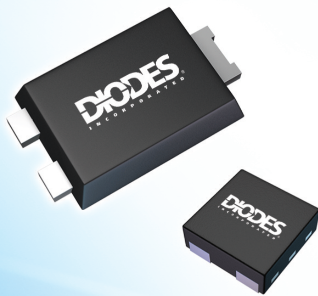

Diodes Incorporated
Discrete and Analog Semiconductors

Qualification Report – PCN-2244

Manufacturer No.: Qualification of "Diodes Technology (Cheng Du) Co. Ltd." (CAT) as an Additional Assembly & Test Site, and Conversion to Copper Bond Wire on Select Products at Diodes Shanghai Kaihong Electronic Co./Diodes Inc. Shanghai (SAT)

Revision: 0

Date: November 22, 2016

Qualified By: Diodes Incorporated

Also Applicable To: The part numbers listed in the associated PCN are Qualified by Similarity (QBS) to the devices included in this report.

Please go to www.diodes.com for current data sheets on associated devices

Prepared By:	Diodes US Document Control	Date	November 22, 2016
Approved By:	Diodes US QRA Department	Date	November 22, 2016

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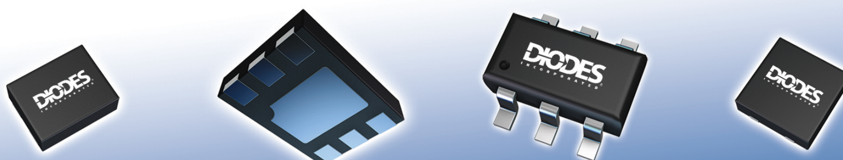

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Plastic encapsulated Diodes Incorporated semiconductor devices are not designed and are not warranted to be suitable for use in some military applications and/or military environments. Use of plastic encapsulated Diodes Incorporated semiconductor devices in military applications and/or military environments, in lieu of hermetically sealed ceramic devices, is understood to be fully at the risk of Buyer.

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Existing industry standards for plastic encapsulated microcircuit qualification and reliability monitors are based upon historical data, experiments, and field experience with the use of these devices in commercial and industrial applications. The applicability of these standards in determining the suitability for use and safety performance in life support, military and aerospace applications has not been established. Due to the multiple variations in field operating conditions, a component manufacturer can only base estimates of product life on models and the results of package and die level qualification. The buyer's use of this data, and all consequences of such use, is solely the buyer's responsibility. Buyer assumes full responsibility to perform sufficient engineering and additional qualification testing in order to properly evaluate the buyer's application and determine whether a candidate device is suitable for use in that application. The information provided by Diodes Incorporated shall not be considered sufficient grounds on which to base any such determination.

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DATE: 22 November, 2016

PCN #: 2244

PCN Title: Qualification of "Diodes Technology (Cheng Du) Co. Ltd." (CAT) as an Additional Assembly & Test Site, and Conversion to Copper Bond Wire on Select Products at Diodes Shanghai Kaihong Electronic Co./Diodes Inc. Shanghai (SAT)

Dear Customer:

This is an announcement of change(s) to products that are currently being offered by Diodes Incorporated.

We request that you acknowledge receipt of this notification within 30 days of the date of this PCN. If you require samples for evaluation purposes, please make a request within 30 days as well. Otherwise, samples may not be built prior to this change. Please refer to the implementation date of this change as it is stated in the attached PCN form. Please contact your local Diodes sales representative to acknowledge receipt of this PCN and for any sample requests.

The changes announced in this PCN will not be implemented earlier than 90 days from the notification date stated in the attached PCN form.

Previously agreed upon customer specific change process requirements or device specific requirements will be addressed separately.

For questions or clarification regarding this PCN, please contact your local Diodes sales representative.

Sincerely,

Diodes Incorporated PCN Team

PRODUCT CHANGE NOTICE PCN-2244 REV 00

Notification Date:	Implementation Date:	Product Family:	Change Type:	PCN #:
22 November, 2016	20 February, 2017	Discrete	Assembly/Test Site and Design	**2244**

TITLE

Qualification of "Diodes Technology (Cheng Du) Company Limited" (CAT) as an Additional Assembly & Test Site, and Conversion to Copper Bond Wire on Select Products at Diodes Shanghai Kaihong Electronic Co./Diodes Inc. Shanghai (SAT)

DESCRIPTION OF CHANGE

This PCN is being issued to notify customers that in order to assure continuity of supply, Diodes has qualified "Diodes Technology (Cheng Du) Company Limited" (CAT) located in Chengdu, China as an additional Assembly & Test (A/T) Site for select parts using Copper bond wire. In addition, the conversion from Gold to Copper bond wire on select Discrete products at Diodes Shanghai Kaihong Electronic Co./Diodes Inc. Shanghai (SAT).

Full electrical characterization and high reliability testing has been completed on representative part numbers to ensure that no changes in product reliability, device functionality or data sheet electrical specifications exist.

There will be no change to the Form, Fit, or Function of affected products.

IMPACT

Table 1: Add Chengdu (CAT) as Additional A/T Site
Table 2: Change From Gold Wire to Copper Wire at Original A/T Site (SAT), and Add CAT as Additional A/T Site

PRODUCTS AFFECTED

See Tables 1 - 2 below.

WEB LINKS

Manufacturer's Notice:	http://www.diodes.com/pcns
For More Information Contact:	http://www.diodes.com/contacts.html
Data Sheet:	http://www.diodes.com/catalog

DISCLAIMER

Unless a Diodes Incorporated Sales representative is contacted in writing within 30 days of the posting of this notice, all changes described in this announcement are considered approved.

Table 1: Table 1: Add Chengdu (CAT) as Additional A/T Site					
1N4148WS-13-F	1N4148WS-7-F	1N4448HWS-13-F	1N4448HWS-7-F	1N4448WS-7-F	1N5711WS-7-F
1N5819HW-7-F	1N6263W-7-F	BAS16HTW-13	BAS16TW-13-F	BAS16TW-7-F	BAS40W-04-7-F
BAS40W-05-7-F	BAS40W-06-7-F	BAS40W-7-F	BAS70W-04-7-F	BAS70W-05-7-F	BAS70W-06-7-F
BAS70W-7-F	BAT42W-7-F	BAT43W-7-F	BAT46W-7-F	BAV16WS-7-F	BAV70HDW-7
BAV70W-7-F	BAV99BRW-7-F	BAV99DW-13-F	BAV99DW-7-F	BAV99W-13-F	BAV99W-7-F
BAW56DW-7-F	BAW56W-7-F	MMBD4148TW-7-F	MMBD4448-7-F	MMBD4448DW-7-F	MMBD4448HADW-7-F
MMBD4448HTW-7-F	SD101AW-7-F	SD101AWS-7-F	SD101BW-7-F	SD101BWS-7-F	SD101CW-7-F
SD101CWS-7-F	SD103AW-13-F	SD103AW-7-F	SD103AWS-7-F	SD103BW-7-F	SD103BWS-7-F
SD103CW-13-F	SD103CW-7-F	SD103CWS-7-F			

Table 2: Change From Gold Wire to Copper Wire at Original A/T Site (SAT) and Add CAT as Additional A/T Site					
1N5711W-7-F	BAS40W-13-F				

Certificate of Design, Construction & Qualification

Description: Qualification of SBR & SKY devices in SOD & SOT packages at CAT

Category		Qual Device 1	Qual Device 2	Qual Device 3	Qual Device 4	Qual Device 5
Product	Part Number	MBR0580S1-7	MBR180S1-7	BAT54CW-7-F	SD103AWS-7-F	1N5819HW-7-F
Assembly	Package Type	SOD-123	SOD-123	SOT-323	SOD-323	SOD-123
Assembly	Package Size	3.65*1.55*1.10mm	3.65*1.55*1.10mm	2.15*2.1*1.05mm	2.55*1.3*1.075mm	3.65*1.55*1.10mm
Wafer	Die Name(s)	E7924	E7925	S9069 / E9069	S9103 / E9103	E9085
Wafer	Die Size (W/L/Thickness) - After Saw	0.73*0.58*0.29mm	0.75*0.75*0.29mm	0.31*0.31*0.216mm	0.46*0.46*0.216mm	0.81*0.81*0.241mm
Wafer	Die Process / Technology	SCHOTTKY	SCHOTTKY	SCHOTTKY	SCHOTTKY	SCHOTTKY
Wafer	Wafer FAB/ Location	KFAB / USA	KFAB / USA	KFAB / USA	KFAB / USA	KFAB / USA
Wafer	Wafer Diameter	6"	6"	5" / 6"	5" / 6"	6"
Wafer	Front Metal Type	AlSiCu	AlSiCu	AlSiCu	AlSiCu	AlSiCu
Wafer	Front Metal Layer Number/ Thickness	AlSiCu 3.5um	AlSiCu 3.5um	AlSiCu 3.5um	AlSiCu 3.5um	AlSiCu 3.5um
Wafer	Number of Poly Layers	NA	NA	NA	NA	NA
Wafer	Back Metal Type (All Layers)	Ti-NiV-Ag	Ti-NiV-Ag	Ti-NiV-Au	Ti-NiV-Au	Ti-NiV-Au
Wafer	Back Metal Thickness (All Layers)	11500 A	11500 A	5000 A	5000 A	5000 A
Wafer	No of masks Steps	3	3	3	3	3
Assembly	Die quantity per package (e.g. single or dual dies)	Single	Single	Dual	Single	Single
Assembly	Die Attach Method (DB Epoxy/Solder Type)	EPOXY	EPOXY	EUTECTIC	EUTECTIC	EPOXY
Assembly	Die Attach Material/ Supplier	84-1LMISR4 / HENKEL	84-1LMISR4 / HENKEL	NA	NA	H9607 / NAMICS
Assembly	Bond Wire/Clip Bond Material/ Supplier	Cu / TANAKA & Heraeus	Cu / TANAKA & Heraeus	Cu / TANAKA & Heraeus	Cu / TANAKA & Heraeus	Cu / TANAKA & Heraeus
Assembly	Bond Type (at Die)	Thermo sonic	Thermo sonic	Thermo sonic	Thermo sonic	Thermo sonic
Assembly	Bond Type (at LF)	Thermo sonic	Thermo sonic	Thermo sonic	Thermo sonic	Thermo sonic
Assembly	No. of bond over active area	2	2	2	1	2
Assembly	Glass Transistion Temp	160 ℃	160 ℃	160 ℃	160 ℃	160 ℃
Assembly	Terminal Finish (Plating) Material	Pb free	Pb free	Pb free	Pb free	Pb free
Assembly	Header plating (Die Land Area)	Bare Copper	Bare Copper	Bare Copper	Bare Copper	Bare Copper
Assembly	Wire Diameter	2.0mil	2.0mil	1.0mil	1.0mil	2.0mil
Assembly	Leadframe Type	SOD-123 B	SOD-123 B	SOT-323 H	SOD-323 B	SOD-123 B
Assembly	Leadframe Material	Alloy42	Alloy42	Alloy42	Alloy42	Alloy42
Assembly	Lead Frame Manufacturer	SHE	SHE	ASM	ASM	SHE
Assembly	Molding Compound Type	CEL-1702HF9SK	CEL-1702HF9SK	GR640HV-L1	GR640HV-L1	CEL-1702HF9SK
Assembly	Mold Compound Material Manufacturer	HITACHI	HITACHI	HENKEL	HENKEL	HITACHI
Assembly	Green Compound (Yes/No)	YES	YES	YES	YES	YES
Assembly	Lead-Free (Yes/No)	YES	YES	YES	YES	YES
Assembly	Assembly Site/ Location	CAT / Chengdu	CAT / Chengdu	CAT / Chengdu	CAT / Chengdu	CAT / Chengdu
Assembly	Test Site/ Location	CAT / Chengdu	CAT / Chengdu	CAT / Chengdu	CAT / Chengdu	CAT / Chengdu
Product	Max Junction Temp	175C	175C	167C	181C	NA
Product	DataSheet	DS37435	DS37775	DS30065	DS30101	DS30217

Reliability and Characterization Testing

# in AEC-Q101	Test	Test Conditions	Duration / Limits	Accept on # Failed/ Sample	# of Lots	X = Test Needed	Results Pass/Fail	X = Test Needed	Results Pass/Fail	X = Test Needed	Results Pass/Fail	X = Test Needed	Results Pass/Fail	X = Test Needed	Results Pass/Fail
2	MSL1 Pre-conditioning	Bake 125C	24 Hrs	SMD only, for Test #7, 8, 9 & 10	3 Assembly lots	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
		Soak 85C, 85% RH	168Hrs			X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
		IR reflow 260C	3 cycles			X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
3	EXTERNAL VISUAL (EV)	MIL-STD-750 METHOD 2071	PER SPEC	All qualification parts submitted for testing		X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
4	PARAMETRIC VERIFICATION (PV)	-55C, 25C, 85C, 125C, 150C	Operating Range, Per Data Sheet	0/25	3 wafer lots	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
	FORWARD SURGE	MIL-750D, METHOD 4066	PER DATA SHEET	0/45	3 wafer lots	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
5	HTRB	Ta=150℃ or Max Tj, Vd=100%, PER MIL-STD-750-1	168 Hrs	0/77	3 wafer lots	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
			500 Hrs	0/77		X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
			1000 Hrs	0/77		X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
7	TC	Ta=-65C to 150C or Max Tj, PER JESD22A-104	168 Cycles	0/77	3 Assembly lots	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
			500 Cycles	0/77		X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
			1000 Cycles	0/77		X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
8	PCT/AC	Ta=121℃ 15PSIG 100%RH; PER JESD22-A102	96 Hrs	0/77	3 Assembly lots	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
9	HAST	Ta=130C, 85%RH 33.3 psia 80% Bias; PER JESD22-A110	96 Hrs	0/77	3 wafer lots			X	Pass	X	Pass	X	Pass		
9 alt	H3TRB	Ta=85ºC, 85% RH, with 80% Maximum Reverse Bias. JESD22A-101	168 Hrs	0/77	3 wafer lots	X	Pass					X	Pass	X	Pass
			500 Hrs	0/77		X	Pass					X	Pass	X	Pass
			1000 Hrs	0/77		X	Pass					X	Pass	X	Pass
10	IOL	MIL-STD-750 Method 1037 (N/A for TVS)	2520 Cycles	0/77	3 wafer lots	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
			7560 Cycles	0/77		X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
			15000 Cycles	0/77		X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
11	ESD	HBM (AEC-Q101-001)	PER DATA SHEET	0/30	1 wafer lot	X	Pass	X	Pass	X	Pass				
		CDM (AEC-Q100-005)	PER DATA SHEET	0/30	1 wafer lot	X	Pass	X	Pass						
12	DPA	AEC Q101-004 SEC. 4		0/2	1 Assembly lot	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
13	Package Physical Dimemsions (PD)	JESD22-B100	Package Outline	0/30;	1 Assembly lot	X	Pass	X	Pass	X	Pass	X	Pass		Pass
20	RESISTANCE TO SOLDER HEAT (RSH)	JESD22 A-111 (SMD), B-106 (PTH) (260C @30S)	PER SPEC	0/30	1 Assembly lot	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
21	Solderability	J-STD-002; JESD22B102 (245C +0/5S)	5 Seconds	0/10;	1 Assembly lot	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
22	THERMAL RESISTANCE (TR)	JESD 24-3, 24-4, 24-6 AS APPROPRIATE	PER SPEC	0/10	1 Assembly lot	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
23	Wire Bond Strength	MIL-STD-750 METHOD 2037 (JESD22-B116B)	Cpk>1.66	0/ min of 5	1 Assembly lot	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
24	BOND SHEAR	AEC-Q101-003	Cpk>1.66	0/ min of 5	1 Assembly lot	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass
25	Die Shear	MIL-STD-750 (2017)	Cpk>1.66	0/5	1 Assembly lot	X	Pass	X	Pass	X	Pass	X	Pass	X	Pass

Summary:	David Tang 06/13/16	Updated 09/28/16
Submitted By:	Mark Li 06/13/16	Updated 09/28/16
Approved By:	Hiwen Hu 06/13/16	

Certificate of Design, Construction & Qualification

	Category					Qual Device 4		Qual Device 5	
	Product	Part Number				1N4148WS-7-F		MMBD4448DW-7-F	
	Assembly	Package Type				SOD-323		SOT-363	
	Assembly	Package Size				2.55*1.3*1.075mm		2.55*1.3*1.075mm	
	Wafer	Die Name(s)				B1003F / B1003FM		B1090F / B1090FM	
	Wafer	Die Size (W/L/Thickness) - After Saw				0.262*0.262*0.216mm		0.35*0.35*0.216mm	
	Wafer	Die Process / Technology				SWITCH		SWITCH	
	Wafer	Wafer FAB/ Location				KFAB / USA		KFAB / USA	
	Wafer	Wafer Diameter				6"		6"	
	Wafer	Front Metal Type				AlSiCu		AlSiCu	
	Wafer	Front Metal Layer Number/ Thickness				AlSiCu 3.5um		AlSiCu 3.5um	
	Wafer	Back Metal Type (All Layers)				Ti-NiV-Au		Ti-NiV-Au	
	Wafer	Back Metal Thickness (All Layers)				5000 A		5000 A	
	Wafer	No of masks Steps				5		5	
	Assembly	Die quantity per package (e.g. single or dual dies)				Single		2	
	Assembly	Die Attach Method (DB Epoxy/Solder Type)				EUTECTIC		EUTECTIC	
	Assembly	Die Attach Material/ Supplier				NA		NA	
	Assembly	Bond Wire/Clip Bond Material/ Supplier				Cu / TANAKA & Heraeus		Cu / TANAKA & Heraeus	
	Assembly	Bond Type (at Die)				Thermo sonic		Thermo sonic	
	Assembly	Bond Type (at LF)				Thermo sonic		Thermo sonic	
	Assembly	No. of bond over active area				1		2	
	Assembly	Glass Transition Temp				160 ℃		160 ℃	
	Assembly	Terminal Finish (Plating) Material				Pb free		Pb free	
	Assembly	Header plating (Die Land Area)				Bare Copper		Ag plating	
	Assembly	Wire Diameter				1.0mil		1.0mil	
	Assembly	Leadframe Type				SOD-323 B		SOT-363 G	
	Assembly	Leadframe Material				Alloy42		Alloy42	
	Assembly	Lead Frame Manufacturer				ASM		SDI	
	Assembly	Molding Compound Type				GR640HV-L1		CEL-1702HF9SK	
	Assembly	Mold Compound Material Manufacturer				HENKEL		HITACHI	
	Assembly	Green Compound (Yes/No)				YES		YES	
	Assembly	Lead-Free (Yes/No)				YES		YES	
	Assembly	Assembly Site/ Location				CAT / Chengdu		CAT / Chengdu	
	Assembly	Test Site/ Location				CAT / Chengdu		CAT / Chengdu	
		Reliability and Characterization Testing							
# in AEC-Q101	**Test**	**Test Conditions**	**Duration / Limits**	**Accept on # Failed/ Sample Size**	**# of Lots**	**X = Test Needed**	**Results Pass/Fail**	**X = Test Needed**	**Results Pass/Fail**
2	MSL1 Pre-conditioning	Bake 125C	24 Hrs	SMD only, for Test #7, 8, 9 & 10	3 Assembly lots	X	Pass	X	Pass
		Soak 85C, 85% RH	168Hrs			X	Pass	X	Pass
		IR reflow 260C	3 cycles			X	Pass	X	Pass
3	EXTERNAL VISUAL (EV)	MIL-STD-750 METHOD 2071	PER SPEC	All qualification parts submitted for testing		X	Pass	X	Pass
4	PARAMETRIC VERIFICATION (PV)	-55C, 25C, 85C, 125C, 150C	Operating Range, Per Data Sheet	0/25	3 wafer lots	X	Pass	X	Pass
5	HTRB	Ta=150℃ or Max Tj, Vd=100%, PER MIL-STD-750-1	168 Hrs	0/77	3 wafer lots	X	Pass	X	Pass
			500 Hrs	0/77		X	Pass	X	Pass
			1000 Hrs	0/77		X	Pass	X	Pass
7	TC	Ta=-65C to 150C or Max Tj, PER JESD22A-104	168 Cycles	0/77	3 Assembly lots	X	Pass	X	Pass
			500 Cycles	0/77		X	Pass	X	Pass
			1000 Cycles	0/77		X	Pass	X	Pass
8	PCT/AC	Ta=121℃ 15PSIG 100%RH; PER JESD22-A102	96 Hrs	0/77	3 Assembly lots	X	Pass	X	Pass
9	HAST	Ta=130C, 85%RH 33.3 psia 80% Bias; PER JESD22-A110	96 Hrs	0/77	3 wafer lots	X	Pass	X	Pass
10	IOL	MIL-STD-750 Method 1037 (N/A for TVS)	2520 Cycles	0/77	3 wafer lots	X	Pass	X	Pass
			7560 Cycles	0/77		X	Pass	X	Pass
			15000 Cycles	0/77		X	Pass	X	Pass
11	ESD	HBM (AEC-Q101-001)	PER DATA SHEET	0/30	1 wafer lot	X	Pass	X	Pass
		MM (AEC-Q101-002)	PER DATA SHEET	0/30	1 wafer lot	X	Pass	X	Pass
12	DPA	AEC Q101-004 SEC. 4		0/2	1 Assembly lot	X	Pass	X	Pass
13	Package Physical Dimemsions (PD)	JESD22-B100	Package Outline	0/30	1 Assembly lot	X	Pass	X	Pass
20	RESISTANCE TO SOLDER HEAT (RSH)	JESD22 A-111 (SMD), B-106 (PTH) (260C @30S)	PER SPEC	0/30	1 Assembly lot	X	Pass	X	Pass
21	Solderability	J-STD-002; JESD22B102 (245C +0/5S)	5 Seconds	0/10	1 Assembly lot	X	Pass	X	Pass
22	THERMAL RESISTANCE (TR)	JESD 24-3, 24-4, 24-6 AS APPROPRIATE	PER SPEC	0/10	1 Assembly lot	X	Pass	X	Pass
23	Wire Bond Strength	MIL-STD-750 METHOD 2037 (JESD22-B116B)	Cpk>1.66	0/ min of 5	1 Assembly lot	X	Pass	X	Pass
24	BOND SHEAR	AEC-Q101-003	Cpk>1.66	0/ min of 5	1 Assembly lot	X	Pass	X	Pass
25	Die Shear	MIL-STD-750 (2017)	Cpk>1.66	0/5	1 Assembly lot	X	Pass	X	Pass
	Summary:	David tang 10/12/16							
	Submitted By:	Mark li 10/12/16							
	Approved By:	Hiwen hu 10/12/16							

Certificate of Design, Construction & Qualification

Description: Qualification of Cu wire bonding for SBR and SKY products

	Category					Qual Device 1		Qual Device 2	
	Product	Part Number				B140HW-7		SD103ATW-7-F	
	Assembly	Package Type				SOD123		SOT-363	
	Assembly	Package Size				1.55*3.7*1.06mm		2.15*2.1*1.0mm	
	Wafer	Die Name(s)				S0226		S9103	
	Wafer	Die Size (W/L/Thickness) - After Saw				0.88*0.88mm		0.46*0.46*0.205mm	
	Wafer	Die Process / Technology				SBR		SBR	
	Wafer	Wafer FAB/ Location				KFAB		KFAB	
	Wafer	Wafer Diameter				5 inch		5 inch	
	Wafer	Front Metal Type				Ti-AlSi		Ti-AlSi	
	Wafer	Front Metal Layer Number/ Thickness				4.0 um		2.0 um	
	Wafer	Back Metal Type (All Layers)				Ti-NiV-Au		NiV-Au	
	Wafer	Back Metal Thickness (All Layers)				1500A/3300A/600A		125A/5150A	
	Wafer	No of masks Steps				3		3	
	Assembly	Die quantity per package (e.g. single or dual dies)				Single		3 die	
	Assembly	Die Attach Method (DB Epoxy/Solder Type)				EPOXY		EUTECTIC	
	Assembly	Die Attach Material/ Supplier				9005SP		N/A	
	Assembly	Bond Wire/Clip Bond Material/ Supplier				Cu/NBKQ		Cu/NBKQ	
	Assembly	Bond Type (at Die)				Thermo sonic		Thermo sonic	
	Assembly	Bond Type (at LF)				Thermo sonic		Thermo sonic	
	Assembly	No. of bond over active area				2		3	
	Assembly	Glass Transistion Temp				130℃		130℃	
	Assembly	Terminal Finish (Plating) Material				Pb free		N/A	
	Assembly	Header plating (Die Land Area)				Silver Spot Plate		Silver Spot Plate	
	Assembly	Wire Diameter				1.7mil		1.0mil	
	Assembly	Leadframe Type				SOD-123		SOT-363O	
	Assembly	Leadframe Material				Alloy 42		ALLOY 42	
	Assembly	Lead Frame Manufacturer				MHT/VAST/XMYH		MHT	
	Assembly	Molding Compound Type				KTMC1050G		CEL-1702HF9 SK	
	Assembly	Mold Compound Material Manufacturer				KCC		HITACHI	
	Assembly	Green Compound (Yes/No)				Yes		Yes	
	Assembly	Lead-Free (Yes/No)				Yes		Yes	
	Assembly	Assembly Site/ Location				SAT		SAT	
	Assembly	Test Site/ Location				SAT		SAT	
	Product	Max Thermal resistance Junc (amibent)				251ºC/W		500ºC/W	
	Product	DataSheet				DS30670		DS30374	
		Reliability and Characterization Testing							
# in AEC Q101 (D)	**Test**	**Test Conditions**	**Duration / Limits**	**Accept on # Failed/ Sample Size per Lot**	**# of Lots**	**X = Test Needed**		**X = Test Needed**	
2	MSL1 Pre-conditioning	Bake 125C	24 Hrs	SMD only, for Test #7, 8, 9 & 10	3 Assembly lots	X	Pass	X	Pass
		Soak 85C, 85% RH	168Hrs			X	Pass	X	Pass
		IR reflow 260C	3 cycles			X	Pass	X	Pass
3	EXTERNAL VISUAL (EV)	MIL-STD-750 METHOD 2071	PER SPEC	All qualification parts submitted for testing		X	Pass	X	Pass
4	PARAMETRIC VERIFICATION (PV)	-55C, 25C, 85C, 125C, 150C	Operating Range, Per Data Sheet	0/25	3 wafer lots	X	Pass	X	Pass
	FORWARD SURGE	MIL-750D, METHOD 4066	PER DATA SHEET	0/45	3 wafer lots	X	Pass	X	Pass
5	HTRB	Ta=150℃ or Max Tj, Vd/Vr/Vcbo=80%, MIL-STD-750-1 / PER JESD22 A-108	168 Hrs	0/77	3 wafer lots	X	Pass	X	Pass
			500 Hrs	0/77		X	Pass	X	Pass
			1000 Hrs	0/77		X	Pass	X	Pass
7	TC	Ta=-65C to 150C or Max Tj, PER JESD22A-104	168 Cycles	0/77	3 Assembly lots	X	Pass	X	Pass
			500 Cycles	0/77		X	Pass	X	Pass
			1000 Cycles	0/77		X	Pass	X	Pass
8	PCT/AC	Ta=121℃ 15PSIG 100%RH; PER JESD22-A102	96 Hrs	0/77	3 Assembly lots	X	Pass	X	Pass
9 alt	H3TRB	Ta=85ºC, 85% RH, with 80% Maximum Reverse Bias. JESD22A-101	168 Hrs	0/77	3 wafer lots	X	Pass	X	Pass
			500 Hrs	0/77		X	Pass	X	Pass
			1000 Hrs	0/77		X	Pass	X	Pass
10	IOL	MIL-STD-750 Method 1037 (N/A for TVS)	2520 Cycles	0/77	3 wafer lots**	X	Pass	X	Pass
			7560 Cycles	0/77		X	Pass	X	Pass
			15000 Cycles	0/77		X	Pass	X	Pass
11	ESD	HBM (AEC-Q101-001)	PER DATA SHEET	0/30	1 wafer lot	X	Pass	X	Pass
		CDM (AEC-Q100-005)	PER DATA SHEET	0/30	1 wafer lot			X	Pass
		MM (AEC-Q101-002)	PER DATA SHEET	0/30	1 wafer lot	X	Pass	X	Pass
12	DPA	AEC Q101-004 SEC. 4		0/2	1 Assembly lot	X	Pass	X	Pass
13	Package Physical Dimemsions (PD)	JESD22-B100	Package Outline	0/30	1 Assembly lot	X	Pass	X	Pass
20	RESISTANCE TO SOLDER HEAT (RSH)	JESD22 A-111 (SMD), B-106 (PTH) (260C @30S)	PER SPEC	0/30	1 Assembly lot	X	Pass	X	Pass
21	Solderability	J-STD-002; JESD22B102 (245C +0/5S)	5 Seconds	0/10	1 Assembly lot	X	Pass	X	Pass
22	THERMAL RESISTANCE (TR)	JESD 24-3, 24-4, 24-6 AS APPROPRIATE	PER SPEC	0/10	1 Assembly lot	X	Pass	X	Pass
23	Wire Bond Strength	MIL-STD-750 METHOD 2037 (JESD22-B116B)	Cpk>1.66	0/ min of 5	1 Assembly lot	X	Pass	X	Pass
24	BOND SHEAR	AEC-Q101-003	Cpk>1.66	0/ min of 5	1 Assembly lot	X	Pass	X	Pass
25	Die Shear	MIL-STD-750 (2017)	Cpk>1.66	0/5	1 Assembly lot	X	Pass	X	Pass

Summary: Joan Yu, Steven Yu, Sun Liang, Kylie
Submitted By: Kylie Hwong, 4/9/15
Approved By: