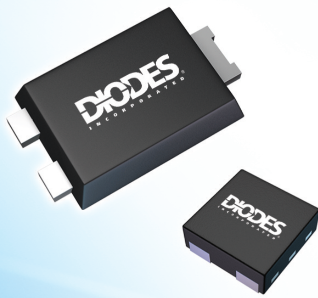


Diodes Incorporated
Discrete and Analog Semiconductors

Qualification Report – PCN-2195

Manufacturer No.: Bill of Materials (BOM) Changes for Select Analog Devices

Revision: 0

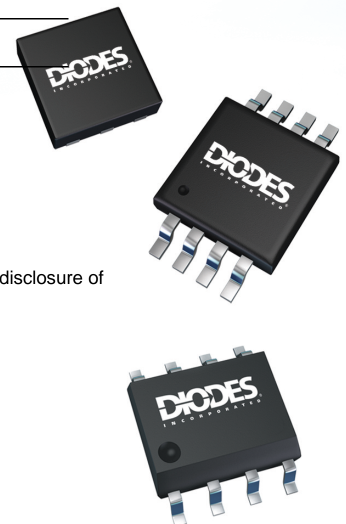
Date: January 17, 2017

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	January 17, 2017
Approved By:	Diodes US QRA Department	Date	January 17, 2017



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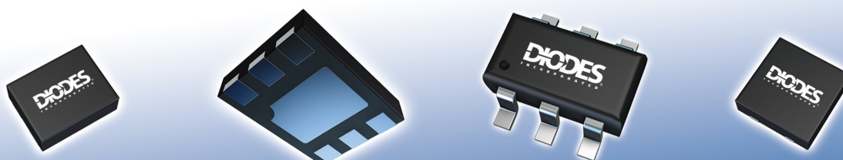

diodes.com

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DATE: 17 January, 2017

PCN #: 2195

PCN Title: Bill of Materials (BOM) Changes for Select Analog Devices

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-2195 REV 00

Notification Date:	Implementation Date:	Product Family:	Change Type:	PCN #:
17 January, 2017	17 April, 2017	Analog	BOM Changes	**2195**
TITLE				
Bill of Materials (BOM) Changes for Select Analog Devices				
DESCRIPTION OF CHANGE				
This PCN is being issued to notify customers that in order to assure continuity of supply, Diodes has qualified additional Bill of Materials (BOM) on selected devices. Full electrical characterization and high reliability testing has been completed on representative part numbers to ensure there is no change to device functionality or electrical specifications in the datasheet.				
IMPACT				
Continuity of Supply. No change in datasheet parameters and/or product performance				
PRODUCTS AFFECTED				
Table 1 - BOM changed from Au wire to 1.0mil PdCu wire and molding compound changed from CEL9220 to EMEG630AY Table 2 - Change from 0.8mil Au wire to 0.8mil Cu wire bonding				
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: BOM changed from Au wire to 1.0mil PdCu wire and compound changed from CEL9220 to EMEG630AY					
PAM8603MNHR	PAM8603MDER				

Table 2: Change from 0.8mil Au wire to 0.8mil Cu wire bonding					
ZABG6002JB20TC					

Certificate of Design, Construction & Qualification

Description: PAM8603M BOM change(Au wire-->PdCu wire, CEL9220-->EMEG630AY)

				Qual Device 1		**Qual Device 1**	
	Part Number			PAM8603MNHR		PAM8603MDER	
	Package			SSOP24		SOP18	
	Package Size			8.65*3.9*1.4mm		11.45*7.5*2.3mm	
	Die Name(s)			PAM0129A05		PAM0129A05	
	Wafer FAB			TSMC		TSMC	
	Wafer Diameter			6inch		6inch	
	Bond Type (at Die)			Ball bond		Ball bond	
	Bond Type (at LF)			Wedge		Wedge	
	No. of bond over active area			NA		NA	
	Glass Transition Temp			135C		135C	
	Lead Material Manufacture			中山复盛(Zhong Shan Fu Sheng)		中山复盛(Zhong Shan Fu Sheng)	
	Header plating (Die Land Area)			ring plating		ring plating	
	Max Junction Temp			150°C		150°C	
	Max Thermal resistance Junc (case)			18C/W		16C/W	
	Max Thermal resistance Junc (ambient)			96C/W		70C/W	
	Front Metal Type			TiN/Al/Si/Cu/TiN		TiN/Al/Si/Cu/TiN	
	Die passivation thickness range			0.8um		0.8um	
	No of masks Steps			18		18	
	Die Size (W/L/Thickness)			2020um*2160um*300um		2020um*2160um*300um	
	Die Process / Technology			TSMC_05_5V_2P3M_HiR		TSMC_05_5V_2P3M_HiR	
	Die Quantity (eg. Die per package)			1		1	
	DB Epoxy/Solder Type			Epoxy		Epoxy	
	Die Attach Material			8200T		8200T	
	Wire Bond Material (Au, Cu, Al)			PdCu		PdCu	
	Wire Diameter			1.0mil		1.0mil	
	Front Metal Thickness			0.8um		0.8um	
	Leadframe Type			SSOP24		SOP18	
	Leadframe Material			A194		A194	
	Molding Compound Type			EMEG630AY		EMEG630AY	
	Green Compound (Yes/No)			Y		Y	
	Lead-Free (Yes/No)			Y		Y	
	Assembly Site			TSHT		TSHT	
	Test Site			TSHT		TSHT	
	DataSheet			PAM8603M		PAM8603M	
	Realibility Testing						
Test	**Test Conditions**	**Duration / Limits**	**Fail/SS**	**X = Test Needed**	**Results Summary**	**X = Test Needed**	**Results Summary**
MSL3 Pre-cond	Bake 125C	24 Hrs	0/154	X	PASS	X	PASS
	Soak 30C, 60% RH	192Hrs	0/154	X	PASS	X	PASS
	IR reflow 260C	3 cycles	0/154	X	PASS	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		
TC	-65C-150C	500 cycles	0/77	X	PASS	X	PASS
		1000 cycles	0/77	X	PASS	X	PASS
HAST	130C, 85%RH 33.3 psia 80% uBias	96 Hrs	0/77	X	PASS	X	PASS
HTSL	150C	168 Hrs	0/77	X	PASS	X	PASS
		500 Hrs	0/77	X	PASS	X	PASS
ESD	HBM (AEC-Q100-002)	+-2KV	0/3	X	PASS		
	MM (AEC-Q100-003)	+-200V	0/3	X	PASS		
	CDM (AEC-Q100-011)	+-750V	0/3	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
WBS	JESD22-B116B	Cpk>1.66	0/30	X	PASS	X	PASS
Crater	Crater Testing	TBD	0/5	X	PASS	X	PASS
Ball (FA)	Free Air Ball Measurement	Cpk>1.66	0/5	X	PASS	X	PASS
Ball (Dia)	Ball Diameter Post Bond	Cpk>1.66	0/5	X	PASS	X	PASS
Ball (Height)	Ball Height	Cpk>1.66	0/5	X	PASS	X	PASS

Summary:
Submitted By:
Approved By: ___________________________________

Certificate of Design, Construction & Qualification

Description: Conversion of JB20 packaged parts from Au wire to Cu wire bonding

	Qual device1	Qual device 2	Qual device 3	QBS device 2	QBS device 3
Part Number	ZLPM8012JB20TC	ZLPM8011JB20TC	ZLPM8010JB20TC	ZXBM1021JB20TC	ZLPM8010JB20TC
Package	QFN4040-20-060E	QFN4040-20-060E	QFN4040-20-060E	QFN4040-20-060E	QFN4040-20-060E
Package Size	4.05 X 4.05 X 0.65	4.05 X 4.05 X 0.65	4.05 X 4.05 X 0.65	4.05 X 4.05 X 0.65	4.05 X 4.05 X 0.65
Die Name(s)	ZLPM8010N	ZLPM8010N	ZLPM8010N	ZXBM1021N	ZLPM8010N
Wafer FAB	Tower Jazz	Tower Jazz	Tower Jazz	OFAB	Tower Jazz
Wafer Diameter	8"	8"	8"	6"	8"
Bond Type (at Die)	Ball, Thermosonic	Ball, Thermosonic	Ball, Thermosonic	Ball, Thermosonic	Ball, Thermosonic
Bond Type (at LF)	Stitch, Thermosonic	Stitch, Thermosonic	Stitch, Thermosonic	Stitch, Thermosonic	Stitch, Thermosonic
No. of bond over active area	25	25	25	20	25
Glass Transistion Temp	135	135	135	135	135
Lead Material Manufacture	Mitsui High Tec	Mitsui High Tec	Mitsui High Tec	Mitsui High Tec	Mitsui High Tec
Header plating (Die Land Area)	NiPdAu	NiPdAu	NiPdAu	NiPdAu	NiPdAu
Max Junction Temp	150	150	150	150	150
Front Metal Type	AlCu	AlCu	AlCu	AlSiCu	AlCu
Die passivation thickness range	USG25000, SiN3000A	USG25000, SiN3000A	USG25000, SiN3000A	SiO2 5000Å + SiNi 5000Å	USG25000, SiN3000A
No of masks Steps	24	24	24	13	24
Die Size (W/L/Thickness)	2080 x 2080	2080 x 2080	2080 x 2080	2080 x 2080	2080 x 2080
Die Process / Technology	Tower0.35um	Tower0.35um	Tower0.35um	ZAD 20V bipolar	Tower0.35um
Die Quantity (eg. Die per package)	1	1	1	1	1
DB Epoxy/Solder Type	QMI519	QMI519	QMI519	QMI519	QMI519
Die Attach Material	QMI519	QMI519	QMI519	QMI519	QMI519
Wire Bond Material (Au, Cu, Al)	Cu	Cu	Cu	Cu	Au
Wire Diameter	0.8	0.8	0.8	0.8	0.8
Front Metal Thickness	2um	2um	2um	2.6um	2um
Leadframe Type	DLF00336	DLF00336	DLF00336	DLF00336	DLF00336
Leadframe Material	C7025HH	C7025HH	C7025HH	C7025HH	C7025HH
Molding Compound Type	EMEG770HCD	EMEG770HCD	EMEG770HCD	EMEG770HCD	EMEG770HCD
Green Compound (Yes/No)	Y	Y	Y	Y	Y
Lead-Free (Yes/No)	Y	Y	Y	Y	Y
Assembly Site	SAT	SAT	SAT	SAT	SAT
Test Site	SAT	SAT	SAT	SAT	SAT
DataSheet	DS35978	DS35978	DS35978	DS36322	DS35978

Realibility Testing

Test	Test Conditions	Duration / Limits	Fail/SS	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
MSL3 Pre-cond	Bake 125C	24 Hrs	0/154	0/154	pass	QBS to device 1		QBS to device 1		154/0	pass	154/0	pass
	Soak 85C, 85% RH	168Hrs	0/154	0/154	pass	QBS to device 1		QBS to device 1		154/0	pass	154/0	pass
	IR reflow 260C	3 cycles	0/154	0/154	pass	QBS to device 1		QBS to device 1		154/0	pass	154/0	pass
HTOL	Tj>125C, 100% Vcc	168 Hrs	0/77	QBS to QBS device 3		QBS to QBS device 3		QBS to QBS device 3		77/0	pass	77/0	pass
		500 Hrs	0/77	QBS to QBS device 3		QBS to QBS device 3		QBS to QBS device 3		77/0	pass	77/0	pass
		1000 Hrs	0/77	QBS to QBS device 3		QBS to QBS device 3		QBS to QBS device 3		77/0	pass	77/0	pass
PTHB	Tamb = 85°C; RH = 85%; Vs = V[max] after Preconditioning	500 Hrs	0/77	0/77	pass	QBS to device 1		QBS to device 1		77/0	pass	77/0	pass
		1000 Hrs	0/77	0/77	pass	QBS to device 1		QBS to device 1		77/0	pass	77/0	pass
TC	-65C-150C	500 cycles	0/77	0/77	pass	QBS to device 1		QBS to device 1		77/0	pass	77/0	pass
		1000 cycles	0/77	0/77	pass	QBS to device 1		QBS to device 1		77/0	pass	77/0	pass
UHAST	130C, 85%RH 33.3 psia 80% Bias	96 Hrs	0/77	0/77	pass	QBS to device 1		QBS to device 1		77/0	pass		
AC	T=121°C 15PSIG 100%RH	96 Hrs	0/77	0/77	pass	QBS to device 1		QBS to device 1		77/0	pass	77/0	pass
HTSL	150C	168 Hrs	0/77	0/45	pass	QBS to device 1		QBS to device 1		45/0	pass	45/0	pass
		500 Hrs	0/77	0/45	pass	QBS to device 1		QBS to device 1		45/0	pass	45/0	pass
		1000 Hrs	0/77	0/45	pass	QBS to device 1		QBS to device 1		45/0	pass	45/0	pass
WBP	MIL-STD883-2011	Cpk>1.66	0/30	0/5	pass	0/5	pass	0/5	pass				
WBS	JESD22-B116B	Cpk>1.66	0/30	0/5	pass	0/5	pass	0/5	pass				
Solderability	245C +0/5C	5 Seconds	0/10	QBS to QBS device 3		QBS to QBS device 3		QBS to QBS device 3				77/0	pass

S Mann

Submitted By: S Mann

Approved By: