operator: Bruce Chang

Test Result:

	Before			After		
No	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)	$V_{(BR)CEO}$ (V)	HFE	$V_{CE(sat)}$ (mV)
1	56.99V	169	116.5mV	59.37V	136	121.4mV
2	61.21V	145	126.0mV	64.35V	154	125.2mV
3	59.04V	134	125.7mV	64.31V	136	125.5mV
4	64.52V	149	113.3mV	66.11V	141	113.3mV
5	57.65V	165	126.2mV	66.10V	140	120.9mV
6	65.41V	152	118.9mV	59.90V	136	121.9mV
7	63.17V	144	115.9mV	65.41V	135	117.5mV
8	65.40V	157	124.0mV	66.28V	142	114.3mV
9	58.76V	159	114.1mV	61.62V	157	122.1mV
10	57.76V	160	125.6mV	61.85V	141	124.0mV
MAX	65.41V	169	126.2mV	66.28V	157	125.5mV
MIN	56.99V	134	113.3mV	59.37V	135	113.3mV
AVG	60.99V	153	120.6mV	63.53V	142	120.6mV

Made By: Leo Hsia

Approval: Peter Yang