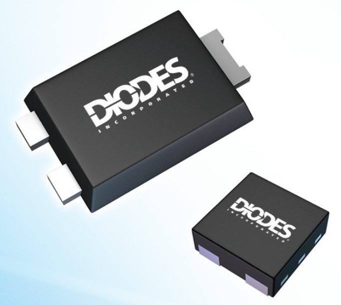


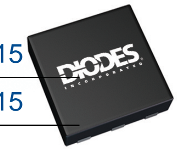
Diodes Incorporated
Discrete and Analog Semiconductors

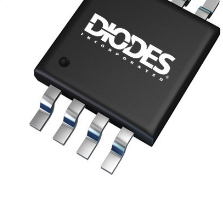
Qualification Report – PCN-2133

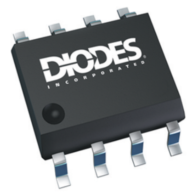
Manufacturer No.:	Qualification of "Diodes Zetex Neuhaus GmbH" as an Additional Assembly & Test Site and Conversion to Palladium Coated Copper Bond Wire for Selected SOT-23F Packaged Products
Revision:	0
Date:	September 25, 2015
Qualified By:	Diodes Incorporated
Also Applicable To:	The part numbers listed 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	September 25, 2015
Approved By:	Diodes US QRA Department	Date	September 25, 2015







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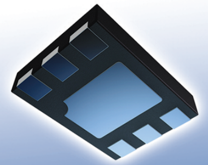

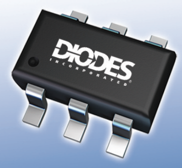

diodes.com

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www.diodes.com

DATE: 25th September, 2015

PCN #: 2133

PCN Title: Qualification of "Diodes Zetex Neuhaus GmbH" as an Additional Assembly & Test Site and Conversion to Palladium Coated Copper Bond Wire for Selected SOT-23F Packaged Products

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-2133 REV 00

Notification Date:	Implementation Date:	Product Family:	Change Type:	PCN #:
25th September, 2015	23rd December, 2015	Discrete / Analog Semiconductors	Additional Assembly & Test Site / Bond Wire Material	**2133**

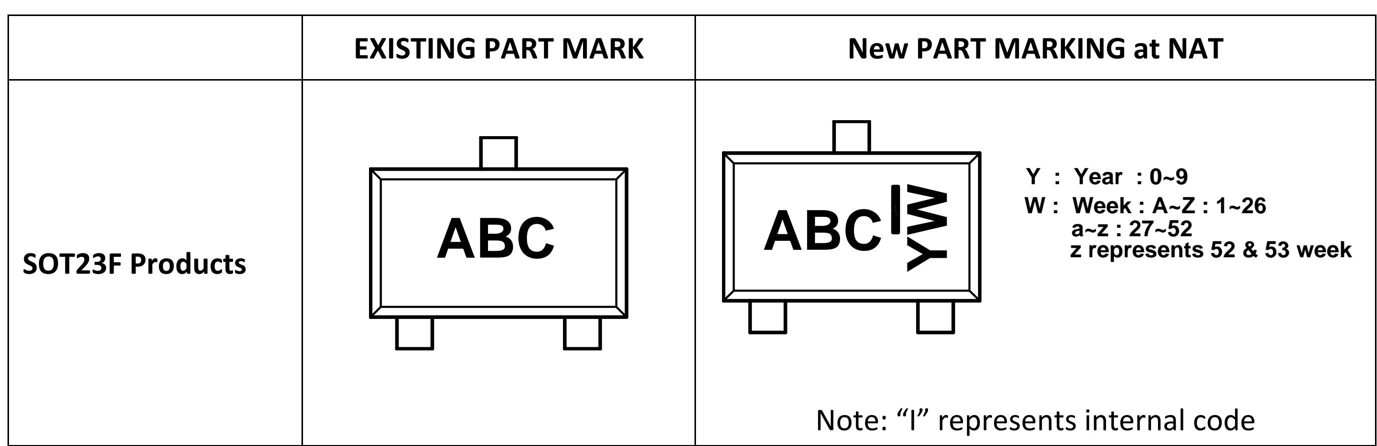
TITLE
Qualification of "Diodes Zetex Neuhaus GmbH" as an Additional Assembly & Test Site and Conversion to Palladium Coated Copper Bond Wire for Selected SOT-23F Packaged Products
DESCRIPTION OF CHANGE
This PCN is being issued to notify customers that in order to assure continuity of supply, Diodes has qualified "Diodes Zetex Neuhaus GmbH" (NAT) located in Neuhaus, Germany as an additional Assembly & Test Site for selected SOT-23F packaged products using palladium coated copper bond wire. Full electrical characterization and high reliability testing has been completed or will be completed on representative part numbers to ensure there is no change to device functionality or electrical specifications in the datasheet. There will be no change to the Form, Fit, or Function of affected products. Part marking for devices manufactured at NAT is shown on the following page.
IMPACT
Continuity of Supply. No change in datasheet parameters and product performance.
PRODUCTS AFFECTED
Please refer to the attached table

