DIODES INCORPORATED

www.diodes.com

Diodes Incorporated for Discrete and Analog Semiconductors

QPAK/PPAP – 2140

Qualification Report

Manufacturer No.:	PCN-2140 – Leadframe material change for SOT-25, SOT-26 and TSOT25 packages
Revision	0
Date:	April 9, 2014
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 the parts listed in this report.

Prepared By:	Diodes US Document Control	Date	April 9, 2014
Approved By:	Diodes US QRA Department	Date	April 9, 2014

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DATE: 9th April, 2014

PCN #: 2140

PCN Title: Leadframe material change for SOT-25, SOT-26 and TSOT25 packages

Dear Customer:

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

One of Diodes' tier-two suppliers of raw material for the manufacture of copper leadframes recently experienced a disaster resulting in plant closure.
Having thoroughly reviewed all aspects of our supply chain and to assure continuity of supply to our customers we will be converting the leadframe material for devices packaged in SOT-25, SOT-26, and TSOT25 to CDA 194 alloy starting immediately as described in attached PCN form.

Please contact your local Diodes sales representative to acknowledge receipt of this PCN and for any sample requests.

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-2140 REV 00

Notification Date:	Implementation Date:	Product Family:	Change Type:	PCN #:
9th April, 2014	Immediately	Analog and Discrete Semiconductors	Leadframe Material	**2140**

TITLE

Leadframe material change for SOT-25, SOT-26 and TSOT25 packages

DESCRIPTION OF CHANGE

One of Diodes' tier-two suppliers of raw material for the manufacture of copper leadframes recently experienced a disaster resulting in plant closure.
Having thoroughly reviewed all aspects of our supply chain and to assure continuity of supply to our customers we will be converting the leadframe material for devices packaged in SOT-25, SOT-26, and TSOT25 at the Diodes SKE/DSH (Shanghai Kaihong Electronic Co./Diodes Inc. Shanghai) Assembly & Test Sites to CDA 194 alloy starting immediately.
A separate product change notification will be issued for Hall effect sensors.

Our currently qualified tier-one leadframe suppliers have already been manufacturing and supplying leadframes with CDA 194 alloy for a number of years. Furthermore, CDA 194 leadframes have already been used for select parts in above mentioned packages and extensively in other package types throughout Diodes.

Full electrical characterization and high reliability testing has been completed using representative devices built with CDA 194 leadframes to ensure there is no change to device functionality or electrical specifications in the datasheet. Corresponding qualification data is available.
There will be no change to the Form, Fit, or Function of products affected.

IMPACT

Continuity of Supply.

PRODUCTS AFFECTED

See attached list.

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 upon receipt of this notice, all changes described in this announcement are considered approved.

PCN-2140 Parts List				
74AHC1G00W5-7	74LVC2G34W6-7	AP2171DWG-7	AP7312-1533W6-7	APX823-29W5G-7
74AHC1G02W5-7	74LVCE1G02W5-7	AP2171WG-7	AP7312-1828W6-7	APX823-31W5G-7
74AHC1G04W5-7	74LVCE1G04W5-7	AP2181DWG-7	AP7312-1830W6-7	APX823-40W5G-7
74AHC1G08W5-7	74LVCE1G08W5-7	AP2181WG-7	AP7312-1833W6-7	APX823-44W5G-7
74AHC1G09W5-7	74LVCE1G125W5-7	AP2191DWG-7	AP7312-3333W6-7	APX823-46W5G-7
74AHC1G125W5-7	74LVCE1G126W5-7	AP2191HWG-7	AP7331-10WG-7	APX824-23W5G-7
74AHC1G126W5-7	74LVCE1G32W5-7	AP2191WG-7	AP7331-12WG-7	APX824-26W5G-7
74AHC1G14W5-7	74LVCE1G86W5-7	AP2280-1WG-7	AP7331-15WG-7	APX824-29W5G-7
74AHC1G32W5-7	AL5801W6-7	AP2280-2WG-7	AP7331-18WG-7	APX824-31W5G-7
74AHC1G86W5-7	AL5801W6Q-7	AP2281-1WG-7	AP7331-20WG-7	APX824-40W5G-7
74AHC1GU04W5-7	AL5802-13	AP2281-3WG-7	AP7331-25WG-7	APX824-46W5G-7
74AHCT1G00W5-7	AL5802-7	AP2552AW6-7	AP7331-28WG-7	APX825A-26W6G-7
74AHCT1G02W5-7	AL8805W5-7	AP2552W6-7	AP7331-30WG-7	APX825A-29W6G-7
74AHCT1G08W5-7	AL8807W5-7	AP2553AW6-7	AP7331-33WG-7	APX825A-31W6G-7
74AHCT1G125W5-7	AL8808WT-7	AP2553W6-7	AP7331-WG-7	APX825A-44W6G-7
74AHCT1G126W5-7	AP131-18WG-7	AP331AWG-7	AP7332-1233W6-7	APX825A-46W6G-7
74AHCT1G14W5-7	AP131-25WG-7	AP331AWRG-7	AP7332-1828W6-7	AS431BKTR-G1
74AHCT1G32W5-7	AP131-25WL-7	AP431QL-7	AP7332-1833W6-7	ASMCC0164-7
74LVC1G00W5-7	AP131-28WG-7	AP432QL-7	AP7332-2833W6-7	ASMCC0195-7
74LVC1G02W5-7	AP131-30WL-7	AP5100WG-7	AP7332-3333W6-7	ASMCC0208-7
74LVC1G04W5-7	AP131-33WG-7	AP5724WG-7	AP7335-10WG-7	ASMCC0209-7
74LVC1G06W5-7	AP131-33WL-7	AP5725WG-7	AP7335-12WG-7	AT1042K6-5.0TRG1
74LVC1G07W5-7	AP133-WG-7	AP5726WG-7	AP7335-18WG-7	AT2042K6-5.0TRG1
74LVC1G08W5-7	AP139-15WL-7	AP5727WG-7	AP7335-25WG-7	AZ431LAKTR-E1
74LVC1G10W6-7	AP139-18WG-7	AP7115-10WG-7	AP7335-27WG-7	AZ431LBKTR-E1
74LVC1G11W6-7	AP139-25WG-7	AP7115-12WG-7	AP7335-28WG-7	BAS21TM-7
74LVC1G125W5-7	AP139-30WG-7	AP7115-15WG-7	AP7335-33WG-7	D1213A-02SM-7
74LVC1G126W5-7	AP139-30WL-7	AP7115-18WG-7	AP7335-39WG-7	D1213A-02SO-7
74LVC1G14W5-7	AP139-33WG-7	AP7115-25WG-7	AP7335A-50W-7	D1213A-04SO-7
74LVC1G17W5-7	AP139-33WL-7	AP7115-28WG-7	AP7335-WG-7	D5V0F4U6SO-7
74LVC1G32W5-7	AP1522WA	AP7115-30WG-7	AP7365-10WG-7	D5V0L4B5SO-7
74LVC1G57W6-7	AP1603WL-7	AP7115-33WG-7	AP7365-12WG-7	D5V0L4B5TS-7
74LVC1G58W6-7	AP2125K-1.8TRG1	AP7115-35WG-7	AP7365-18WG-7	DCX114YK-7
74LVC1G86W5-7	AP2125K-2.5TRG1	AP7311-12WG-7	AP7365-25WG-7	DCX114YK-7-F
74LVC1G97W6-7	AP2125K-2.8TRG1	AP7311-15WG-7	AP7365-28WG-7	DCX124EK-7
74LVC1G98W6-7	AP2125K-3.3TRG1	AP7311-18WG-7	AP7365-30WG-7	DCX124EK-7-F
74LVC2G04W6-7	AP2141DWG-7	AP7311-25WG-7	AP7365-33WG-7	DCX144EK-7
74LVC2G06W6-7	AP2141WG-7	AP7311-33WG-7	AP7365-WG-7	DDC123JK-7-F
74LVC2G07W6-7	AP2151DWG-7	AP7311-WG-7	AP8800AWT-7	DIMD10A-7
74LVC2G14W6-7	AP2151WG-7	AP7312-1218W6-7	APX321WG-7	DMC2700UDM-7
74LVC2G17W6-7	AP2161DWG-7	AP7312-1233W6-7	APX823-23W5G-7	DMG6402LDM-7

DMG9926UDM-7	TLV431AE5TA	ZXMN10A08E6TA	ZXTC2045E6TA
DMMT2907A-7	TLV431BE5TA	ZXMN10B08E6QTA	ZXTC2061E6TA
DMMT3906-7-F	ZHCS2000TA	ZXMN10B08E6TA	ZXTC2062E6TA
DMMT5401-7-F	ZLLS2000TA	ZXMN2088DE6TA	ZXTC2063E6TA
DMMT5551-7-F	ZTD09N50DE6QTA	ZXMN2A01E6TA	ZXTD09N50DE6TA
DMMT5551S-7-F	ZVN4525E6TA	ZXMN2A03E6TA	ZXTD2090E6TA
DMN2004DMK-7	ZVP4525E6TA	ZXMN2B03E6TA	ZXTD4591E6TA
DMN2100UDM-7	ZX5T2E6TA	ZXMN3A01E6TA	ZXTD6717E6QTA
DMN2215UDM-7	ZXCL280E5TA	ZXMN3A03E6TA	ZXTD6717E6TA
DMN3033LDM-7	ZXCL300E5TA	ZXMN6A08E6QTA	ZXTP2006E6TA
DMN3051LDM-7	ZXCL330E5TA	ZXMN6A08E6TA	
DMN3115UDM-7	ZXCT1010E5TA	ZXMP10A17E6QTA	
DMN3115UDMQ-7	ZXCT1011E5TA	ZXMP10A17E6TA	
DMN5L06DMK-7	ZXCT1012ET5TA	ZXMP2120E5TA	
DMN601DMK-7	ZXCT1020E5TA	ZXMP3A17E6TA	
DMP2066LDM-7	ZXCT1021E5TA	ZXMP4A57E6TA	
DMP2130LDM-7	ZXCT1022E5TA	ZXMP6A17E6QTA	
DMP2240UDM-7	ZXCT1041E5TA	ZXMP6A17E6TA	
DMP3056LDM-7	ZXCT1050E5TA	ZXRE060AET5TA	
DMP3098LDM-7	ZXCT1051E5TA	ZXRE060ET5TA	
DRDC3105E6-7	ZXCT1080E5TA	ZXRE160AET5TA	
DSS4160DS-7	ZXCT1081E5TA	ZXRE160ET5TA	
DT1042-04SO-7	ZXCT1082E5TA	ZXRE250AW5-7	
DT2042-04SO-7	ZXCT1083E5TA	ZXSC300E5TA	
DVRN6056-7-F	ZXCT1084E5TA	ZXSC310E5TA	
DVRN6056-7-G	ZXCT1085E5TA	ZXSC400E6TA	
IMT17-7	ZXCT1086E5TA	ZXSC410E6TA	
IMX8-7-F	ZXCT1087E5TA	ZXSC420E6TA	
LMN200B01-7	ZXCT1110W5-7	ZXT10N15DE6TA	
LMV321WG-7	ZXGD3001E6TA	ZXT10N20DE6TA	
MMBD3004BRM-7-F	ZXGD3002E6TA	ZXT10N50DE6TA	
MMBD4448HTM-7-F	ZXGD3003E6TA	ZXT10P12DE6TA	
MMBD5004BRM-7	ZXGD3004E6TA	ZXT10P20DE6TA	
MMDT2227M-7	ZXGD3005E6TA	ZXT10P20DE6TC	
MMDTA06-7	ZXGD3006E6QTA	ZXT10P40DE6TA	
MMDTA42-7-F	ZXGD3006E6TA	ZXT13N15DE6TA	
SD103ASDM-7-F	ZXLD1350ET5TA	ZXT13N20DE6TA	
SDM03MT40-7-F	ZXLD1615ET5TA	ZXT13N50DE6TA	
SDM03MT40A-7-F	ZXM62N02E6TA	ZXT13P12DE6TA	
SDM10M45SD-7-F	ZXM62P02E6TA	ZXT13P20DE6TA	
TL431AW5-7	ZXM62P03E6TA	ZXT13P40DE6TA	
TL431BW5-7	ZXMN10A08E6QTA	ZXTC2045E6QTA	

Certificate of Design, Construction & Qualification

Description: Qual package SOT-26 material change from E64 to CDA194

		Qual Device 1	Qual Device 2
Part Number		74LVC2G07W6-7	ZXSC400E6TA
Package		SOT-26	SOT-26
Package Size		3.0*2.8*1.15	3.0*2.8*1.15
Die Name(s)		AW06010286A0-007-CN	ZXSC400F
Wafer FAB		DHC	OFAB
Wafer Diameter		6"	6"
Bond Type (at Die)		Ball	Ball
Bond Type (at LF)		Wedge	Wedge
No. of bond over active area		6	6
Lead Material Manufacture		NBKQ	NBKQ
Max Junction Temp		N/A	N/A
Max Thermal resistance Junc (case)		52C/W	N/A
Max Thermal resistance Junc (amibent)		204C/W	N/A
Front Metal Type		AlCu	N/A
Die passivation thickness range		Oxide 4kA SiN 6kA	Ox/ Nitride
Die Size (W/L/Thickness)		0.539*0.35*0.205	1.422*0.762
Die Process / Technology		CMOS 5V, 0.5um, 1P3M	N/A
Die Quantity (eg. Die per package)		1	1
DB Epoxy/Solder Type		Epoxy	Epoxy
Die Attach Material		84-1LMISR4	8200TI
Wire Bond Material (Au, Cu, Al)		Au	Au
Wire Diameter		Au 0.7mil	Au 1.0mil
Front Metal Thickness		2um	1.2um
Leadframe Type		SOT-26A	SOT-26A
Leadframe Material		CDA194	CDA194
Molding Compound Type		EME-G700	CEL-1702HF9 SK
Green Compound (Yes/No)		Yes	Yes
Lead-Free (Yes/No)		Yes	Yes
Assembly Site		DSH	DSH
Test Site		DSH	DSH
DataSheet		74LVC2G07	ZXSC400

Realibility Testing

Test	Test Conditions	Duration / Limits	Fail/SS	X = Test Needed	Results Pass/Fail	X = Test Needed	Results Pass/Fail
MSL1 Pre-cond	Bake 125C	24 Hrs	0/154	X	Pass	X	Pass
	Soak 85C, 85% RH	168Hrs	0/154	X	Pass	X	Pass
	IR reflow 260C	3 cycles	0/154	X	Pass	X	Pass
HAST	130C, 85%RH 33.3 psia 100% Bias	96 Hrs	0/77	X	Pass	X	
HTSL	150C	168 Hrs	0/77	X	Pass	X	Pass
Die Shear	MIL-STD-750 (2017)	Cpk>1.66	0/30	X	Pass	X	Pass
WBP	MIL-STD883-2011	Cpk>1.66	0/30	X	Pass	X	Pass
PD	JESD22-B100B	Package Outline	0/30	X	Pass	X	Pass
Solderability	245C +0/5C	5 Seconds	0/10	X	Pass	X	Pass

Remark:

Summary:
Submitted By:
Approved By:

Certificate of Design, Construction & Qualification

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Description: TSOT23-5 A LDF material change qual

	Qual Device 1	**Qual Device 2**
Part Number	AL8808WT-7	ZXLD1615ET5TA
Package	TSOT23-5	TSOT23-5
Package Size (mm)	2.8*2.9*0.92	2.8*2.9*0.92
Die Name(s)	AL8808N	ZXLD1615F
Wafer FAB	ZETEX	OFAB
Wafer Diameter	8"	6"
Bond Type (at Die)	Ball	Ball
Bond Type (at LF)	Wedge	Wedge
No. of bond over active area	8	8
Lead Material Manufacture	ASM	ASM
Header plating (Die Land Area)	Ag 3~8um	Ag 3~8um
Max Junction Temp	150°C/W	150°C/W
Front Metal Type	TIN/ Al(0.5% Cu)/ TIN	TIN/ Al(0.5% Cu)/ TIN
No of masks Steps	24	24
Die Size (W/L/Thickness)	0.9*1.03	1.575* 0.885
Die Quantity (eg. Die per package)	1	1
DB Epoxy/Solder Type	Epoxy	Epoxy
Die Attach Material	8200TI	8200TI
Wire Bond Material (Au, Cu, Al)	Cu	Au
Wire Diameter	0.8mil	1.0mil
Leadframe Type	TSOT23-5 A	TSOT23-5 A
Leadframe Material	CDA194	CDA194
Molding Compound Type	CEL-1702HF9 SK	CEL-1702HF9 SK
Green Compound (Yes/No)	Yes	Yes
Lead-Free (Yes/No)	Yes	Yes
Assembly Site	SAT	SAT
Test Site	SAT	SAT
DataSheet	AL8808	ZXLD1615

Realibility Testing

Test	**Test Conditions**	**Duration / Limits**	**Fail/SS**	**X = Test Needed**		**QBS Test Completed**	**Results Pass/Fail**
MSL1 Pre-cond	Bake 125C	24 Hrs	0/154	X	Pass	X	Pass
	Soak 85C, 85% RH	168Hrs	0/154	X	Pass	X	Pass
	IR reflow 260C	3 cycles	0/154	X	Pass	X	Pass
TC	-65C-150C	500 cycles	0/77	X	Pass	X	
HAST	130C, 85%RH 33.3 psia 100% Bias	96 Hrs	0/77	X	Pass	X	
HTSL	150C	168 Hrs	0/77	X	Pass	X	Pass
		500 Hrs	0/77	X	Pass	X	
WBP	MIL-STD883-2011	Cpk>1.66	0/30	X	Pass	X	Pass
WBS	JESD22-B116B	Cpk>1.66	0/30	X	Pass	X	Pass
PD	JESD22-B100B	Package Outline	0/30	X	Pass	X	Pass

Remark:

Summary: ___________________________________

Submitted By:

Approved By:

Certificate of Design, Construction & Qualification

Description: Package SOT-25 material change from EFTEC-64T to CDA194

				Qual Device 1	
	Part Number			AP2125K-3.3TRG1	
	Package			SOT-25	
	Package Size			3.0*2.8*1.15	
	Die Name(s)			AW011-001	
	Wafer FAB			BCD	
	Wafer Diameter			6"	
	Bond Type (at Die)			Ball	
	Bond Type (at LF)			Wedge	
	No. of bond over active area			5	
	Lead Material Manufacture			NBKQ/ASM	
	Front Metal Type			0.8umAL+560ATIN	
	Die Size (W/L/Thickness)			0.7*0.67mm	
	Die Process / Technology			0.5um CMOS	
	Die Quantity (eg. Die per package)			1	
	DB Epoxy/Solder Type			Epoxy	
	Die Attach Material			8200TI	
	Wire Bond Material (Au, Cu, Al)			Cu	
	Wire Diameter			1.0mil	
	Front Metal Thickness			0.8umAL+560ATIN	
	Leadframe Type			SOT-25 H	
	Leadframe Material			CDA194	
	Molding Compound Type			CEL-1700HF40SK-D3	
	Green Compound (Yes/No)			Yes	
	Lead-Free (Yes/No)			Yes	
	Assembly Site			SAT	
	Test Site			SAT	
	DataSheet			AP2125	
	Realibility Testing				
Test	**Test Conditions**	**Duration / Limits**	**Fail/SS**	**X = Test Needed**	**Pass/Fail**
MSL3 Pre-cond	Bake 125C	24 Hrs	0/154	X	Pass
	Soak 30C, 60% RH	192Hrs	0/154	X	Pass
	IR reflow 260C	3 cycles	0/154	X	Pass
TC	-65C-150C	500 cycles	0/77	X	Pass
		1000 cycles	0/77	X	Pass
UHAST	130C, 85%RH 33.3 psia	96 Hrs	0/77	X	Pass
HTSL	150C	168 Hrs	0/77	X	Pass
		500 Hrs	0/77	X	Pass
		1000 Hrs	0/77	X	Pass
Die Shear	MIL-STD-750 (2017)	Cpk>1.66	0/30	X	Pass
WBP	MIL-STD883-2011	Cpk>1.66	0/30	X	Pass
WBS	JESD22-B116B	Cpk>1.66	0/30	X	Pass

Remark:

Summary: ________________________________

Submitted By:

Approved By:

CERTIFICATE OF DESIGN AND CONSTRUCTION

Printed specifications are not controlled documents. Verify revision before using.

Assembly and Test Site	DIODES INC	**Glass Transition Temperature (T_G)**	N/A
DIC P/N	SDM03MT40-7-F	**Lead Frame Type**	SOT-26 G
Package Type	SOT-26	**Lead Frame Manufacturer**	NBKQ
DIE P/N	YHF014	**Lead Frame Material**	CDA194
Die Line or Process	SBR	**Terminal Finish (Plating) Material**	N/A
Wafer Diameter	5 inch	**Header Plating (Die Land Area)**	Silver Spot Plate
Wafer Fab Site(s)	PHENITEC	**Max Junction Temperature (T_j)**	125° C
ID Method (multiple sites)	N/A	**Max Thermal Resistance Junction to Case (θ_{JC})**	N/A
Assembly Locations(s)	Shanghai Kaihong Electronic Co., Ltd. No.999 Chenchun Road, Xinqiao Town, Songjiang,Shanghai,P.R. China 201612 DIODES INC. IN SHANGHAI, Plant1,NO.111-10 Songjiang Export Processing Zone, Shanghai,P.R.China 201600	**Max Thermal Resistance Junction to Ambient (θ_{JA})***	N/A
Test Locations(s)	DIODES INC. IN SHANGHAI, Plant1,NO.111-10 Songjiang Export Processing Zone, Shanghai,P.R.China 201600	**Front Metal Type (Top Layer)**	N/A
Die attach Method / Material	Epoxy/9005SP	**Front Metal Thickness (Top Layer)**	N/A
Bond Wire/Clip Material & Wire Diameter	Au wire, 1.0mil	**Back Metal Type (All Layers)**	N/A
Bond Type (at top side of the die)	N/A	**Back Metal Thickness (all Layers)**	N/A
Bond Type (at leadframe)	N/A	**Die Conformal Coating (Passivation)**	N/A
No. of Bonds over Active Area	3	**Die Passivation Thickness Range**	N/A
Mold Compound Material Type	CEL-1702HF9 SK	**Die Size (Width x Length x Thickness) in mm**	0.23*0.23
Mold Compound Material Manufacturer	HITACHI	**No. of Mask Steps**	

Completed by		Date	Certified by	Date
Typed/Printed				
Signature				
Title			Discrete Manager	

SHANGHAI KAIHONG ELECTRONIC CO.,LTD

Reliability Test Summary Report

FACTORY:		PART NUMBER :SDM03MT40-7 SWR1311059 CUSTOMER Package:SOT26 DIODES INC.:				
LABORATORY (If Different):		PART DESCRIPTION:Urgent material change-SOT-26G qual(NBKQ),(wafer:YHF014)				
DW-008 (AEC Q101) Test#	Test Description	Test Conditions	#Lots	#To Test	**Results**	REMARKS
7.3.2 (1)	PRE- AND POST- STRESS ELECTRICAL TEST (TEST)	Per Spec				
7.3.3 (2)	PRECONDITIONING (PC)	JSED22 A-113 N/A for Axial	1	308	0/308	
7.3.5.1 (3)	EXTERNAL VISUAL (EV)	MIL-STD-750 METHOD 2071	1	500	0/500	
7.3.5.2 (4)	PARAMETRIC VERIFICATION (PV)	Per Data Sheet Ta1=-55*C, Ta2=25*C, Ta3=85*C, Ta4=150*C Characteristic VZ@IZT=5mA Characteristic IR@VR=5V Characteristic VF@IF=10mA	1 of 3	25		
	Lot #2		2 of 3	25		
	Lot #3		3 of 3	25		
7.3.5.3	FORWARD SURGE	MIL-750D, Method 4066	1	45		
7.3.5.4 (5)	HIGH TEMP. REVERSE BIAS (HTRB)	T=125*C Vr=32V, PER JESD22 A-108	1	77		
	Pretest		1	77		
	@ 500 Hours	T=125*C Vr=32V, PER JESD22 A-108	1	77		
	Final 1000Hours	T=125*C Vr=32V, PER JESD22 A-108	1	77		
(6)	HIGH TEMP GATE BIAS (HTGB)	MIL-750D, Method 4066			N/A	
7.3.5.5 (7)	TEMPERATURE CYCLING (TC)	T=-65*C-150*C, PER JESD22 A-104				
	Pretest		1	77	0/77	
	@ 500 Cycles	T=-65*C-150*C, PER JESD22 A-104	1	77	0/77	
	Final 1000 Cycles	T=-65*C-150*C, PER JESD22 A-104	1	77	0/77	
7.3.5.6 (8)	AUTOCLAVE (AC)	T=121*C 15PSIG 100%RH	1	77	0/77	
7.3.5.7 (9)	H3TRB	T=85*C RH=85% VR=32v	1	77		
	Pretest		1	77	0/77	
	@ 500 Hours	T=85*C RH=85% VR=32v	1	77	0/77	
	Final 1000Hours	T=85*C RH=85% VR=32v	1	77	0/77	
7.3.5.7 (9a)	HAST	T=131*C 85%RH Vr=32V	1	77	0/77	
7.3.5.8 (10)	INTERMITTENTOPERATING LIFE (IOL)	IF=30mA, PER MIL-STD-750 METHOD 1037				15000cy @2min on/off
	Pretest	MIL-STD-750 METHOD 1037	1	77	0/77	
	Midpoint 7560CY	MIL-STD-750 METHOD 1037	1	77	0/77	
	After 15000CY	MIL-STD-750 METHOD 1037	1	77	0/77	
(10a)	POWER AND TEMP. CYCLE (PTC)	JESD22 A-105, Per Table AEC-Q101, p11	1	77		
(Optional)	Pretest	JESD22 A-105, Per Table AEC-Q101, p11	1	77		
	Midpoint	JESD22 A-105, Per Table AEC-Q101, p11	1	77		
	After	JESD22 A-105, Per Table AEC-Q101, p11	1	77		
7.3.5.9 (11)	ESD CHARACTERIZATION (ESD)	PER AEC-Q101-001 & -002	1	60		
7.3.5.10 (12)	D.P.A. (DPA)	AEC Q101-004 SEC. 4	1	2	0/2	
7.3.5.11 (13)	PHYSICAL DIMENSION (PD)	PER JESD22 B-100	1	30	0/30	
7.3.5.12 (14)	TERMINAL STRENGTH (TS)	MIL-STD-750, Method 2036	1	30		
7.3.5.13 (15)	RESISTANCE TO SOLVENTS (RTS)	JESD22 B-107	1	30		
(16)	CONSTANT ACCELERATION (CA)	N/A, not hermetically sealed device.	N/A	N/A		
(17)	VIBRATION VARIABLE FREQUENCY (VVF	N/A, not hermetically sealed device.	N/A	N/A		
7.3.5.14 (20)	RESISTANCE TO SOLDER HEAT (RSH)	JESD22 B-106	1	30	0/30	260*C @30S
7.3.5.15 (21)	SOLDERABILITY (SD)	J-STD-002	1	10	0/10	245*C @5S
7.3.5.16 (22)	THERMAL RESISTANCE (TR)	JESD 24-3, 24-4, 24-6 as appropriate	1	10	0/10	
7.3.5.17 (23)	WIRE BOND STRENGTH (WBS)	MIL-STD-750 METHOD 2037	1	30		
7.3.5.18 (24)	BOND SHEAR (BS)	AEC-Q101-003	1	30		
7.3.5.19 (25)	DIE SHEAR (DS)	MIL-STD-750 METHOD 2017	1	30	0/30	
Summary:	The lot passed 1000hrs full hi-rel test.					
Submitted by:	Joan Yu 02/10/14	Approved by:Adam Gu 02/10/14				

CERTIFICATE OF DESIGN AND CONSTRUCTION

Printed specifications are not controlled documents. Verify revision before using.

Assembly and Test Site	DIODES INC	**Glass Transition Temperature (T_G)**	N/A
DIC P/N	ZXMP4A57E6QTA	**Lead Frame Type**	SOT-26 C
Package Type	SOT-26	**Lead Frame Manufacturer**	NBKQ
DIE P/N	ZXMP4A57D	**Lead Frame Material**	CDA194
Die Line or Process	SBR	**Terminal Finish (Plating) Material**	N/A
Wafer Diameter	6 inch	**Header Plating (Die Land Area)**	Silver Spot Plate
Wafer Fab Site(s)	OFAB	**Max Junction Temperature (T_j)**	150° C
ID Method (multiple sites)	N/A	**Max Thermal Resistance Junction to Case (θ_{JC})**	N/A
Assembly Locations(s)	Shanghai Kaihong Electronic Co., Ltd. No.999 Chenchun Road, Xinqiao Town, Songjiang,Shanghai,P.R. China 201612 DIODES INC. IN SHANGHAI, Plant1,NO.111-10 Songjiang Export Processing Zone, Shanghai,P.R.China 201600	**Max Thermal Resistance Junction to Ambient (θ_{JA})***	N/A
Test Locations(s)	DIODES INC. IN SHANGHAI, Plant1,NO.111-10 Songjiang Export Processing Zone, Shanghai,P.R.China 201600	**Front Metal Type (Top Layer)**	N/A
Die attach Method / Material	Epoxy/9005SP	**Front Metal Thickness (Top Layer)**	N/A
Bond Wire/Clip Material & Wire Diameter	Cu wire, 1.7mil	**Back Metal Type (All Layers)**	N/A
Bond Type (at top side of the die)	N/A	**Back Metal Thickness (all Layers)**	N/A
Bond Type (at leadframe)	N/A	**Die Conformal Coating (Passivation)**	N/A
No. of Bonds over Active Area	3	**Die Passivation Thickness Range**	N/A
Mold Compound Material Type	CEL-1702HF9 SK	**Die Size (Width x Length x Thickness) in mm**	1.85*1.09
Mold Compound Material Manufacturer	HITACHI	**No. of Mask Steps**	

	Completed by	Date	Certified by	Date
Typed/Printed				
Signature				
Title			Discrete Manager	

SHANGHAI KAIHONG ELECTRONIC CO.,LTD

Reliability Test Summary

FACTORY:		PART NUMBER : ZXMP4A57E6QTA SWR1311063 Package Description : SOT-26			CUSTOMER: DIODES INC.:	
LABORATORY (If Different):		PART DESCRIPTION : Qualification for SOT-26 C NBKQ LDF(ZXMP4A57D, 1.7mil Cu Wire + CEL-1702HF9 SK).				
DW-008 (AEC Q101) Test#	Test Description	Test Conditions	#Lots	#To Test	**Results**	REMARKS
7.3.2 (1)	PRE- AND POST- STRESS ELECTRICAL TEST (TEST)	Per Spec				
7.3.3 (2)	PRECONDITIONING (PC)	JSED22 A-113 N/A for Axial	1	308	0/308	
7.3.5.1 (3)	EXTERNAL VISUAL (EV)	MIL-STD-750 METHOD 2071	1	500	0/500	
7.3.5.2 (4)	PARAMETRIC VERIFICATION (PV)	Per Data Sheet Ta1=-55℃, Ta2=25℃, Ta3=85℃, Ta4=150℃ Characteristic BVDSS@VGS=0V, ID=-250uA Characteristic IDSS@VDS=-40V, VGS=0V Characteristic IGSS@VGS=±20V, VDS=0V Characteristic VGS(th)@VDS=VGS, ID=-250uA Characteristic RDSON@VGS=-10V, ID=-4A Characteristic RDSON@VGS=-4.5V, ID=-2A Characteristic yFS@VDS=-15V,ID=-4A Characteristic VSD@VGS=0V,ID=-4A	1 of 3	25	N/A	
	Lot #2		2 of 3	25	N/A	
	Lot #3		3 of 3	25	N/A	
7.3.5.3	FORWARD SURGE	MIL-750D, Method 4066	1	45	N/A	
7.3.5.4 (5)	HIGH TEMP. REVERSE BIAS (HTRB)	T=150℃ Vd=32V, PER JESD22 A-108	1	77	N/A	
(6)	HIGH TEMP GATE BIAS (HTGB)	T=150℃ Vg=20V, PER JESD22 A-108	1	77	N/A	
7.3.5.5 (7)	TEMPERATURE CYCLING (TC)	T=-65℃-150℃, PER JESD22 A-104				
	Pretest		1	77	0/77	
	@ 500 Cycles	T=-65℃-150℃, PER JESD22 A-104	1	77	0/77	
	Final 1000 Cycles	T=-65℃-150℃, PER JESD22 A-104	1	77	0/77	
7.3.5.6 (8)	AUTOCLAVE (AC)	T=121℃ 15PSIG 100%RH				
	Pretest		1	77	0/77	
	Final 96 Hours	T=121℃ 15PSIG 100%RH	1	77	0/77	
7.3.5.7 (9-1)	Highly Accelerated Stress Test(HAST)	T=130℃ RH=85% Vd=32V				
	Pretest		1	77	0/77	
	Final 96 Hours	T=130℃ RH=85% Vd=32V	1	77	0/77	
7.3.5.7 (9-2)	High Humidity High Temp. Reverse Bias(H^3TRB)	T=85℃ RH=85% Vd=32V	1	77	N/A	No request if HAST passed
7.3.5.8 (10)	INTERMITTENTOPERATING LIFE (IOL)	Vd=5V / Id=200mA; PER MIL-STD-750 METHOD 1037				
	Pretest		1	77	0/77	
	@ 7560 Cycles	MIL-STD-750 METHOD 1037	1	77	0/77	
	Final 15000 Cycles	MIL-STD-750 METHOD 1037	1	77	0/77	
(10a)	POWER AND TEMP. CYCLE (PTC)	JESD22 A-105, Per Table AEC-Q101, p11	1	77	N/A	
7.3.5.9 (11)	ESD CHARACTERIZATION (ESD)	PER AEC-Q101-001 & -002	1	60	N/A	
7.3.5.10 (12)	D.P.A. (DPA)	AEC Q101-004 SEC. 4	1	4	N/A	
7.3.5.11 (13)	PHYSICAL DIMENSION (PD)	PER JESD22 B-100	1	30	0/30	
7.3.5.12 (14)	TERMINAL STRENGTH (TS)	MIL-STD-750, Method 2036	1	30	N/A	
7.3.5.13 (15)	RESISTANCE TO SOLVENTS (RTS)	JESD22 B-107	1	30	N/A	
(16)	CONSTANT ACCELERATION (CA)	N/A, not hermetically sealed device.	N/A	N/A		
(17)	VIBRATION VARIABLE FREQUENCY (VVF)	N/A, not hermetically sealed device.	N/A	N/A		
(18)	MECHANICAL SHOCK (MS)	N/A, not hermetically sealed device.	N/A	N/A		
(19)	HERMETICITY (HER)	N/A, not hermetically sealed device.	N/A	N/A		
7.3.5.14 (20)	RESISTANCE TO SOLDER HEAT (RSH)	JESD22 B-106	1	30	0/30	260℃@30sec
7.3.5.15 (21)	SOLDERABILITY (SD)	J-STD-002	1	10	0/10	245℃@5sec
7.3.5.16 (22)	THERMAL RESISTANCE (TR)	JESD 24-3, 24-4, 24-6 as appropriate	1	10	0/10	
7.3.5.17 (23)	WIRE BOND STRENGTH (WBS)	MIL-STD-750 METHOD 2037	1	25	N/A	
7.3.5.18 (24)	BOND SHEAR (BS)	AEC-Q101-003	1	25	N/A	
7.3.5.19 (25)	DIE SHEAR (DS)	MIL-STD-750 METHOD 2017	1	30	0/30	
(26)	UNCLAMPED INDUCTIVE SWITCHING (UIS)	N/A, not for Diode	N/A	N/A		
(27)	DIELECTRIC INTEGRITY (DI)	N/A, not for Diode	N/A	N/A		
Summary: The lot passed the precondition test and 1000hrs hi-rel tests.						
Submitted by: Jianhua Yang 2/14/14		**Approved by: Adam Gu 2/14/14**				

Q-Form Q014-4,Rev.K