

DATE: 3, April 2023

PCN #: 2611

PCN Title: Qualified Additional Assembly Test Sites, Die Revision and Tape and Reel Packing Quantity

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-2611 REV 1

Notification Date:	Implementation Date:	Product Family:	Change Type:	PCN #:
3 April,2023	3 July, 2023	Analog Semiconductors	Additional AT Sites, Die Revision, Tape and Reel Packing Quantity	2611
TITLE				
Qualified Additional Assembly Test Sites, Die Revision and Tape and Reel Packing Quantity.				
DESCRIPTION OF CHANGE				
This PCN is being issued to notify customers that in order to assure continuity of supply, Diodes Incorporated has qualified additional Assembly Test Sites Greatek Electronics Inc. (GTK) located in Toufen, Taiwan, and Wuxi Hongguang Microelectronics Co., Ltd (WXHG) located in Wuxi City, China. Diodes has also qualified an additional Die Revision on select products. Lastly, the Tape and Reel Packing Quantity will be changed from 500 units to 1,000 units per reel for select products listed below. Full electrical characterization and high reliability testing has been completed on representative part numbers to ensure no change to device functionality or electrical specifications in the datasheet. Refer to the attached qualification report embedded in this file (to view, download this PCN file then open it with a PDF viewer to see the attached qual report).				
IMPACT				
Continuity of Supply. There will be no change to the Form, Fit or Function of products affected, unless specifically indicated.				
PRODUCTS AFFECTED				
Table 1 - Qualification of Additional Assembly Test Site (GTK) Table 2 - Qualification of Additional Die Revision Table 3 - Qualification of Additional Assembly Test Site (WXHG) Table 4 - Change of Tape and Reel Packing Quantity from 500 units per reel to 1,000 units per reel				
WEB LINKS				
Manufacturer’s Notice:	https://www.diodes.com/quality/product-change-notices/diodes-product-change-notices/			
For More Information Contact:	https://www.diodes.com/about/contact-us/contact-sales/			
Data Sheet:	https://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 – Qualification of Additional Assembly Test Site (GTK)					
AH1892-CD4-7	AH1898-CA4-7				

Table 2 – Qualification of Additional Die Revision					
AH3712-W-7	AH3713-W-7	AH3714-W-7	AH3715-W-7		

Table 3 – Qualification of Additional Assembly Test Site (WXHG)					
AS78L05RTR-E1	AS78L05RTR-G1	AS78L12RTR-G1	AS78L15RTR-E1	AS78L15RTR-G1	AZ431AN-ATRE1
AZ431AN-ATRG1	AZ431AR-ATRE1	AZ431BN-ATRE1	AZ431BN-ATRG1	AZ431BR-ATRE1	

Table 4 - Change of Tape and Reel Packing Quantity from 500 units per reel to 1,000 units per reel

HX5021C0156.250000	LDF620010	NX5041D0156.250000	NX53E85003	NX7021D0148.500000	NX7031E0156.250000
HX5032F0200.000000	LDF620011	NX5041E0027.000000	NX53F00002	NX7021D0156.250000	NX7031E0200.000000
HX52F62004	LDF620012J	NX5061C0125.000000	NX53F62001	NX7021D0156.253906	NX7031E0212.500000
HX52F62006	LDF620014J	NX5061D0025.000625	NX53F62002	NX7021D0200.000000	NX7032B0200.000000
HX53500001	LDF620015	NX5061E0156.250000	NX53F62003	NX7021D0212.500000	NX7032C0200.000000
HX53A00001	LDF620016J	NX52250003	NX53F62004	NX7021D0312.500000	NX7032C0400.000000
HX53C50001	LDF620018	NX52A00001	NX53F62006	NX7021D0425.000000	NX7032D0050.001250
HX72500001	LDG000001	NX52A00002	NX53F62007	NX7021D0622.080000	NX7032D0200.000000
HX72F55001	LDGPON155	NX52A00003	NX53F62008	NX7021D0644.531250	NX7032D0250.000000
HX72F62002	LNC500001	NX52A00007	NX53F62009	NX7021E0100.000000	NX7032E0135.000000
HX73500001	LNC500003	NX52A00008	NX53F6205Z	NX7021E0125.000000	NX7032E0200.000000
HX73500002	NX3241E212.500000	NX52C01001	NX53G66001	NX7021E0150.000000	NX7032E0218.750000
HX73C50002	NX5021C0156.250000	NX52C50001	NX53K00002	NX7021E0156.250000	NX7041D0025.000000
HX73D33001	NX5021D0050.000000	NX52C50002	NX53K00003	NX7021E0212.500000	NX7041D0100.000000
HX73E85001	NX5021D0100.000000	NX52F00003	NX53K00004	NX7021E0250.000000	NX7041E0100.000000
HX73F00001	NX5021D0125.006250	NX52F62003	NX53K00006	NX7021E0300.000000	NX72250002
HX73F62001	NX5021D0133.330000	NX52F62004	NX53SB0001	NX7021E0300.037500	NX72250003
HX73F62002	NX5021D0155.520000	NX52F62005	NX53V25001	NX7022D0100.000000	NX72250007
LD10GE156	NX5021D0156.250000	NX52F62006	NX5427001Z	NX7022D0125.000000	NX72500002
LD2500002	NX5021D0187.500000	NX52F93001	NX54A00001	NX7022D0156.250000	NX72500004
LD2500005	NX5021D0200.000000	NX52I75001	NX54A00002	NX7031A0106.920000	NX72500005
LD5000004	NX5021D0250.000000	NX52K00001	NX54A00005	NX7031A0114.285000	NX72500007
LD5000009	NX5021D0250.025000	NX52L25001	NX54A00006	NX7031A0148.351000	NX72500008
LD5000010	NX5021D0322.289795	NX52P00002	NX54A00008	NX7031A0148.500000	NX7262C001
LD5400001Z	NX5021E0025.000000	NX52P00003	NX54C50001	NX7031A0156.250000	NX7264E001
LD6660002	NX5021E0125.000000	NX52U00001	NX54C50002	NX7031A0166.666666	NX7264E002
LD7060002	NX5021E0133.330000	NX52V25001	NX54E85001	NX7031A0622.080000	NX72667001
LD7060003	NX5021E0156.250000	NX52V25002	NX54F62003	NX7031C0050.000000	NX72750002
LD7810002J	NX5021E0300.000000	NX52W22001	NX54F62006	NX7031C0125.000000	NX72777001
LD8000001	NX5021E0312.500000	NX53500002	NX54K00001	NX7031C0126.663500	NX72781001
LD8730001	NX5021E0375.000000	NX53500003	NX56250001	NX7031C0133.330000	NX72A00001
LDA000001	NX5021E125.000000	NX53500006	NX56F62001	NX7031C0139.996500	NX72A00004
LDA000004	NX5022D0125.000000	NX53500007	NX7021A0156.253906	NX7031C0156.250000	NX72A00005
LDA000006	NX5022D0156.250000	NX53500009	NX7021B0155.520000	NX7031D0025.000000	NX72A00006
LDA000009	NX5031A0212.500000	NX5350A02Z	NX7021B0156.250000	NX7031D0100.000000	NX72A00007
LDA620001	NX5031C0100.000000	NX5364E002	NX7021B0187.510300	NX7031D0125.000000	NX72A00010
LDC450001	NX5031D0100.000000	NX53781001	NX7021B0625.000000	NX7031D0148.500000	NX72A00011
LDC500001	NX5031D0125.006250	NX53781002	NX7021C0125.000000	NX7031D0150.000000	NX72A00013
LDC500002	NX5031D0156.250000	NX53850001	NX7021C0150.000000	NX7031D0156.250000	NX72A00014
LDC500009	NX5031D0212.500000	NX53A00001	NX7021C0156.250000	NX7031D0156.253906	NX72A00015
LDC500011J	NX5031E0050.000000	NX53A00004	NX7021D0025.000000	NX7031D0200.000000	NX72A62001
LDD500001Z	NX5031E0150.000000	NX53A00007	NX7021D0025.000625	NX7031D0212.500000	NX72C50001
LDE830001	NX5031E0156.250000	NX53C50001	NX7021D0050.000000	NX7031D0644.531250	NX72C50002
LDE850002	NX5031E0166.666666	NX53C50003	NX7021D0066.700000	NX7031E0030.000000	NX72C50003
LDE850004	NX5032D0125.000000	NX53C50012	NX7021D0100.000000	NX7031E0050.000000	NX72C50006
LDF000002	NX5032D0125.003125	NX53C50013	NX7021D0125.000000	NX7031E0060.000000	NX72C50007
LDF550001	NX5032E0100.000000	NX53C50014	NX7021D0125.003125	NX7031E0075.000000	NX72C50011
LDF620001	NX5041C0027.000000	NX53D33001	NX7021D0133.000000	NX7031E0100.000000	NX72C50012
LDF620002	NX5041D0025.000000	NX53D33002	NX7021D0133.250000	NX7031E0125.000000	NX72C50014
LDF620008J	NX5041D0100.000000	NX53D3301Z	NX7021D0148.351648	NX7031E0150.000000	NX72C50015

Table 4 - Change of Tape and Reel Packing Quantity from 500 units per reel to 1,000 units per reel Continued

NX72C50016	NX73250003	NX73K00014	PB6250004	PBF620026	PDA000009J
NX72D30001	NX7340A001	NX73K00015	PB6250006	PBF620030	PDA300001
NX72D33003	NX7340A01M	NX73K00017	PB7500006	PBF620031J	PDC500002
NX72E83001	NX73500001	NX73K00018	PB8500001	PBF620032	PDC500006
NX72E85001	NX73500003	NX73K0004Z	PB8750002	PBF620033J	PDC500010
NX72F00001	NX73500006	NX73L25001	PB9000001	PBF620034J	PDD330001
NX72F00003	NX73500009	NX73L25002	PB9600001	PBF620035	PDD330003
NX72F00004	NX7364E001	NX73L25003	PBA000001	PBF620038J	PDF000001
NX72F00005	NX7364E002	NX73L25006	PBA000002	PBF620039J	PDF000003
NX72F00007	NX73810001	NX73P00001	PBA000007	PBF620042	PDF000005
NX72F55001	NX73819001	NX73SA0001	PBA000009	PBF620046J	PDF000007J
NX72F55002	NX73A00001	NX73U00001	PBA000010	PBF620048J	PDF120001
NX72F55003	NX73A00008	NX73V25002	PBA000015	PBF620050	PDF550004J
NX72F55004	NX73A00012	NX73V25003	PBA000016	PBF620054J	PDF550005
NX72F55009	NX73A56001	NX74781001	PBA000017	PBF620055J	PDF620001
NX72F55010	NX73C00002	NX74A00001	PBA000021J	PBF620061	PDF620004
NX72F55011	NX73C28002	NX74A00004	PBA000022J	PBF620062	PDF620005
NX72F55015	NX73C50002	NX74A00005	PBA000023J	PBF620063J	PDF620007
NX72F5506Z	NX73C50003	NX74C50002	PBA000026	PBF620069	PDF620008Z
NX72F5507Z	NX73C50004	NX74F62003	PBA000027	PBF620070J	PDF620011J
NX72F62002	NX73C50007	NX74F6201Z	PBA000033	PBF620072	PDF620015J
NX72F62004	NX73C50008	NX74G11001	PBA620006	PBF620073	PDF620016J
NX72F62005	NX73C50012	NX74K00002	PBB250001	PBF620074Z	PDF620017J
NX72F62007	NX73C50014	NX76F62003	PBC500002	PBF620075	PDF620019J
NX72F62009	NX73C50015	NX76K00001	PBC500003	PBF620077J	PDF620019Z
NX72F62010	NX73D33001	PB2500006	PBC500008	PBF620079J	PDF620021
NX72F62012	NX73D33004	PB2500007	PBC500009	PBF620086	PDF620022J
NX72F62013	NX73E83001	PB2500007Z	PBC500014	PBF620088J	PDF620023J
NX72F62016	NX73E85003	PB2500012	PBC500019	PBF620089J	PDF620024J
NX72F62018	NX73E85005	PB2500013	PBC500019A	PBF620091Z	PDF620026
NX72F6208Z	NX73E85008	PB2500015	PBC500024	PBF620093	PDF620027J
NX72G00001	NX73F00002	PB2500016	PBC500026J	PBF620096J	PDF620028J
NX72G00003	NX73F62001	PB2500018	PBC500027J	PBG000001	PDF620030J
NX72G11001	NX73F62002	PB2500020J	PBD670001J	PBG000003	PDF620031J
NX72G11003	NX73F62004	PB5000002	PBD670002J	PBG110004	PDF620032J
NX72G1102Z	NX73F62006	PB5000006	PBF000003	PBG110005	PDF620033J
NX72I75001	NX73F62007	PB5000007	PBF000009J	PD10GE156	PDF930003
NX72K00001	NX73F62008	PB5000008	PBF000010J	PD2500005	PDF110005
NX72K00002	NX73F62009	PB5000009	PBF000011J	PD2500006	PDSAS2150
NX72K00003	NX73F62012	PB5000010	PBF550006	PD2500008	PFF620004
NX72L25001	NX73F62013	PB5000016	PBF550010	PD2500010	PFF620005
NX72L25002	NX73F6203Z	PB5000017	PBF550014	PD5000001	PFK000001
NX72SA0005	NX73G11001	PB5000017Z	PBF550015	PD5000003	PFV250006Z
NX72SA003M	NX73G50001	PB5000018	PBF550016	PD5000006	PFV250008
NX72SA004Z	NX73I75001	PB5000021	PBF620007	PD5000007	PN0000004
NX72SB001Z	NX73K00001	PB5000023J	PBF620008	PD5000009	PN0000006
NX72V2501Z	NX73K00002	PB5000026J	PBF620012	PD5000012	PNF000003
NX72W22002	NX73K00003	PB5000028J	PBF620019	PD7060002	PNF620002
NX72W22003	NX73K00006	PB5000029	PBF620021Z	PDA000002	PX5000001
NX72W2201Z	NX73K00010	PB6180001	PBF620022	PDA000008J	PX5000002

Table 4 - Change of Tape and Reel Packing Quantity from 500 units per reel to 1,000 units per reel Continued

PX5000007	PXE850007	SQA000006	UX52F6203Z	UX72C28002	UX72F6234Z
PX5000010	PXF000003	SQA000007	UX52F6204Z	UX72C50002	UX72F6238Z
PX5000013	PXF000016	SQA000008	UX52F6214Z	UX72C50003	UX72F6250Z
PX5000015	PXF000017	SQA000009Q	UX52I0501Z	UX72C50005	UX72G00001
PX5000019	PXF620007	SQC500001	UX53A00001	UX72C50006	UX72G11001
PX5000020	PXF620012	SQF620001	UX53A00002	UX72C5009Z	UX72K00001
PXA000001	PXF620016	SQF620002Z	UX53A0003Z	UX72F55001	UX72K00002
PXA000002	PXF620023J	SQF620003J	UX53C50002	UX72F55003	UX72L25001
PXA000010	PXF620026J	SQPCIE100	UX53C50003	UX72F55004	UX72L25005
PXA000012	RX5362F001	UF5031D1156.250000	UX53F62004	UX72F62001	UX72L25007
PXA000015	RX5362F002	UV72K48001	UX53F62005	UX72F62002	UX72V25006
PXA000016	RX5362F003	UV72K48002	UX53F62006	UX72F62003	UX73A00001
PXA000017	RX53A00001	UV72K48003	UX53F6201Z	UX72F62007	UX73C50001
PXA000018	RX7264E001	UV73A24001	UX53F6202Z	UX72F62009	UX73D5002Z
PXA000019	RX72V25003	UX5021E0025.000000	UX53F6203Z	UX72F62010	UX73E85001
PXA000021	RX72V2501Z	UX5021E0050.000000	UX53G11001	UX72F62011	UX73F00003
PXA000022Z	S2692-150.0000	UX5021E0100.000000	UX53G6601Z	UX72F62016	UX73F55001
PXA000023	S2692-150.0000(T)	UX5040GE01	UX53K00001	UX72F62018	UX73F62001
PXA620005	SDS3833B-100.0000	UX52250002	UX53K00002	UX72F6201A	UX73F62002
PXB200001	SDS3833B-125.0000	UX52A00001	UX54A00001	UX72F62020	UX73F62003
PXC500005	SDS3833B-150.0000	UX52A62001	UX54A00002	UX72F62021	UX73F62004
PXC500006	SEL3833B-187.5000(T)	UX52C50001	UX54D33001	UX72F62022	UX73F62005
PXC500007	SN10GE159	UX52F62001	UX54D3302Z	UX72F62024	UX73F62006
PXC500008	SPA000001	UX52F62002	UX54F62001	UX72F62027	UX73K00002
PXC500009	SPA000001Z	UX52F62005	UX7021B0156.250000	UX72F62029	UX74A00001
PXC500011	SPA000005J	UX52F62006	UX7021C0212.500000	UX72F62035	UX74A00003
PXC500012	SPA000007	UX52F62008	UX7021D0212.500000	UX72F62044	UX74F62002
PXC500019	SPA000008	UX52F62010	UX7021E0125.000000	UX72F62046	UX74F62003
PXD280001	SPA000009	UX52F62012	UX7021Z0050.000000	UX72F62047	UX74F62004
PXD500002	SPA000010	UX52F62015	UX7022E0125.000000	UX72F62048	UX74W22002
PXE830003	SQA000001	UX52F62017	UX7031E0125.000000	UX72F62049	UX74W2204Z
PXE850004	SQA000001Z	UX52F62019	UX7032D0200.000000	UX72F62051	WF7021B0622.080000
PXE850005	SQA000002	UX52F62022	UX7040GE01	UX72F62052	WF7262C001
PXE850006	SQA000004Z	UX52F62024	UX72A00002	UX72F6214Z	



Certificate of Design, Construction & Qualification

Description: Qualification of AH1892-CD4-7 (AT house change from Sjsemi to GTK)

				Qual Device 1 (1st lot)		Qual Device 1 (2nd lot)		Qual Device 1 (3rd lot)		QBS Device1 (1st lot)		QBS Device 1 (2nd lot)		QBS Device 1 (3rd lot)		QBS Device 2	
General	Part Number			AH1892-CD4-7		AH1892-CD4-7		AH1892-CD4-7		AH1898-CA4-7		AH1898-CA4-7		AH1898-CA4-7		AP7353D-18CV4-7	
	Package			U-WLB0707-4		U-WLB0707-4		U-WLB0707-4		U-WLB0808-4		U-WLB0808-4		U-WLB0808-4		X1-WLB0707-4	
	Wire Bond, Cu Pillar, CSP			WLCSP		WLCSP		WLCSP		WLCSP		WLCSP		WLCSP		WLCSP	
	MSL Level			MSL1		MSL1		MSL1		MSL1		MSL1		MSL1		MSL1	
	Package Size			0.75*0.75*0.511		0.75*0.75*0.511		0.75*0.75*0.511		0.85*0.85*0.511		0.85*0.85*0.511		0.85*0.85*0.511		0.64*0.64*0.395	
	Die Quantity (eq. Die per package)			1		1		1		1		1		1		1	
	Die Name(1)			AD08040279C0		AD08040279C0		AD08040279C0		AD08040333A0		AD08040333A0		AD08040333A0		AD08070428B0	
	Die Size (W/L/Thickness)			0.75*0.75*0.326		0.75*0.75*0.326		0.75*0.75*0.326		0.85*0.85*0.326		0.85*0.85*0.326		0.85*0.85*0.326		0.67*0.67*0.21	
	Die Process / Technology			CMOS/ 0.35 um/ Mixed Signal/2P3M		CMOS/ 0.35 um/ Mixed Signal/2P3M		CMOS/ 0.35 um/ Mixed Signal/2P3M		CMOS 0.35um 3.3V 2P3M		CMOS 0.35um 3.3V 2P3M		CMOS 0.35um 3.3V 2P3M		CMOS 0.18um 5V 1P4M	
	Fab	Wafer FAB		TSMC/TAIWAN		TSMC/TAIWAN		TSMC/TAIWAN		TSMC/TAIWAN		TSMC/TAIWAN		TSMC/TAIWAN		Dongbu Hitek	
	Wafer Diameter		8"		8"		8"										
	Wafer Thickness		360um		360um		360um										
	Top Metal Type/Bond Pad Composition		TIN/AISiCu/TiN		TIN/AISiCu/TiN		TIN/AISiCu/TiN										
	Top Metal Thickness		0.8 um		0.8 um		0.8 um		8"		8"		8"		8"		
	Back Metal Type (All Layers)		LC2850		LC2850		LC2850		360um		360um		360um		725um		
	Back Metal Thickness (All Layers)		25um		25um		25um		TIN/AISiCu/TiN		TIN/AISiCu/TiN		TIN/AISiCu/TiN		AlSiCu		
	Max Junction Temp		150 degree C		150 degree C		150 degree C										
	No of masks Steps		15		15		15		150 degree C		150 degree C		150 degree C				
	Metal Layers		3		3		3		NA		NA		NA				
	Min Metal Width								15		15		15		24		
	Min Metal Spacing								3		3		3		4		
	Backgrind Location								GTK		GTK		GTK		GTK		
	Bond Type (at Die)								bump		bump		bump		bump		
	Green Compound (Yes/No)								Yes		Yes		Yes		Yes		
	Lead-Free (Yes/No)								Yes		Yes		Yes		Yes		
	Assembly Site								GTK		GTK		GTK		GTK		
	FT Test Site								GTK		GTK		GTK		GTK		
	Realtibility Test Site								DHC		DHC		DHC		DHC		
	Qual Plan #								22021701		22021701		22021702		22021702		19010804
	Realibility Testing																QPACK-19003
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	X = Test Needed	Results Pass/Fail	X = Test Needed	Results Pass/Fail
MSL1 Pre-cond	(JESD22-A113) Bake 125C	24 Hrs	0/154	X	Pass	QBS to QBS device 1 & 2		QBS to QBS device 1 & 2		X	Pass	X	Pass	X	Pass	X	Pass
	Soak 85C, 85% RH	168Hrs	0/154	X	Pass	QBS to QBS device 1 & 2		QBS to QBS device 1 & 2		X	Pass	X	Pass	X	Pass	X	Pass
	IR reflow 260C	3 cycles	0/154	X	Pass	QBS to QBS device 1 & 2		QBS to QBS device 1 & 2		X	Pass	X	Pass	X	Pass	X	Pass
Temp Cycle (TC)	(JESD22-A104) -65C-150C	500 cycles	0/77	X	Pass	QBS to QBS device 1 & 2		QBS to QBS device 1 & 2		X	Pass	X	Pass	X	Pass	X	Pass
	Mounted on PCB Board (Daughter Card)	1000 cycles	0/77	X	Pass	QBS to QBS device 1 & 2		QBS to QBS device 1 & 2		X	Pass	X	Pass	X	Pass	X	Pass
HAST	JESD22-A101/A110 130C, 85%RH 33.3 psia Vcc = Op Max	96 Hrs	0/77	X	Pass	QBS to QBS device 1 & 2		QBS to QBS device 1 & 2		X	Pass	X	Pass	X	Pass	X	Pass
HTSL High Temperature Storage	(JESD22-A103) Ta>150C	168 Hrs	0/77	X	Pass	QBS to QBS device 1 & 2		QBS to QBS device 1 & 2		X	Pass	X	Pass	X	Pass	X	Pass
		500 Hrs	0/77	X	Pass	QBS to QBS device 1 & 2		QBS to QBS device 1 & 2		X	Pass	X	Pass	X	Pass	X	Pass
		1000 Hrs	0/77	X	Pass	QBS to QBS device 1 & 2		QBS to QBS device 1 & 2		X	Pass	X	Pass	X	Pass	X	Pass
PD Physical Dimensions		Package Outline	Ppk>1.67 Cpk>1.33	X	Pass					X	Pass	X	Pass	X	Pass	X	Pass
SBS Solder Ball Shear			Ppk>1.67 Cpk>1.33	X	Pass					X	Pass	X	Pass	X	Pass		
Summary: Submitted By: Approved By:				Pass Tommy Chao 2022/4/28 M. Kulbeth/5 Apr, 2022													

				Qual Device 1 (1st lot)		Qual Device 1 (2nd lot)		Qual Device 1 (3rd lot)		QBS Device 1	
General	Part Number			AH1898-CA4-7		AH1898-CA4-7		AH1898-CA4-7		AP7353D-18CV4-7	
	Package			U-WLB0808-4		U-WLB0808-4		U-WLB0808-4		X1-WLB0707-4	
	Wire Bond, Cu Pillar, CSP			WLCSP		WLCSP		WLCSP		WLCSP	
	MSL Level			MSL1		MSL1		MSL1		MSL1	
	Package Size			0.85*0.85*0.511		0.85*0.85*0.511		0.85*0.85*0.511		0.64*0.64*0.395	
	Die Quantity (eg. Die per package)			1		1		1		1	
	Die Name(1)			AD08040333A0		AD08040333A0		AD08040333A0		AD08070428B0	
	Die Size (W/L/Thickness)			0.85*0.85*0.326		0.85*0.85*0.326		0.85*0.85*0.326		0.67*0.67*0.21	
	Die Process / Technology			CMOS 0.35um 3.3V 2P3M		CMOS 0.35um 3.3V 2P3M		CMOS 0.35um 3.3V 2P3M		CMOS 0.18um 5V 1P4M	
Fab	Wafer FAB			TSMC/TAIWAN		TSMC/TAIWAN		TSMC/TAIWAN		Dongbu Hitek	
	Wafer Diameter			8"		8"		8"		8"	
	Wafer Thickness			360um		360um		360um		725um	
	Top Metal Type/Bond Pad Composition			TiN/AISiCu/TiN		TiN/AISiCu/TiN		TiN/AISiCu/TiN		AlSiCu	
	Top Metal Thickness			4 um		4 um		4 um		2.7um	
	Back Metal Type (All Layers)			LC2850		LC2850		LC2850		N/A	
	Back Metal Thickness (All Layers)			25um		25um		25um		N/A	
	Die passivation thickness range			SION 1.5K/ SOG 3.15K/ SiN		SION 1.5K/ SOG 3.15K/ SiN		SION 1.5K/ SOG 3.15K/ SiN		SiN 6kA, Oxide 8kA	
	Max Junction Temp			10K		10K		10K			
	No of masks Steps			150 degree C		150 degree C		150 degree C			
	Metal Layers			15		15		15		24	
	Backgrind Location			3		3		3		4	
	Bond Type (at Die)			GTK		GTK		GTK		GTK	
	Green Compound (Yes/No)			bump		bump		bump		bump	
	Lead-Free (Yes/No)			Yes		Yes		Yes		Yes	
AT/Rel	Assembly Site			Yes		Yes		Yes		Yes	
	FT Test Site			GTK		GTK		GTK		GTK	
	Realibility Test Site			GTK		GTK		GTK		GTK	
	Qual Plan #			DHC		DHC		DHC		DHC	
				22021702		22021702		22021702		19010804	
	Realibility Testing									QPACK-19003	
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
MSL1 Pre-cond	(JESD22-A113) Bake 125C	24 Hrs	0/154	X	Pass	X	Pass	X	Pass	X	Pass
	Soak 85C, 85% RH	168Hrs	0/154	X	Pass	X	Pass	X	Pass	X	Pass
	IR reflow 260C	3 cycles	0/154	X	Pass	X	Pass	X	Pass	X	Pass
Temp Cycle (TC)	(JESD22-A104) -65C-150C	500 cycles	0/77	X	Pass	X	Pass	X	Pass	X	Pass
	Mounted on PCB Board (Daughter Card)	1000 cycles	0/77	X	Pass	X	Pass	X	Pass	X	Pass
HAST	JESD22-A101/A110										
	130C, 85%RH 33.3 psia Vcc = Op Max	96 Hrs	0/77	X	Pass	X	Pass	X	Pass	X	Pass
HTSL High Temperature Storage	(JESD22-A103) Ta>150C	168 Hrs	0/77	X	Pass	X	Pass	X	Pass	X	Pass
		500 Hrs	0/77	X	Pass	X	Pass	X	Pass	X	Pass
		1000 Hrs	0/77	X	Pass	X	Pass	X	Pass	X	Pass
SD Solderability	>95% Coverage	5 Seconds	0/15							X	Pass
PD Physical Dimensions		Package Outline	Ppk>1.67 Cpk>1.33	X	Pass	X	Pass	X	Pass	X	Pass
SBS Solder Ball Shear			Ppk>1.67 Cpk>1.33	X	Pass	X	Pass	X	Pass		
Human Body Model	HBM (AEC-Q100-002)	+8KV	0/3							X	Pass
Charged Device Model	CDM (AEC-Q100-011)	+750V	0/3							X	Pass
LU Latch-up (Class II)	Max Operating Ta or Tc or Tj	100mA	0/6							X	Pass
Char Characterization	Typ -40C, 0C, 25C, 85C, 125C	Operating Range	0/30							X	Pass
Summary: Pass											

				Qual Device 1-4 by QBS		QBS Device 1		QBS Device 2		QBS Device 3			
General	Part Number			AH3712-W-7 AH3713-W-7 AH3714-W-7 AH3715-W-7		AH3717Q-W-7		AH3712Q-W-7		AH3715Q-W-7			
	Package			SC59		SC59		SC59		SC59			
	Wire Bond, Cu Piller, CSP			Wire Bond		Wire Bond		Wire Bond		Wire Bond			
	MSL Level			MSL1		MSL1		MSL1		MSL1			
	Package Size			3.0*2.8*1.15		3.0*2.8*1.15		3.0*2.8*1.15		3.0*2.8*1.15			
	Die Quantity (eg. Die per package)			1		1		1		1			
	Die Size (W/L/Thickness)			1.51*0.71*0.1		1.51*0.71*0.1		1.51*0.71*0.1		1.51*0.71*0.1			
	Die Process / Technology			1830BD18BA		1830BD18BA		1830BD18BA		1830BD18BA			
	No of masks Steps			25		25		25		25			
	Wire Bond Material (Au, Cu, Al)			Au		Au		Au		Au			
	Wire Diameter			0.8mil		0.8mil		0.8mil		0.8mil			
Fab	Wafer FAB			Dongbu Hitek		Dongbu Hitek		Dongbu Hitek		Dongbu Hitek			
	Wafer FAB Location			Korea		Korea		Korea		Korea			
	Wafer Diameter			8"		8"		8"		8"			
	Top Metal Type/Bond Pad Composition			AlCu		AlCu		AlCu		AlCu			
	Top Metal Thickness			2.7um		2.7um		2.7um		2.7um			
	Die passivation thickness range			Oxide 8K/SiN 6K		Oxide 8K/SiN 6K		Oxide 8K/SiN 6K		Oxide 8K/SiN 6K			
	No. of bond over active area			0		0		0		0			
	Glass Transistion Temp			140 degree C		140 degree C		140 degree C		140 degree C			
	Lead Material Manufacture			NBKQ		NBKQ		NBKQ		NBKQ			
	Max Junction Temp			170 degree C		170 degree C		170 degree C		170 degree C			
	No of masks Steps			25		25		25		25			
	Metal Layers			3		3		3		3			
	Bond Type (at Die)			Ball		Ball		Ball		Ball			
	Bond Type (at LF)			Ball		Ball		Ball		Ball			
	DB Epoxy/Solder Type			CWBC		CWBC		CWBC		CWBC			
	Die Attach Material			8008MD		8008MD		8008MD		8008MD			
	Leadframe Type			Stamping		Stamping		Stamping		Stamping			
	Leadframe Material			EFTEC64		EFTEC64		EFTEC64		EFTEC64			
	Molding Compound Type			EME-G630AY		EME-G630AY		EME-G630AY		EME-G630AY			
	Green Compound (Yes/No)			Yes		Yes		Yes		Yes			
	Lead-Free (Yes/No)			Yes		Yes		Yes		Yes			
AT/Rel	Assembly Site			SAT		SAT		SAT		SAT			
	FT Test Site			SAT		SAT		SAT		SAT			
	Realibility Test Site			DHC		DHC		DHC		DHC			
	Qual Plan #			22100606		22050902		22050902		22050902			
	Realibility Testing					QPACK-20050902		QPACK-20050902		QPACK-20050902			
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		
MSL1 Pre-cond	(JESD22-A113) Bake 125C	24 Hrs	0/154	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass		Pass
	Soak 85C, 85% RH	168Hrs	0/154	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass		Pass
Temp Cycle (TC)	IR reflow 260C	3 cycles	0/154	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass		Pass
	(JESD22-A104) -50C-175C	500 cycles	0/77	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass		Pass
	Mounted on PCB Board (Daughter Card)	1000 cycles	0/77	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass		Pass
HAST	JESD22-A101/A110	96 Hrs	0/77	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass		Pass
UHAST	130C, 85%RH 33.3 psia Vcc = Op Max					X	Pass	X	Pass	X	Pass		Pass
HTSL													



Certificate of Design, Construction & Qualification

Description: Qualification for AH371X-W-7

				Qual Device 1-4 by QBS		QBS Device 1		QBS Device 2		QBS Device 3	
General	Part Number			AH3712-W-7 AH3713-W-7 AH3714-W-7 AH3715-W-7		AH3717Q-W-7		AH3712Q-W-7		AH3715Q-W-7	
	Package			SC59		SC59		SC59		SC59	
	Wire Bond, Cu Piller, CSP			Wire Bond		Wire Bond		Wire Bond		Wire Bond	
	MSL Level			MSL1		MSL1		MSL1		MSL1	
	Package Size			3.0*2.8*1.15		3.0*2.8*1.15		3.0*2.8*1.15		3.0*2.8*1.15	
	Die Quantity (eg. Die per package)			1		1		1		1	
	Die Size (W/L/Thickness)			1.51*0.71*0.1		1.51*0.71*0.1		1.51*0.71*0.1		1.51*0.71*0.1	
	Die Process / Technology			1830BD18BA		1830BD18BA		1830BD18BA		1830BD18BA	
	No of masks Steps			25		25		25		25	
	Wire Bond Material (Au, Cu, Al)			Au		Au		Au		Au	
	Wire Diameter			0.8mil		0.8mil		0.8mil		0.8mil	
Fab	Wafer FAB			Dongbu Hitek		Dongbu Hitek		Dongbu Hitek		Dongbu Hitek	
	Wafer FAB Location			Korea		Korea		Korea		Korea	
	Wafer Diameter			8"		8"		8"		8"	
	Top Metal Type/Bond Pad Composition			AlCu		AlCu		AlCu		AlCu	
	Top Metal Thickness			2.7um		2.7um		2.7um		2.7um	
	Die passivation thickness range			Oxide 8K/SiN 6K		Oxide 8K/SiN 6K		Oxide 8K/SiN 6K		Oxide 8K/SiN 6K	
	No. of bond over active area			0		0		0		0	
	Glass Transistion Temp			140 degree C		140 degree C		140 degree C		140 degree C	
	Lead Material Manufacture			NBKQ		NBKQ		NBKQ		NBKQ	
	Max Junction Temp			170 degree C		170 degree C		170 degree C		170 degree C	
	No of masks Steps		25		25		25		25		
	Metal Layers		3		3		3		3		
	Bond Type (at Die)		Ball		Ball		Ball		Ball		
	Bond Type (at LF)		Ball		Ball		Ball		Ball		
	DB Epoxy/Solder Type		CWBC		CWBC		CWBC		CWBC		
	Die Attach Material		8008MD		8008MD		8008MD		8008MD		
	Leadframe Type		Stamping		Stamping		Stamping		Stamping		
	Leadframe Material		EFTEC64		EFTEC64		EFTEC64		EFTEC64		
	Molding Compound Type		EME-G630AY		EME-G630AY		EME-G630AY		EME-G630AY		
	Green Compound (Yes/No)		Yes		Yes		Yes		Yes		
	Lead-Free (Yes/No)		Yes		Yes		Yes		Yes		
AT/Rel	Assembly Site		SAT		SAT		SAT		SAT		
	FT Test Site		SAT		SAT		SAT		SAT		
	Realibility Test Site		DHC		DHC		DHC		DHC		
	Qual Plan #		22100606		22050902		22050902		22050902		
	Realibility Testing				QPACK-20050902			QPACK-20050902		QPACK-20050902	
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
MSL1 Pre-cond	(JESD22-A113) Bake 125C	24 Hrs	0/154	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass
	Soak 85C, 85% RH	168Hrs	0/154	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass
	IR reflow 260C	3 cycles	0/154	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass
Temp Cycle (TC)	(JESD22-A104) -50c-175c	500 cycles	0/77	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass
	Mounted on PCB Board (Daughter Card)	1000 cycles	0/77	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass
HAST	JESD22-A101/A110	96 Hrs	0/77	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass
UHAST	130C, 85%RH 33.3 psia Vcc = Op Max					X	Pass	X	Pass	X	Pass
HTSL	(JESD22-A103)					X	Pass	X	Pass	X	Pass
High Temperature Storage	Ta>150C	168 Hrs	0/77	QBS to QBS Device 2				X	Pass		
		500 Hrs	0/77	QBS to QBS Device 2				X	Pass		
		1000 Hrs	0/77	QBS to QBS Device 2				X	Pass		
HTOL	Ta=125C, 100% Vcc	168 Hrs	0/77	QBS to QBS Device 1		X	Pass				
	or Ta=150 for 408 hrs	500 Hrs	0/77	QBS to QBS Device 1		X	Pass				
		1000 Hrs	0/77	QBS to QBS Device 1		X	Pass				
ELFR	Ta=125C, 100% Vcc	48 hrs	0/800							X	Pass
Earlier Life Failure Rate											
WBS	JESD22-B116B	Cpk>1.66	0/5	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass
WBP	MIL-STD883-2011	Cpk>1.66	0/5	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass
SD											
Solderability	>95% Coverage	5 Seconds	0/15	QBS to QBS Device 2				X	Pass		
PD											
Physical Dimensions		Package Outline	Ppk>1.67 Cpk>1.33	QBS to QBS Device 1,2,3		X	Pass	X	Pass	X	Pass
Human Body Model	HBM (AEC-Q100-002)	+2KV	0/3	QBS to QBS Device 1		X	Pass				
Charged Device Model	CDM (AEC-Q100-011)	+750V	0/3	QBS to QBS Device 1		X	Pass				
LU											
Latch-up (Class II)	Max Operating Ta or Tc or Tj	100mA	0/6	QBS to QBS Device 1		X	Pass				
Char											
Characterization	Typ -40C, 0C,-25C,-85C,-125C	Operating Range	0/30	QBS to QBS Device 1		X	Pass				
Summary:	Pass										
Submitted By:	Ben Hou										
Approved By:	YC Kuei / 8, January 2023										



				Qual Device 1		Qual Device 2		Qual Device 3		Qual Device 4 By QBS	
General	Part Number			AS78L05RTR-E1		AS78L05RTR-E1		AS78L05RTR-E1		Complete Device List (QBS parts)	
	Package			SOT-89		SOT-89		SOT-89		SOT-89	
	Wire Bond, Cu Piller, CSP			Wire Bond		Wire Bond		Wire Bond		Wire Bond	
	MSL Level			3		3		3		3	
	Package Size			4.5*4.1*1.5		4.5*4.1*1.5		4.5*4.1*1.5		NA	
	Die Quantity (eg. Die per package)			1		1		1		1	
	Die Name(1)			AA085HA-H		AA085HA-H		AA085HA-H		Complete Device List (QBS parts)	
	Die Size (W/L/Thickness)			0.86*0.93mm		0.86*0.93mm		0.86*0.93mm		NA	
	Die Process / Technology			Bipolar/2um/36V/0P1M		Bipolar/2um/36V/0P1M		Bipolar/2um/36V/0P1M		Bipolar/2um/36V/0P1M	
	No of masks Steps			11		11		11		11	
	Wire Bond Material (Au, Cu, Al)			AuPdCu		AuPdCu		AuPdCu		AuPdCu	
	Wire Diameter			1 mil		1 mil		1 mil		1 mil	
Fab	Wafer FAB			JK-FAB		JK-FAB		JK-FAB		JK-FAB	
	Wafer FAB Location			TaiWan China		TaiWan China		TaiWan China		TaiWan China	
	Bump or Piller or RDL			No		No		No		No	
	Bump/Piller/RDL Site (Name and phy location)			No		No		No		No	
	Wafer Diameter			6"		6"		6"		6"	
	Wafer Thickness			625		625		625		625	
	Top Metal Type/Bond Pad Composition			AlSiCu		AlSiCu		AlSiCu		AlSiCu	
	Top Metal Thickness			1.2um		1.2um		1.2um		1.2um	
	Die passivation thickness range			5000A SiO2+5000A Si3N4		5000A SiO2+5000A Si3N4		5000A SiO2+5000A Si3N4		5000A SiO2+5000A Si3N4	
	No. of bond over active area			0		0		0		0	
	Glass Transition Temp			130 degree C		130 degree C		130 degree C		130 degree C	
	Max Junction Temp			150 degree C		150 degree C		150 degree C		150 degree C	
	BackgrindThickness			240um		240um		240um		240um	
	Backgrind Location			WXHG		WXHG		WXHG		WXHG	
	Bond Type (at Die)			Ball		Ball		Ball		Ball	
	Bond Type (at LF)			Wedge		Wedge		Wedge		Wedge	
	DB Epoxy/Solder Type			Epoxy		Epoxy		Epoxy		Epoxy	
	Die Attach Material			S502		S502		S502		S502	
	Min Bond Pad Pitch			100		158.5		158.5		158.5	
	# of pad/ball/pin Pitch			3		3		3		3	
	Leadframe Type (Stamped or Etched)			stamping		stamping		stamping		stamping	
	Leadframe Material			KFC		KFC		KFC		KFC	
	Ag plated or Bare Cu			Ag plating		Ag plating		Ag plating		Ag plating	
	Lead Frame Manufacturer			NBGB		NBGB		NBGB		NBGB	
	Molding Compound Type			EME-G630AY		EME-G631K		EME-G631K		EME-G631K	
	Molding Compound Manufacturer			SuZhouZhuYou		SuZhouZhuYou		SuZhouZhuYou		SuZhouZhuYou	
	Green Compound (Yes/No)			Yes		Yes		Yes		Yes	
	Lead-Free (Yes/No)			Yes		Yes		Yes		Yes	
AT/Rel	Assembly Site/ Location			WXHG		WXHG		WXHG		WXHG	
	Test Site/ Location			WXHG		WXHG		WXHG		WXHG	
	Reliability Test Site			BCD		BCD		BCD		BCD	
	Qual Plan #			22101301		22101301		22101301		22101301	
	Reliability 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
MSL3 Pre-cond	(JESD22-A113) Bake 125C	24 Hrs	0/154	X	Pass	X	Pass	X	Pass	QBS to qual device 1,2,3	
	Soak 30C, 60% RH	192Hrs	0/154	X	Pass	X	Pass	X	Pass	QBS to qual device 1,2,3	
	IR reflow 260C	3 cycles	0/154	X	Pass	X	Pass	X	Pass	QBS to qual device 1,2,3	
Temp Cycle (TC)	(JESD22-A104) -65C-150C	500 cycles	0/77	X	Pass	X	Pass	X	Pass	QBS to qual device 1,2,3	
	Mounted on PCB Board (Daughter Card)	1000 cycles	0/77	X	Pass	X	Pass	X	Pass	QBS to qual device 1,2,3	
H											