WEB LINKS	
Manufacturer's Notice:	http://www.diodes.com/quality/pcns
For More Information Contact:	http://www.diodes.com/contacts
Data Sheet:	http://www.diodes.com/products

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.

Affected Part Numbers
ZTL431AFFTA
ZTL431BFFTA
ZTL432AFFTA
ZTL432BFFTA
ZXMP2120FFTA
ZXMS6004FFTA(*)
ZXTN04120HFFTA
ZXTN07012EFFTA
ZXTN07045EFFTA
ZXTP05120HFFTA
ZXTP07012EFFTA
ZXTP07040DFFTA
ZXTN19020CFFTA
ZXTN19020DFFTA
ZXTN19060CFFTA
ZXTN19100CFFTA
ZXTP19020CFFTA
ZXTP19020DFFTA
ZXTP19060CFFTA
ZXTP19100CFFTA
ZXTP25020CFFTA
ZXTN08400BFFTA
ZXTP08400BFFTA

Note: (*) remains qualified with gold (Au) wire only



	EXISTING PART MARK	New PART MARKING at NAT
SOT23F Products	ABC	ABC I YW Y : Year : 0~9 W : Week : A~Z : 1~26 a~z : 27~52 z represents 52 & 53 week Note: “I” represents internal code

Certificate Of Design, Construction & Qualification

Description: BJT portfolio SOT23F

Category		Qual Device 1	Qual Device 2	Qual Device 3
Product	Part Number	ZXTN07045EFF	ZXTN19100CFF	ZXTP25020CFF
Assembly	Package Type	SOT23F	SOT23F	SOT23F
Assembly	Package Size	2.9 x 2.4 x 0.9	2.9 x 2.4 x 0.9	2.9 x 2.4 x 0.9
Wafer	Die Name(s)	FZT651BTXD / CZ651BXD	X19N100CT3D / CZ19N100CD	X25P20CT3D / CZ25P20CD
Wafer	Die Size (W/L/Thickness) - After Saw	1.067 x 1.067 x 0.178	1.067 x 1.067 x 0.178	0.810 x 0.810 x 0.178
Wafer	Die Process / Technology	BJT	BJT	BJT
Wafer	Wafer FAB/ Location	OFAB/KFAB	OFAB/KFAB	OFAB/KFAB
Wafer	Wafer Diameter	6 inch	6 inch	6 inch
Wafer	Front Metal Type	AlSi1Cu0.5	AlSi1Cu0.5	AlSi1Cu0.5
Wafer	Front Metal Layer Number/ Thickness	3μm /3.5μm	6μm	6μm
Wafer	Back Metal Type (All Layers)	Ti/Ni/Ag	Ti/Ni/Ag	Ti/Ni/Ag
Wafer	Back Metal Thickness (All Layers)	0.3KA/2.6KA/5.5KA	0.3KA/2.6KA/5.5KA	0.3KA/2.6KA/5.5KA
Wafer	Die Conforming Coating (Passivation)	None	Ox/Nitride	Ox/Nitride
Wafer	Die passivation thickness range	N/A	10000 Å	10000 Å
Wafer	No of masks Steps	4	5	6
Assembly	Die quantity per package (e.g. single or dual dies)	1	1	1
Assembly	Die Attach Method (DB Epoxy/Solder Type)	Epoxy	Epoxy	Epoxy
Assembly	Die Attach Material/ Supplier	QMI529HT	QMI529HT	QMI529HT
Assembly	Bond Wire/Clip Bond Material/ Supplier	CuPd	CuPd	CuPd
Assembly	Bond Type (at Die)	Thermosonic	Thermosonic	Thermosonic
Assembly	Bond Type (at LF)	Thermosonic	Thermosonic	Thermosonic
Assembly	No. of bond over active area	2	4	4
Assembly	Glass Transistion Temp	125°C	125°C	125°C
Assembly	Terminal Finish (Plating) Material	100% Pure Tin Plating	100% Pure Tin Plating	100% Pure Tin Plating
Assembly	Header plating (Die Land Area)	Ag selective 3-6μm	Ag selective 3-6μm	Ag selective 3-6μm
Assembly	Wire Diameter	43μm	43μm	38μm
Assembly	Leadframe Type	TB301	TB301	TB301
Assembly	Leadframe Material	K65 (Wieland)	K65 (Wieland)	K65 (Wieland)
Assembly	Lead Frame Manufacturer	Possehl	Possehl	Possehl
Assembly	Molding Compound Type	GE1030M	GE1030M	GE1030M
Assembly	Mold Compound Material Manufacturer	Hitachi	Hitachi	Hitachi
Assembly	Green Compound (Yes/No)	Yes	Yes	Yes
Assembly	Lead-Free (Yes/No)	Yes	Yes	Yes
Assembly	Assembly Site/ Location	DZNG	DZNG	DZNG
Assembly	Test Site/ Location	DZNG	DZNG	DZNG
Product	Max Junction Temp	150°C	150°C	150°C
Product	Max Thermal resistance Junc (case)	43.77 °C/W	N/A	N/A
Product	Max Thermal resistance Junc (amibent)	83 °C/W	83 °C/W	83 °C/W
Product	DataSheet	ZXTN07045EFF	ZXTN19100CFF	ZXTP25020CFF

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	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
		Soak 85C, 85% RH	168Hrs			X	pass	X	pass	X	pass
		IR reflow 260C	3 cycles			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
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
5	HTRB	Ta=150°C or Max Tj, Vd=100%, PER MIL-STD-750-1	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
7	TC	Ta=-55C to 150C or Max Tj, PER JESD22A-104	168 Cycles	0/77	3 Assembly lots	X	pass	X	pass	X	pass
			500 Cycles	0/77		X	pass	X	pass	X	pass
			1000 Cycles	0/77		X	pass	X	pass	X	pass
8	PCT/AC	Ta=121°C 15PSIG 100%RH; PER JESD22-A102	96 Hrs	0/77	3 Assembly lots	X	pass	X	pass	X	pass
9	Temperature, Humidity and Bias (THB) - For BJT	Ta=85oC, 85% R.H., 80% Maximum VCBO; PER 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
			7560 Cycles	0/77		X	pass	X	pass	X	pass
			15000 Cycles	0/77		X	pass	X	pass	X	pass
12	DPA	AEC Q101-004 SEC. 4		0/2	1 Assembly lot	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
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
21	Solderability	J-STD-002; JESD22B102 (245C +0/5S)	5 Seconds	0/10	1 Assembly lot	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
24	BOND SHEAR	AEC-Q101-003	Cpk>1.66	0/ min of 5	1 Assembly lot	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

Remark:

Summary:

Submitted By:

Approved By:

Certificate of Design, Construction & Qualification

Description: ZTL431AFF CuPd wire bonding conversion qual

	Qual Device 1	
Part Number	ZTL431AFF	
Package	SOT23F	
MSL Level	MSL1	
Package Size	2.9 x 2.4 x 0.9	
Die Name(1)	ZTL43101F	
Die Size (W/L/Thickness	0.54 x 0.51 x 0.229	
Die Process / Technology	analog IC	
Wire Bond Material (Au, Cu, Al)	CuPd	
Wire Diameter	25μm	
Wire Bond Material (Au, Cu, Al)	CuPd	
Wire Diameter	25μm	
Wafer FAB	OFAB	
Wafer Diameter	6"	
Bond Type (at Die)	Ball	
Bond Type (at LF)	Wedge	
No. of bond over active area	0	
Glass Transistion Temp	125 degree C	
Lead Material Manufacture	Possehl	
Header plating (Die Land Area)	Ag	
Max Junction Temp	125 degree C	
Max Thermal resistance Junc (case)	NA	
Max Thermal resistance Junc (amibent)	138°C/W @ PDIS=900mW	
Front Metal Type	AlCu0.5	
Back Metal Type (All Layers)	Ti/Ni/Ag	
Back Metal Thickness (All Layers)	0.3KA/2.6KA/5.5KA	
Die Conforming Coating	Ox/Nitride	
Die passivation thickness range	10000 Å	
No of masks Steps	13	
DB Epoxy/Solder Type	Epoxy	
Die Attach Material	QMI529HT	
Front Metal Thickness	2μm	
Leadframe Type	Matte Sn over Cu	
Leadframe Material	K65 (Wieland)	
Molding Compound Type	GE1030M	
Green Compound (Yes/No)	Yes	
Lead-Free (Yes/No)	Yes	
Assembly Site	NAT	
FT Test Site	NAT	
Realibility Test Site	DZUK	
DataSheet	ZTL431/ZTL432	

Realibility Testing

Test	Test Conditions	Duration / Limits	Fail/SS	X = Test Needed	
MSL1 Pre-cond	Bake 125C	24 Hrs	0/154	x	pass
	Soak 85C, 85% RH	168Hrs	0/154	x	pass
	IR reflow 260C	3 cycles	0/154	x	pass
HTOL	Tj>125C, 100% Vcc	168 Hrs	0/77	x	pass
		500 Hrs	0/77	x	pass
		1000 Hrs	0/77	x	pass
EXTERNAL VISUAL (EV)	MIL-STD-750 METHOD 2071	PER SPEC	All qualification parts submitted for testing	x	pass
PTC	-65C-150C	168 cycles	0/77	X	pass
		500 cycles	0/77	X	pass
		1000 cycles	0/77	X	pass
PTHB	Temperature,	Ta=85oC, 85% R.H.,	168 Hrs	X	pass
	Humidity and	80% Maximum	500 Hrs	X	pass
	Bias (THB)	VCBO; PER	1000 Hrs	X	pass
HS	Tamb=150degC	168 Hrs	0/77	X	pass
		500 Hrs	0/77	X	pass
		1000 Hrs	0/77	X	pass
PCT/AC	T=121°C 15PSIG 100%RH	96 Hrs	0/77	x	pass
WBP	MIL-STD883-2011	Cpk>1.66	0/30	X	pass
WBS	JESD22-B116B	Cpk>1.66	0/30	X	pass
PD	JESD22-B100B	Package Outline	0/30	x	pass
Solderability	245C +0/5C	5 Seconds	0/10	x	pass
RSHD	260C;10 sec;	1 cycle	0/45	x	pass
Remark:					

Summary:

Submitted By: David Cheng 10/10/2012

Approved By: Michael Kulbeth 10/10/2012

Certificate of Design, Construction & Qualification

Description: Conversion of SOT23F ZXMP2120FFTA to Copper wire (PCN2133)

Category		Qual Device 1
Product	Part Number	ZXMP2120FF
Assembly	Package Type	SOT23F
Assembly	Package Size	2.9mm x 2.4mm x0.9mm
Wafer	Die Name(s)	ZVP2120T3D
Wafer	Die Size (W/L/Thickness) - After Saw	1.035*1.035mm*0.229µm
Wafer	Wafer FAB/ Location	OFAB
Wafer	Wafer Diameter	150mm
Wafer	Front Metal Type	3µm AlSiCu0.05
Wafer	Back Metal Type (All Layers)	TiNiAg
Wafer	Back Metal Thickness (All Layers)	300Å/2600Å/5500Å
Wafer	Die Conforming Coating (Passivation)	Nitrid
Wafer	Die passivation thickness range	1000Å
Wafer	No of masks Steps	7
Assembly	Die quantity per package (e.g. single or dual dies)	single
Assembly	Die Attach Method (DB Epoxy/Solder Type)	Epoxy
Assembly	Die Attach Material/ Supplier	QMI529HT/Henkel
Assembly	Bond Wire/Clip Bond Material/ Supplier	CuPd/Heraus
Assembly	Bond Type (at Die)	Ball
Assembly	Bond Type (at LF)	Wedge
Assembly	No. of bond over active area	1 (Source)
Assembly	Glass Transistion Temp	125
Assembly	Terminal Finish (Plating) Material	Pure Tin
Assembly	Header plating (Die Land Area)	1.34mm x 1.25mm
Assembly	Wire Diameter	25µm
Assembly	Leadframe Type	TB301
Assembly	Leadframe Material	K65
Assembly	Lead Frame Manufacturer	Possehl
Assembly	Molding Compound Type	GE1030M
Assembly	Mold Compound Material Manufacturer	Hitachi
Assembly	Green Compound (Yes/No)	Yes
Assembly	Lead-Free (Yes/No)	Yes
Assembly	Assembly Site/ Location	DZNG
Assembly	Test Site/ Location	DZNG
Product	Max Junction Temp	150°C
Product	Max Thermal resistance Junc (case)	44K/W
Product	Max Thermal resistance Junc (amibent)	125K/W
Product	DataSheet	ds33601

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	Results Pass/Fail
2	MSL1 Pre-conditioning	Bake 125C	24 Hrs	SMD only, for Test #7, 8, 9 & 10	3 Assembly lots	X	Pass
		Soak 85C, 85% RH	168Hrs			X	Pass
		IR reflow 260C	3 cycles			X	Pass
3	EXTERNAL VISUAL (EV)	MIL-STD-750 METHOD 2071	PER SPEC	All qualification parts submitted for testing		X	Pass
4	PARAMETRIC VERIFICATION (PV)	-55C, 25C, 85C, 125C, 150C	Operating Range, Per Data Sheet	0/25	3 wafer lots	X	Pass
5	HTRB	Ta=150°C or Max Tj, Vd=100%, PER MIL-STD-750-1	168 Hrs	0/77	3 wafer lots	X	Pass
			500 Hrs	0/77		X	Pass
			1000 Hrs	0/77		X	Pass
6	HTGB (Gated Devices only)	Ta=150°C or Max Tj, Vg=100%, PER JESD22 A-108	168 Hrs	0/77	3 wafer lots	X	Pass
			500 Hrs	0/77		X	Pass
			1000 Hrs	0/77		X	Pass
7	TC	Ta=-55C to 150C or Max Tj, PER JESD22A-104	168 Cycles	0/77	3 Assembly lots	X	Pass
			500 Cycles	0/77		X	Pass
			1000 Cycles	0/77		X	Pass
8	PCT/AC	Ta=121°C 15PSIG 100%RH; PER JESD22-A102	96 Hrs	0/77	3 Assembly lots	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
			500 Hrs	0/77		X	Pass
			1000 Hrs	0/77		X	Pass
10	IOL	MIL-STD-750 Method 1037 (N/A for TVS)	2520 Cycles	0/77	3 wafer lots	X	Pass
			7560 Cycles	0/77		X	Pass
			15000 Cycles	0/77		X	Pass
12	DPA	AEC Q101-004 SEC. 4		0/2	1 Assembly lot	X	Pass
13	Package Physical Dimemsions (PD)	JESD22-B100	Package Outline	0/30	1 Assembly lot	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
21	Solderability	J-STD-002; JESD22B102 (245C +0/5S)	5 Seconds	0/10	1 Assembly lot	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
24	BOND SHEAR	AEC-Q101-003	Cpk>1.66	0/ min of 5	1 Assembly lot	X	Pass
	Remark:						

Summary:

Submitted By:

Approved By: Aya Chan (QRA), 2014-12-12

Certificate of Design, Construction & Qualification

Description: Transfer SOT23F products to DZNG and qualify Au Wire

Category	Item	Qual Device 1 - Lot 1	Qual Device 1 - Lot 2	Qual Device 1 - Lot 3
Product	Part Number	ZXMS6004FF	ZXMS6004FF	ZXMS6004FF
Assembly	Package Type	SOT23F	SOT23F	SOT23F
Wafer	Die Name(s)	ZXMS6004T3D	ZXMS6004T3D	ZXMS6004T3D
Wafer	Die Size (W/L/Thickness) - After Saw	1.07 mm x 1.07 mm x 0.203 mm	1.07 mm x 1.07 mm x 0.203 mm	1.07 mm x 1.07 mm x 0.203 mm
Wafer	Die Process / Technology	N-CHANNEL SVMOS	N-CHANNEL SVMOS	N-CHANNEL SVMOS
Wafer	Wafer FAB/ Location	OFAB	OFAB	OFAB
Wafer	Wafer Diameter	150mm	150mm	150mm
Wafer	Front Metal Type	TiTiN+AlSi1Cu0.5	TiTiN+AlSi1Cu0.5	TiTiN+AlSi1Cu0.5
Wafer	Front Metal Layer Number/ Thickness	2µm	2µm	2µm
Wafer	Back Metal Type (All Layers)	TiNiAg	TiNiAg	TiNiAg
Wafer	Back Metal Thickness (All Layers)	Ti: 300Å Ni: 2600Å Ag: 5500Å	Ti: 300Å Ni: 2600Å Ag: 5500Å	Ti: 300Å Ni: 2600Å Ag: 5500Å
Wafer	Die Conforming Coating (Passivation)	Nitride	Nitride	Nitride
Wafer	Die passivation thickness range	10000 Å	10000 Å	10000 Å
Wafer	No of masks Steps	9	9	9
Assembly	Die quantity per package (e.g. single or dual dies)	1	1	1
Assembly	Die Attach Method (DB Epoxy/Solder Type)	Epoxy	Epoxy	Epoxy
Assembly	Bond Wire/Clip Bond Material/ Supplier	Au	Au	Au
Assembly	Bond Type (at Die)	Thermosonic - ball bond	Thermosonic - ball bond	Thermosonic - ball bond
Assembly	Bond Type (at LF)	Thermosonic-wedge bond	Thermosonic-wedge bond	Thermosonic-wedge bond
Assembly	No. of bond over active area	5	5	5
Assembly	Glass Transistion Temp	125 °C	125 °C	125 °C
Assembly	Terminal Finish (Plating) Material	100% Pure Tin Plating	100% Pure Tin Plating	100% Pure Tin Plating
Assembly	Header plating (Die Land Area)	Ag selective 3-6µm	Ag selective 3-6µm	Ag selective 3-6µm
Assembly	Wire Diameter	25 um	25 um	25 um
Assembly	Leadframe Type	TB301	TB301	TB301
Assembly	Leadframe Material	K65	K65	K65
Assembly	Lead Frame Manufacturer	Possehl	Possehl	Possehl
Assembly	Molding Compound Type	GE1030M	GE1030M	GE1030M
Assembly	Mold Compound Material Manufacturer	Hitachi	Hitachi	Hitachi
Assembly	Green Compound (Yes/No)	Yes	Yes	Yes
Assembly	Lead-Free (Yes/No)	Yes	Yes	Yes
Assembly	Assembly Site/ Location	NAT (DZNG)	NAT (DZNG)	NAT (DZNG)
Assembly	Test Site/ Location	NAT (DZNG)	NAT (DZNG)	NAT (DZNG)
Product	Max Junction Temp	150 °C	150 °C	150 °C
Product	Max Thermal resistance Junc (case)	44 °C/W	44 °C/W	44 °C/W
Product	Max Thermal resistance Junc (amibent)	83 °C/W	83 °C/W	83 °C/W
Product	DataSheet	DS#: 33609	DS#: 33609	DS#: 33609

Reliability and Characterization Testing

# in AEC-Q101 (D)	Test	Test Conditions	Duration / Limits	Accept on # Failed/ Sample Size per Lot	# of Lots	Lot 1 X = Test Needed	Lot 1 Results Pass/Fail	Lot 2 X = Test Needed	Lot 2 Results Pass/Fail	Lot 3 X = Test Needed	Lot 3 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
		Soak 85C, 85% RH	168Hrs			x	Pass	x	Pass	x	Pass
		IR reflow 260C	3 cycles			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
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
5	HTRB	Ta=150°C or Max Tj, Vd=100%, PER MIL-STD-750-1	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
6	HTGB (Gated Devices only)	Ta=150°C or Max Tj, Vg=100%, PER JESD22 A-108	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
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
			500 Cycles	0/77		x	Pass	x	Pass	x	Pass
			1000 Cycles	0/77		x	Pass	x	Pass	x	Pass
8	PCT/AC	Ta=121°C 15PSIG 100%RH; PER JESD22-A102	96 Hrs	0/77	3 Assembly 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
			7560 Cycles	0/77		x	Pass	x	Pass	x	Pass
			15000 Cycles	0/77		x	Pass	x	Pass	x	Pass
11	ESD	HBM (AEC-Q101-001)	4KV	0/30	1 wafer lot	x	Pass				
		MM (AEC-Q101-002)	200V	0/30	1 wafer lot	x	Pass				
12	DPA	AEC Q101-004 SEC. 4	PER SPEC	0/2	1 Assembly lot	x	Pass				
13	Package Physical Dimemsions (PD)	JESD22-B100	Package Outline	0/30	1 Assembly lot	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				
21	Solderability	J-STD-002; JESD22B102 (245C +0/5S)	5 Seconds	0/10	1 Assembly lot	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
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
24	BOND SHEAR	AEC-Q101-003	Cpk>1.66	0/ min of 5	1 Assembly lot	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
28	Short Circuit Reliability Characterization	AEC-Q101-006	For smart power parts only	0/10	3 Assembly lot	X	Pass (Grade D)	X	Pass (Grade D)	X	Pass (Grade D)
	Remark:										

Summary:

Submitted By:

Approved By: Frank Chen, 9/14/2015

Certificate of Design, Construction & Qualification

Description: ZXTP08400BFF/ZXTN08400BFF CuPd wire bonding conversion c

Category	Parameter	Qual Device 1	Qual Device 2
Product	Part Number	ZXTP08400BFF	ZXTN08400BFF
Assembly	Package Type	SOT23 Flat	SOT23 FLAT
Assembly	Package Size	2.9 x 2.4 x 0.9	2.9 x 2.4 x 0.9
Wafer	Die Name(s)	FZT758TXD	FZT658TXD
Wafer	Die Size (W/L/Thickness) - After Saw	1.143 x 1.143 x 0.178	1.143 x 1.143 x 0.178
Wafer	Die Process / Technology	Gen3 - HV	Gen3 - HV
Wafer	Wafer FAB/ Location	OFAB	OFAB
Wafer	Wafer Diameter	150mm	150mm
Wafer	Front Metal Type	AlSiCu	AlSiCu
Wafer	Front Metal Layer Number/ Thickness	3.0um	3um
Wafer	Back Metal Type (All Layers)	TiNiAg	TiNiAg
Wafer	Back Metal Thickness (All Layers)	300/2600/5500A	300/2600/5500A
Wafer	No of masks Steps	5	4
Assembly	Die quantity per package (e.g. single or dual dies)	1	1
Assembly	Die Attach Method (DB Epoxy/Solder Type)	Epoxy	Epoxy
Assembly	Die Attach Material/ Supplier	QMI529HT/Henkel	QMI529HT/Henkel
Assembly	Bond Wire/Clip Bond Material/ Supplier	CuPd/Heraeus	CuPd/Heraeus
Assembly	Bond Type (at Die)	Thermosonic	Thermosonic
Assembly	Bond Type (at LF)	Thermosonic	Thermosonic
Assembly	No. of bond over active area	2	2
Assembly	Glass Transistion Temp	125 degree C	125 degree C
Assembly	Terminal Finish (Plating) Material	Matt Sn	Matt Sn
Assembly	Header plating (Die Land Area)	Spot Ag	Spot Ag
Assembly	Wire Diameter	38µm	38µm
Assembly	Leadframe Type	SOT-23 FLAT	SOT-23 FLAT
Assembly	Leadframe Material	K65 (Wieland)	K65 (Wieland)
Assembly	Lead Frame Manufacturer	Possehl	Possehl
Assembly	Molding Compound Type	GE1030M	GE1030M
Assembly	Mold Compound Material Manufacturer	Nitto	Nitto
Assembly	Green Compound (Yes/No)	Yes	Yes
Assembly	Lead-Free (Yes/No)	Yes	Yes
Assembly	Assembly Site/ Location	NAT	NAT
Assembly	Test Site/ Location	NAT	NAT
Product	Max Junction Temp	150 degree C	150 degree C
Product	Max Thermal resistance Junc (amibent)	149 °C/W	149 °C/W
Product	DataSheet	DS33674	DS33675

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	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°C 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
7b	Wire Bond Integrity	MIL-STD-750, Method 2037 (For bonding of dissimilar metals, eg: Au/Al)	500 Hrs	0/5	3 Assembly lots	X	Pass	X	Pass
8	PCT/AC	Ta=121°C 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
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 (WBI)	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)	PER SPEC	0/5	1 Assembly lot	X	Pass	X	Pass
	HS	Hot Store at 150C	168 Hrs	0/77	1 Assembly lot	X	Pass	X	Pass
			500 Hrs	0/77	1 Assembly lot	X	Pass	X	Pass
			1000 Hrs	0/77	1 Assembly lot	X	Pass	X	Pass
	Remark:								

Summary:

Submitted By:

Approved By: