

Customer Feedback/Approval Form

Form provided by ZVEI - Revision 3.0.0

Title of PCN:			
1.Silver paste source change 2.Package outline dimension change			
Customer PCN No.		Supplier PCN No.	PCN17002
Please check the appropriate box below:			

<input type="checkbox"/>	1. Feedback	date:	
<input type="checkbox"/>	We agree with this proposed change for the parts as listed in chapter '11. Affected parts'. Approval letter will be sent in written form.		
<input type="checkbox"/>	We agree with this proposed change schedule and will start with the PCN process. Approval letter will be sent in written form after evaluation.		
<input type="checkbox"/>	We disapprove because:		
<input type="checkbox"/>	Remark:		

<input type="checkbox"/>	2. Feedback	date:	
<input type="checkbox"/>	We acknowledge qualification / validation as assigned in chapter 8 of the PCN.		
<input type="checkbox"/>	We need more information:		
<input type="checkbox"/>	We need the following samples:		
<input type="checkbox"/>	Estimated closing date for PCN:		

<input type="checkbox"/>	Final Feedback/Approval	date:	

Sender:	
Company:	

Name:	
Address/Location:	
Signature:	
Date:	

Please return to: [your Sales partner]	
Name:	
Address/Location:	
Phone:	
Fax:	
Email:	



台灣半導體股份有限公司
231 台北縣新店市北新路三段205號11樓
電話:886-2-8913-1588
傳真:886-2-8913-1788

TAIWAN SEMICONDUCTOR CO., LTD.
11F, No. 205 Sec. 3, Beishin RD.
Shindian Dist., New Taipei City, Taiwan, R.O.C. 231
Tel:886-2-8913-1588 Fax:886-2-8913-1788

Comparison report

Prepared by Lijing
Approved by Ran Meng
Issued date on 2016.8.1
Revision for A

Comparison report

Parametric comparison:

	ITEM	VF/mV	VF/mV	VR/V	IR/uA	IR/uA	Result	
TS4148 RXG	TEST	10mA	100mA	5uA	80V	20V	No difference	
	SPEC	<750	<950	>100	<0.5	<0.025		
	Old:	MAX	727	920	154.5	0.041		0.021
		MIN	713	888	135.4	0.012		0.004
		AVE	718	899	146.6	0.020		0.010
	New:	MAX	720	923	162.4	0.027		0.016
		MIN	711	883	137.0	0.006		0.002
		AVE	715	898	150.7	0.011		0.006
	TS4148 RYG	TEST	10mA	100mA	5uA	80V		20V
SPEC		<750	<950	>100	<0.5	<0.025		
Old:		MAX	728	928	154.2	0.037	0.016	
		MIN	712	890	135.8	0.013	0.001	
		AVE	718	902	145.8	0.019	0.009	
New:		MAX	721	921	161.4	0.035	0.015	
		MIN	712	887	136.1	0.010	0.002	
		AVE	717	901	151.0	0.022	0.011	
TS4148C RZG		TEST	10mA	100mA	5uA	80V	20V	No difference
	SPEC	<1000	<1250	>100	<0.5	<0.025		
	Old:	MAX	726	922	160.4	0.027	0.009	
		MIN	714	893	142.0	0.007	0.004	
		AVE	719	904	150.7	0.009	0.005	
	New:	MAX	720	914	154.5	0.041	0.021	
		MIN	713	888	135.7	0.015	0.001	
		AVE	716	897	146.6	0.021	0.011	

	ITEM	VF/mV	ZZT/Ω	ZZK/Ω	VZ/V	IR/uA	Result	
BZS55B5V1	TEST	200mA	5mA	1mA	5mA	1V	No difference	
	SPEC	<1500	<50	<550	5.00-5.20	<0.1		
	Old:	MAX	945	19	218.7	5.026		0.000
		MIN	977	26	284.5	5.160		0.025
		AVE	955	21	235.3	5.113		0.003
	New:	MAX	920	19	218.7	5.040		0.000
		MIN	979	26	284.5	5.154		0.015
		AVE	955	21	235.5	5.102		0.003
	BZS55C27	TEST	200mA	5mA	1mA	5mA		18V
SPEC		<1500	<80	<220	25.65~28.35	<0.1		
Old:		MAX	946	8	10.0	26.858	0.000	
		MIN	1027	9	19.4	27.335	0.039	
		AVE	976	9	12.8	27.111	0.010	
New:		MAX	964	7	10.4	26.824	0.000	
		MIN	1001	9	15.2	27.312	0.017	
		AVE	976	9	11.9	27.143	0.001	
BZY55B13		TEST	200mA	5mA	1mA	5mA	10V	No difference
	SPEC	<1500	<26	<110	12.74-13.26	<0.1		
	Old:	MAX	954	8	15.2	13.171	0.000	
		MIN	1146	16	20.9	13.261	0.008	
		AVE	980	15	17.6	13.224	0.003	
	New:	MAX	913	8	14.9	13.165	0.000	
		MIN	1009	16	20.7	13.252	0.016	
		AVE	976	15	17.6	13.220	0.004	
	BZY55C18	TEST	200mA	5mA	1mA	5mA	13V	
SPEC		<1500	<50	<170	17.1~18.9	<0.1		
Old:		MAX	956	25	26.8	17.886	0.000	
		MIN	980	27	40.5	18.225	0.012	
		AVE	964	26	33.1	18.036	0.004	
New:		MAX	955	25	26.8	17.886	0.000	
		MIN	977	36	55.0	18.113	0.012	
		AVE	963	27	33.6	18.035	0.004	

***** The copyright of document and business secret belong to TSC, and no copies should be made without any permission *****

Comparison report

Dic shear comparison:單位:N

Item	Old			New			Result
	MAX	MIN	AVE	MAX	MIN	AVE	
TS4148 RXG	4.60	3.70	4.10	4.60	3.60	4.10	No difference
TS4148 RYG	4.60	3.60	4.10	4.60	3.60	4.20	
TS4148C RZG	4.50	3.70	4.10	4.40	3.50	3.90	
BZS55B&C Series	4.50	3.60	4.10	4.50	3.50	4.10	
BZY55B&C Series	4.50	3.50	4.10	4.50	3.50	3.90	

Thermal resistance comparison:單位: °C/W

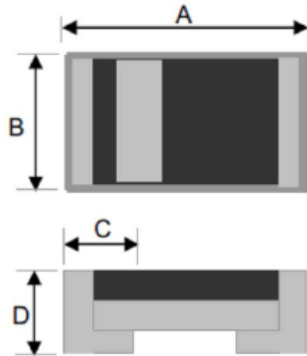
Item	Old			New			Result
	MAX	MIN	AVE	MAX	MIN	AVE	
TS4148 RXG	228.0	205.9	220.7	226.5	207.9	219.5	No difference
TS4148 RYG	229.9	205.8	218.8	229.9	205.1	216.9	
TS4148C RZG	229.5	202.1	216.7	229.2	200.5	214.3	
BZS55B&C Series	229.5	205.9	218.0	229.8	207.6	218.3	
BZY55B&C Series	228.2	205.1	216.8	229.8	205.3	216.9	

Comparison report

Outline dimensions summary:

PACKAGE OUTLINE DIMENSIONS

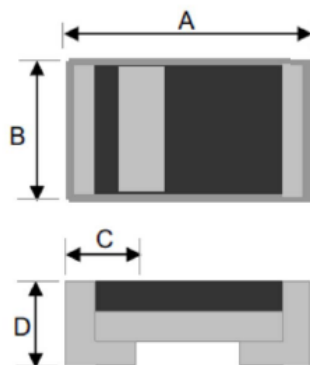
0805 (Ceramics)



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.80	2.20	0.071	0.087
B	1.05	1.45	0.041	0.057
C	0.25	0.65	0.010	0.026
D	0.75	0.95	0.030	0.037

PACKAGE OUTLINE DIMENSIONS

1206 (Ceramics)



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	3.00	3.40	0.118	0.134
B	1.30	1.70	0.051	0.067
C	0.35	0.75	0.014	0.030
D	0.75	0.95	0.030	0.037

Item	Package	Old (D尺寸)				New (D尺寸)				Result
		Spec.	MAX	MIN	AVE	Spec.	MAX	MIN	AVE	
1	0805	0.75~0.95	0.79	0.75	0.77	0.65~0.85	0.75	0.72	0.74	Outline can't meet with TSC's specification.
2	1206	0.75~0.95	0.79	0.75	0.77	0.65~0.85	0.74	0.72	0.71	

Comparison report

Ingredient comparison

Supplier name	Substance Name	CAS No.	Raw Material Proportion
Old :	Silver	7440-22-4	50.0%
	Glass frit	trade secret	12.5%
	Resins	trade secret	5.0%
	Additives	trade secret	5.0%
	Diethylene glycol monobuty ether	112-34-5	15.0%
	Terpineo	8000-41-7	12.5%
New :	silver	7440-22-4	54.0%
	Ethyl cellulose	9004-57-3	5.0%
	Inorganic adhesive	-	6.0%
	terpineol	10482-56-1	35.0%

Reliability Test Report

TSC Part Number : TS4148

Prepared by : Benny
Approved by : Brian



台灣半導體股份有限公司
231 新北市新店區北新路三段205號11樓
電話:886-2-8913-1588
傳真:886-2-8913-1788

TAIWAN SEMICONDUCTOR CO., LTD.
11F, No. 205 Sec. 3, Beishin RD.
Shindian Dist., New Taipei City, Taiwan, R.O.C. 231
Tel:886-2-8913-1588 Fax:886-2-8913-1788

TSC generic family P/N including as follows :

: Identifies used P/N we used for this family qualification.

Family Generic P/N :

Package :

<input checked="" type="checkbox"/> TS4148 RXG	1206
<input checked="" type="checkbox"/> TS4148 RYG	0805
<input checked="" type="checkbox"/> TS4148 RZG	0603

Environment Test Summary

Customer P/N :		TS4148							
General Specification :		TSC Data sheet		Supplier Manufacturing Site :		China			
Reason for Qual. :		Qualification plan		According to :		JESD22			
Item	Test	Test Conditions			# Lots	S.Size	# Failed	Result	
1	Solderability	245±5°C, 2±0.5 secs			1	45	0	Accept	
2	Steam Aging Solderability	98±3 °C, 100%RH, 4hrs 245±5°C, 2±0.5s			1	45	0	Accept	
3	Coating resist	260±5 °C, 10±1s			1	45	0	Accept	
4	Plating Thickness	X-RAY · 3~15um			1	45	0	Accept	
5	Forward Surge Current	500mA, 1s			1	45	0	Accept	
6	Resistance to soldering heat	260±5°C, 10±1s			1	45	0	Accept	
7	Hi-Pressure Steady State	121°C 1atm(101KPa) 100%RH 96hrs			1	45	0	Accept	
8	Thermal Shock	-55 ±3 °C/5 mins→150±3 °C/5 mins, 10cycls			1	45	0	Accept	
9	Bending	Bending 4mm			1	11	0	Accept	
10	Temperature Cycle	-55±3°C/ 30mins→25±3°C/10mins→ 150±3°C/30mins→25±3°C/10mins ; 20cycls			1	45	0	Accept	
11	Humidity Steady State	85±3 °C 85%RH, 168hrs			1	45	0	Accept	
12	Continue Forward Operating Life	IF=1.1*IO(165mA) , 1000hrs			1	45	0	Accept	
13	Intermittent Forward Operating Life	IF=1.5*Io(225mA), ON 5mins, Off 5mins, 1000cycls			1	45	0	Accept	
14	Hi-Temperature Reverse Bias	150±3 °C, VR=80% RATED VR(75V), 1000hrs			1	45	0	Accept	
15	H3TRB	85±3°C 85%RH,VR=60V, 168hrs			1	45	0	Accept	
Comment :									
Prepared by :		Fongjuan Wang		Approved by :		John Tong			
Title :		Hi-Rel Supervisor		Title :		QA Leader			