



Product Change Notification / LIAL-23CCBP390

Date:

25-Jun-2021

Product Category:

AntiFuse FPGAs, General Purpose FPGAs, System On Chip FPGAs

PCN Type:

Manufacturing Change

Notification Subject:

Memo # ML062021004D & TRB# WW22: Initial Notice: Qualification of ASEM as a new assembly site for selected Microsemi products available in 144L, 256L, and 324L LFBGA, 281L and 288L TFBGA packages.

Affected CPNs:

[LIAL-23CCBP390_Affected_CPN_06252021.pdf](#)

[LIAL-23CCBP390_Affected_CPN_06252021.csv](#)

Notification Text:

PCN Status:Initial notification.

PCN Type: Manufacturing Change

Microchip Parts Affected:Please open one of the files found in the Affected CPNs section

NOTE: For your convenience Microchip includes identical files in two formats (.pdf and .xls).

Description of Change:Qualification of ASEM as a new assembly site for selected Microsemi products available in 144L, 256L, and 324L LFBGA, 281L and 288L TFBGA packages.

Pre and Post Change Summary:

	Pre-Change	Post Change
Assembly Site	UTAC Dongguan Limited (UDG)	ASE Group -Malaysia (ASEM)

Wire material	Au	CuPd	Au	CuPdAu
	Refer to attached excel file for details of material change by device.			
Die attach material	CRM-1076WB	CRM1525D	Ablebond 2100A	
	Refer to attached excel file for details of material change by device.			
Molding compound material	KE-G1250LKDS-30		G750E	
	Refer to attached excel file for details of material change by device.			
Solder Ball	SAC305	SnPb	SAC305	SnPb
	Refer to attached excel file for details of material change by device.			

Impacts to Data Sheet:None.

Change Impact:None

Reason for Change:

To improve productivity by qualifying ASEM as a new assembly site.

Note: Because of capacity constraints that have been observed throughout the industry there may be limited or no inventory available as identified in the pre-change.

Change Implementation Status:In Progress

Estimated Qualification Completion Date:December 15, 2021

Note: Please be advised the qualification completion times may be extended because of unforeseen business conditions however implementation will not occur until after qualification has completed and a final PCN has been issued. The final PCN will include the qualification report and estimated first ship date. Also note that after the estimated first ship date guided in the final PCN customers may receive pre and post change parts.

Time Table Summary:

Workweek	June 2021					-->	December 2021				
	23	24	25	26	27		49	50	51	52	53
Initial PCN Issue Date				X							
Qual Report Availability								X			
Final PCN Issue Date								X			

Method to Identify Change:1. Traceability code2. Parts can be identified by Country of Origin marked on the unit. CHN (China) for devices built at UDG. MYS (Malaysia) for devices built at ASEM.

Qualification Plan:Please open the attachments included with this PCN labeled as PCN_#_Qual_Plan

Revision History:June 25, 2021: Issued initial notification.

The change described in this PCN does not alter Microchip's current regulatory compliance regarding the material content of the applicable products.

Attachments:

[PCN_LIAL-23CCBP390_Affected CPN list_PN_List_UDG_ASEM.xlsx](#)

[PCN_LIAL-23CCBP390_Qual plan_PA-233.pdf](#)

[PCN_LIAL-23CCBP390_Qual plan_AEC-PA-008.pdf](#)

Please contact your local [Microchip sales office](#) with questions or concerns regarding this notification.

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If you wish to change your PCN profile, including opt out, please go to the [PCN home page](#) select login and sign into your myMicrochip account. Select a profile option from the left navigation bar and make the applicable selections.

Affected Part Numbers	Wire type		Epoxy		Mold Compound		Solder Ball	
	Pre change	Post Change	Pre change	Post Change	Pre change	Post Change	Pre change	Post Change
A2F200M3F-1FG256	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F200M3F-1FG256I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F200M3F-1FG256IX3	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F200M3F-1FGG256	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F200M3F-1FGG256I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F200M3F-FG256	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F200M3F-FG256I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F200M3F-FG256IX94	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F200M3F-FG256YI	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F200M3F-FGG256	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F200M3F-FGG256I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-1CS288	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-1CS288I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-1CSG288	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-1CSG288I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-1CSG288IQ091	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-1CSG288IZ091	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-1CSG288IZ265	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-CS288	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-CS288I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-CSG288	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-CSG288I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-CSG288X52	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-1FG256	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-1FG256I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-1FG256IX94	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-1FG256M	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-1FG256YI	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-1FGG256	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-1FGG256I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-1FGG256IX3	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-1FGG256M	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-FG256	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-FG256I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-FG256M	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A2F500M3G-FGG256	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-FGG256I	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A2F500M3G-FGG256M	Au	CuPdAu	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A3P060-1FG144	CuPd	CuPdAu	CRM1525D	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A3P060-1FG144I	CuPd	CuPdAu	CRM1525D	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A3P060-1FG144T	Au	Au	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A3P060-1FGG144	CuPd	CuPdAu	CRM1525D	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A3P060-1FGG144I	CuPd	CuPdAu	CRM1525D	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A3P060-1FGG144T	Au	Au	CRM-1076WB	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SAC305	SAC305
A3P060-2FG144	CuPd	CuPdAu	CRM1525D	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb
A3P060-2FG144I	CuPd	CuPdAu	CRM1525D	Ablebond 2100A	KE-G1250LKDS-30	Sumitomo G750E	SnPb	SnPb



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QUALIFICATION PLAN SUMMARY

PCN #: LIAL-23CCBP390

Date:

April 7, 2021

**Qualification of ASEM as a new assembly site for selected
Microsemi products available in 144L, 256L, and 324L
LFBGA, 281L and 288L TFBGA packages.**

Purpose: Qualification of ASEM as a new assembly site for selected Microsemi products available in 144L, 256L, and 324L LFBGA, 281L and 288L TFBGA packages

Product being qualified: A3P1000-FGG256
Criteria used for qualification: AEC-Q100

Additional products qualified: Refer to table A for devices list of qualification by extension/similarity.

Qualification vehicles:

Lot Info	Wafer Lot#	Mesa Lot#	D/C
Lot 1	TBD	TBD	TBD
Lot 2	TBD	TBD	TBD
Lot 3	TBD	TBD	TBD

Package Information			Package Test Information	
Name & location	Package name	Bonding diagram and Rev	Name & Location	Test program name and Rev
ASE Malaysia	FGG256	1-8a-11963n R1 Or equivalent	MSCC, SJ	AUTOA3P1000, REV: A14

Additional Information:

Bill of Material

- Mold compound: Sumitomo G750E
- Die attach epoxy: Ablebond 2100A
- Bond wire: Au
- Solder ball: 96.5%Sn/3%Ag/0.5%Cu
- Substrate:
 - o Core material: GHPL-830NXA, CCL-HL832NXA
 - o solder mask: AUS308

Test Group A - Accelerated Environment Stress Tests Plan/Summary

Test Name	Group	Test Criteria	Test Condition	# of Lots	Sample Size per lot	Test Duration Pull Point	Acceptance Criteria	Results	Comments
Preconditioning (L3)	A1	JESD22-A113	30°C, 60%RH, 192 hrs. 260°C reflow Temp	3	287 units/lot	192 hrs.	0 Failure		TEST = ROOM and 125°C
Biased HAST ^{/2} (B-HAST)	A2	JESD22-A110	110°C, 85%RH, 264 hrs.	3	77 units + 5 spares/lot (246 units total)	264 hrs.	0 Failure		TEST = ROOM and 125°C
Unbiased HAST ^{/2} (U-HAST)	A3	JESD22-A118	110°C, 85%RH, 264 hrs.	3	77 units + 5 spares/lot (246 units total)	264 hrs.	0 Failure		TEST = ROOM
Temperature Cycle (TC) ^{/2}	A4	JESD22-A104	65 °C to 150 °C, 500 cycles	3	77 units + 5 spares/lot (246 units total)	500 cycles	0 Failure		TEST = ROOM and 125°C
Power Temperature Cycling ^{/4}	A5	JESD22-A105	N/A	-	N/A	N/A	N/A	N/A	See note 4
High Temp Storage (HTS)	A6	JESD22-A103 (no Precon required)	150°C, 1000 hrs.	3	45 units + 3 spares/lot (144 total)	1000 hrs.	0 Failure		TEST = ROOM and 125°C

Note:

1. CSAM monitor to be performed on minimum of 15 units/lot at pre and post MSL-3 pre-conditioning.
2. All samples require preconditioning except for HTS.
3. Spares will be properly identified. To be used only as replacement in case of mechanical damage from assignable cause on actual qual samples.
4. Power Temperature cycling test is not required.
This test is required only on devices with maximum rated power ≥ 1 watt or $\Delta T_J \geq 40^\circ\text{C}$ or devices designed to drive inductive loads.

Test Group C - Package Assembly Integrity Tests (for each lot)

Assembly process	Test method	Criteria	Failure Rate	Acceptance Criteria	Results	Comments
Die Shear	TM2019	≥5kg	0/10 reading	No failure		
Wire Pull	TM2011	≥3g	0/30 reading From 5 units	0		
Bond Shear	JESD22-B116	≥5g	0/35 reading from 5 units	0		
Bond pad crater check	Internal Control	No crack	2 units	No crack		
Wire Sweep	X-Ray	Assembly Spec	0/30 readings	No failure		
BGA Ball Shear	JESD22-B117	Assembly spec	0/30 reading	0		To be performed after 2X reflow cycles
Physical Dimension	JESD-B100	Per package Drawing	0/30 readings	No failure		

Additional Data Collection

1. Wire pull test on decapsulated samples after Temperature cycling.

Sample size: 5 units; 12 wires/unit (2 bond wires from each corner, 1 at mid span)

Unit#	Unit 2	Unit 3	Unit 4	Unit 5
Grm-force				
min				
max				
average				
Result				

Acceptance Criteria: 3 grams after Temp cycle. Cpk not

Table A: List of devices to be covered by this qualification run

Devices	Pb-Free Package	With SnPb Solder ball ^{2/}
A3P1000 – Qualification vehicle ^{1/}	FGG256	FG256
A3P250	FGG256	FG256
A3P1000	FGG144	FG144
A3P250	FGG144	FG144
A3P125	FGG144	FG144
A3P060	FGG144	FG144

Notes

1/ Qualification vehicle. The other devices are qualified by extension.

2/ Automotive does not allow SnPb. However, some end users such as Avionic application prefer to use devices with SnPb terminal, and electrically screened based on automotive requirements.



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QUALIFICATION PLAN SUMMARY

PCN #: LIAL-23CCBP390

**Date:
April 7, 2021**

Qualification of ASEM as a new assembly site for selected Microsemi products available in 144L, 256L, and 324L LFBGA, 281L and 288L TFBGA packages.

Purpose: Qualification of ASEM as a new assembly site for selected Microsemi products available in 144L, 256L, and 324L LFBGA, 281L and 288L TFBGA packages.

Criteria used for qualification: JESD47K.

SN	Qualification Vehicle
1	A3PE3000-FGG324
2	APA600-FGG256
3	AFS1500-FGG256
4	A2F500-CSG288
5	AGL1000-CSG281

Additional products qualified: Refer to table A for list of devices that will be qualified by extension/similarity

1) A3PE3000-FGG324

Lot Info	Wafer Lot #	Mesa Lot #	D/C
Lot 1	TBD	TBD	TBD
Lot 2	TBD	TBD	TBD
Lot 3	TBD	TBD	TBD

Note: Non-consecutive lots at assembly processing.

2) APA600-FGG256

Lot Info	Wafer Lot #	Mesa Lot #	D/C
Lot 1	TBD	TBD	TBD

3) AFS1500-FGG256

Lot Info	Wafer Lot #	Mesa Lot #	D/C
Lot 1	TBD	TBD	TBD

4) A2F500-CSG288

Lot Info	Wafer Lot #	Mesa Lot #	D/C
Lot 1	TBD	TBD	TBD

5) AGL1000-CSG281

Lot Info	Wafer Lot #	Mesa Lot #	D/C
Lot 1	TBD	TBD	TBD

		Package Information			Package Test Information
SN	Product	Name & location	Package name	Bonding diagram and Rev	Name & Location
1	A3PE3000-FG324	ASE Malaysia	FGG256	1-8A-111027 R1	San Jose CA
2.	APA600-FGG256	ASE Malaysia	FGG256	1-8A-11914u R1	San Jose CA
3.	AFS1500-FGG256	ASE Malaysia	FGG256	TBD	San Jose CA
4.	A2F500-CSG288	ASE Malaysia	CSG288	1-8A-11971n R1	San Jose CA
5.	AGL1000-CSG281	ASE Malaysia	CSG281	TBD	San Jose CA

Additional Information:

- **Bill of Material**

- Die Attach: Ablebond 2100A
- Bond wire: CuPdAu
- Mold compound: G750E
- Solder ball: SAC305
- Substrates
 - Core material: GHPL-830NXA, CCL-HL832NXA
 - Solder mask: AUS308

Maximum Temperature is the MSL reflow temp (260C).

Qualification Test Plan

1. A3PE3000-FGG324

Test Name	Test Criteria	Test Condition	# of Lots	Sample Size per lot	Test Duration Pull Point	Acceptance Criteria	Results	Comments
Preconditioning (L3)	JESD22-A113	30°C, 60%RH, 192 hrs.: 260°C reflow Temp	3	75 + 9 spares ^{/3}	192 hrs.	Pass Electrical test		
Temperature Cycle (TC) /2	JESD22-A104	-55 °C to 125 °C, condition B, 700 cycles	3	25 + 3 spare /3	700 cycles	Pass Electrical test		
HAST (Unbiased HAST) /2	JESD22-A118	110 °C, 85%RH, 264 hours	3	25 + 3 spare /3	264 hours	Pass Electrical test		
High Temp Storage (HTS) /2	JESD22-A103	150°C, 1000 hours	3	25 + 3 spare /3	1000 hrs	Pass Electrical test		

Notes:

/1 CSAM monitor to be performed on 15 units/lot at pre and post MSL

/2 All samples to undergo MSL3.

/3 Spares are properly identified. This will be used only as replacement in the event of mechanical damage from machine error or handling.

2. APA600-FGG256

Test Name	Test Criteria	Test Condition	# of Lots	Sample Size per lot	Test Duration Pull Point	Acceptance Criteria	Results	Comments
Preconditioning (L3)	JESD22-A113	30°C, 60%RH, 192 hrs.: 260°C reflow Temp	1	135 + 9 spares ^{/3}	192 hrs.	Pass Electrical test		
Temperature Cycle (TC) ^{/2}	JESD22-A104	-55 °C to 125 °C, condition B, 700 cycles	1	45 + 3 spare ^{/3}	700 cycles	Pass Electrical test		
HAST (Unbiased HAST) ^{/2}	JESD22-A118	110 °C, 85%RH, 264 hours	1	45 + 3 spare ^{/3}	264 hours	Pass Electrical test		
High Temp Storage (HTS) ^{/2}	JESD22-A103	150°C, 1000 hours	1	45 + 3 spare ^{/3}	1000 hrs	Pass Electrical test		

Notes:

/1 CSAM monitor to be performed on 15 units/lot at pre and post MSL.

/2 All samples to undergo MSL3.

/3 Spares are properly identified. This will be used only as replacement in the event of mechanical damage from machine error or handling

3. AFS1500-FGG256

Test Name	Test Criteria	Test Condition	# of Lots	Sample Size per lot	Test Duration Pull Point	Acceptance Criteria	Results	Comments
Preconditioning (L3)	JESD22-A113	30°C, 60%RH, 192 hrs.: 260°C reflow Temp	1	105 + 6 spares ^{/3}	192 hrs.	Pass Electrical test		
Temperature Cycle (TC) ^{/2}	JESD22-A104	-55 °C to 125 °C, condition B, 700 cycles	1	45 + 3 spare ^{/3}	700 cycles	Pass Electrical test		
HAST (Unbiased HAST) ^{/2}	JESD22-A118	110 °C, 85%RH, 264 hours	1	45 + 3 spare ^{/3}	264 hours	Pass Electrical test		

Notes:

/1 CSAM monitor to be performed on 15 units/lot at pre and post MSL.

/2 All samples to undergo MSL3.

/3 Spares are properly identified. This will be used only as replacement in the event of mechanical damage from machine error or handling

5. A2F500-CSG288

Test Name	Test Criteria	Test Condition	# of Lots	Sample Size per lot	Test Duration Pull Point	Acceptance Criteria	Results	Comments
Preconditioning (L3)	JESD22-A113	30°C, 60%RH, 192 hrs.: 260°C reflow Temp	1	105 + 6 spares ^{/3}	192 hrs.	Pass Electrical test		
Temperature Cycle (TC) ^{/2}	JESD22-A104	-55 °C to 125 °C, condition B, 700 cycles	1	45 + 3 spare ^{/3}	700 cycles	Pass Electrical test		

HAST (Unbiased HAST) ^{/2}	JESD22-A118	110 °C, 85%RH, 264 hours	1	45 + 3 spare ^{/3}	264 hours	Pass Electrical test		
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Notes:

/1 CSAM monitor to be performed on 15 units/lot at pre and post MSL.

/2 All samples to undergo MSL3.

/3 Spares are properly identified. This will be used only as replacement in the event of mechanical damage from machine error or handling

6. AGL1000- CSG281

Test Name	Test Criteria	Test Condition	# of Lots	Sample Size per lot	Test Duration Pull Point	Acceptance Criteria	Results	Comments
Preconditioning (L3)	JESD22-A113	30°C, 60%RH, 192 hrs.: 260°C reflow Temp	1	105 + 6 spares ^{/3}	192 hrs.	Pass Electrical test		
Temperature Cycle (TC) ^{/2}	JESD22-A104	-55 °C to 125 °C, condition B, 700 cycles	1	45 + 3 spare ^{/3}	700 cycles	Pass Electrical test		
HAST (Unbiased HAST) ^{/2}	JESD22-A118	110 °C, 85%RH, 264 hours	1	45 + 3 spare ^{/3}	264 hours	Pass Electrical test		

Notes:

/1 CSAM monitor to be performed on 15 units/lot at pre and post MSL.

/2 All samples to undergo MSL3.

/3 Spares are properly identified. This will be used only as replacement in the event of mechanical damage from machine error or handling

In-process Assembly Data (Per Assembly Lot)

Assembly process	Test method	Criteria	Failure Rate	Acceptance Criteria	Results	Comments
Die shear	MIL-STD-883 TM2019	≥5kg-f	0/10 bonds from 5 units	No failure		
Wire Pull	TM2011	≥3 g-f	0/30 bonds from 5 units	0		
Stitch Pull	TM2011	≥2.5 g-f	0/30 bonds from 5 units	0		
Bond Shear	JESD22-B116	≥7 g-f	0/30 bonds from 5 units	0		
Bond pad crater check	Internal Control	No crack	0/1 unit	No crack		
Wire sweep	x-ray	Assembly spec	1 mold shot	15% max deflection		
Solder ball shear	JESD22-B117	Assembly spec	30 balls from 5 units	No failure		
Physical Dimension	JESD22-B100	POD	0/5 units	No failure		

Table A: List of Devices covered by this qualification run

1. A3PE3000-FGG324 (UMC, Nitride passivation)

Device	Pb-Free Package	With SnPb Solder ball
A3PE3000 – Qual vehicle*	FGG324	FG324
A3P1000	FGG256	FG256
A3P250	FGG256	FG256
A3P1000	FGG144	FG144
A3P600	FGG144	FG144
A3P400	FGG144	FG144
A3P250	FGG144	FG144
A3P125	FGG144	FG144
A3P060	FGG144	FG144
AGL1000	FGG256	FG256
AGL600	FGG256	FG256
AGL400	FGG256	FG256
A3P600	FGG256	FG256
A3P400	FGG256	FG256
A3PE600	FGG256	FG256
AGLE600	FGG256	FG256
AGL1000	FGG144	FG144
AGL600	FGG144	FG144
AGL400	FGG144	FG144
AGL250	FGG144	FG144
AGL125	FGG144	FG144

Note 1: * Qual vehicle. The other devices are qualified by extension

2. AFS1500-FGG256 (IFX - Polyimide passivation)

Device	Pb-Free Package	With SnPb Solder ball
AFS1500 – Qual vehicle*	FGG256	FG256
AFS600	FGG256	FG256
AFS250	FGG256	FG256
A3P1000	FGG256	FG256
A3P250	FGG256	FG256
A3P250	FGG144	FG144
A3P125	FGG144	FG144
A3P060	FGG144	FG144
AX250	FGG256	FG256

Note 1: * Qual vehicle. The other devices are qualified by extension.

2: AX250 is UMC wafer, however, like IFX devices, die surface finish is with polyimide passivation.

3. AGL1000-CSG281 (UMC, Nitride passivation)

Table A: List of Devices covered by this qualification run

Device	Pb-Free Package	With SnPb Solder balls
AGL1000 – Qual vehicle*	CSG281	CS281
AGL600	CSG281	CS281

Note 1: * Qual vehicle. The other devices are qualified by extension

4. A2F500-CSG288 (IFX, Polyimide passivation)

Table A: List of Devices covered by this qualification run

Device	Pb-Free Package	With SnPb Solder balls
A2F500 – Qual vehicle*	CSG288	CS288
A2F200	CSG288	CS288

Note 1: * Qual vehicle. The other devices are qualified by extension

Affected Catalog Part Numbers (CPN)

A3P400-2FG144I
A3P400-2FGG144
A3P400-2FGG144I
A3P400-FG144
A3P400-FG144I
A3P400-FGG144
A3P400-FGG144I
M1A3P400-1FG144
M1A3P400-1FG144I
M1A3P400-1FGG144
M1A3P400-1FGG144I
M1A3P400-2FG144
M1A3P400-2FG144I
M1A3P400-2FGG144
M1A3P400-2FGG144I
M1A3P400-FG144
M1A3P400-FG144I
M1A3P400-FGG144
M1A3P400-FGG144I
A3P400-1FG256
A3P400-1FG256I
A3P400-1FGG256
A3P400-1FGG256I
A3P400-2FG256
A3P400-2FG256I
A3P400-2FGG256
A3P400-2FGG256I
A3P400-FG256
A3P400-FG256I
A3P400-FG256IX94
A3P400-FGG256
A3P400-FGG256I
M1A3P400-1FG256
M1A3P400-1FG256I
M1A3P400-1FGG256
M1A3P400-1FGG256I
M1A3P400-2FG256
M1A3P400-2FG256I
M1A3P400-2FGG256
M1A3P400-2FGG256I
M1A3P400-FG256
M1A3P400-FG256I
M1A3P400-FGG256
M1A3P400-FGG256I
A3P600-1FG144
A3P600-1FG144I

A3P600-1FGG144
A3P600-1FGG144I
A3P600-2FG144
A3P600-2FG144I
A3P600-2FGG144
A3P600-2FGG144I
A3P600-FG144
A3P600-FG144I
A3P600-FGG144
A3P600-FGG144I
A3P600L-1FG144
A3P600L-1FG144I
A3P600L-1FGG144
A3P600L-1FGG144I
A3P600L-FG144
A3P600L-FG144I
A3P600L-FGG144
A3P600L-FGG144I
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M1A3P600-FGG144I
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M1A3P600L-1FGG144
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M1A3P600L-FG144I
M1A3P600L-FGG144
M1A3P600L-FGG144I
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A3P600-1FG256I
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A3P600-2FG256
A3P600-2FG256I
A3P600-2FGG256
A3P600-2FGG256I
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M1A3P600-FGG256
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A3PE3000-1FGG324
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A3PE3000L-1FGG324I
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A3PE3000L-FG324I
A3PE3000L-FGG324
A3PE3000L-FGG324I
A3PE3000L-FGG324IX6
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M1A3PE3000-FG324
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A2F200M3F-1FG256I

A2F200M3F-1FG256IX3
A2F200M3F-1FGG256
A2F200M3F-1FGG256I
A2F200M3F-FG256
A2F200M3F-FG256I
A2F200M3F-FG256IX94
A2F200M3F-FG256YI
A2F200M3F-FGG256
A2F200M3F-FGG256I
A2F500M3G-1CS288
A2F500M3G-1CS288I
A2F500M3G-1CSG288
A2F500M3G-1CSG288I
A2F500M3G-1CSG288IQ091
A2F500M3G-1CSG288IZ091
A2F500M3G-1CSG288IZ265
A2F500M3G-CS288
A2F500M3G-CS288I
A2F500M3G-CSG288
A2F500M3G-CSG288I
A2F500M3G-CSG288X52
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A2F500M3G-1FG256I
A2F500M3G-1FG256IX94
A2F500M3G-1FG256M
A2F500M3G-1FG256YI
A2F500M3G-1FGG256
A2F500M3G-1FGG256I
A2F500M3G-1FGG256IX3
A2F500M3G-1FGG256M
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A2F500M3G-FGG256
A2F500M3G-FGG256I
A2F500M3G-FGG256M
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A3P060-1FGG144I
A3P060-1FGG144T
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A3P060-2FG144I
A3P060-2FGG144
A3P060-2FGG144I
A3P060-FG144
A3P060-FG144I
A3P060-FG144T

A3P060-FGG144
A3P060-FGG144I
A3P060-FGG144T
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A3P1000-1FG144M
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A3P1000-2FG144I
A3P1000-2FGG144
A3P1000-2FGG144I
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A3P1000-FG144I
A3P1000-FG144IX94
A3P1000-FG144M
A3P1000-FG144MX3
A3P1000-FG144MX399
A3P1000-FG144MX6
A3P1000-FG144MX94
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A3P1000-1FGG256T
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P1AFS1500-2FGG256
P1AFS1500-2FGG256I
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U1AFS1500-FG256I

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U1AFS1500-FGG256I
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AFS600-1FG256I
AFS600-1FG256K
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AFS600-FGG256I
AFS600-FGG256IX94
AFS600-FGG256K
AFS600-FGG256X297
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M7AFS600-FGG256I

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P1AFS600-2FGG256I
P1AFS600-FG256I
P1AFS600-FGG256
U1AFS600-FG256
U1AFS600-FG256I
U1AFS600-FGG256
U1AFS600-FGG256I
AGL1000V2-CS281
AGL1000V2-CS281I
AGL1000V2-CSG281
AGL1000V2-CSG281I
AGL1000V5-CS281
AGL1000V5-CS281I
AGL1000V5-CSG281
AGL1000V5-CSG281I
AGL1000V5-CSG281ID
M1AGL1000V2-CS281
M1AGL1000V2-CS281I
M1AGL1000V2-CSG281
M1AGL1000V2-CSG281I
M1AGL1000V5-CS281
M1AGL1000V5-CS281I
M1AGL1000V5-CSG281
M1AGL1000V5-CSG281I
AGL1000V2-FG144
AGL1000V2-FG144I
AGL1000V2-FGG144
AGL1000V2-FGG144I
AGL1000V5-FG144
AGL1000V5-FG144I
AGL1000V5-FGG144
AGL1000V5-FGG144I
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M1AGL1000V2-FGG144I
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M1AGL1000V5-FG144I
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M1AGL1000V5-FGG144I
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AGL1000V2-FGG256
AGL1000V2-FGG256I
AGL1000V5-FG256

AGL1000V5-FG256I
AGL1000V5-FGG256
AGL1000V5-FGG256I
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M1AGL1000V2-FG256I
M1AGL1000V2-FGG256
M1AGL1000V2-FGG256I
M1AGL1000V5-FG256
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AGL250V5-FGG144I
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M1AGL250V5-FGG144
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AGL400V5-FG256I
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APA150-FG144I
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APA150-FGG144IX94
APA150-FGG144X95
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APA150-FGG256
APA150-FGG256A
APA150-FGG256I
APA150-FGG256IX95
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APA300-FGG144M
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A3P1000-FGG256
A3P1000-FGG256I
A3P1000-FGG256IX277
A3P1000-FGG256IX377
A3P1000-FGG256M
A3P1000-FGG256T
A3P1000-FGG256X53
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A3P125-1FGG144I
A3P125-1FGG144T
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A3P125-2FGG144
A3P125-2FGG144I
A3P125-FG144
A3P125-FG144I
A3P125-FG144T
A3P125-FGG144

A3P125-FGG144GW
A3P125-FGG144I
A3P125-FGG144IPW48
A3P125-FGG144PR85
A3P125-FGG144T
A3P125-FGG144X277
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A3P250-1FG144I
A3P250-1FG144IX94
A3P250-1FG144M
A3P250-1FG144T
A3P250-1FGG144
A3P250-1FGG144I
A3P250-1FGG144T
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A3P250-2FGG144
A3P250-2FGG144I
A3P250-FG144
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A3P250-FGG144
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A3P250-FGG144IX7
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A3P250-1FG256I
A3P250-1FG256T
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A3P250-1FGG256T
A3P250-2FG256
A3P250-2FG256I

A3P250-2FGG256
A3P250-2FGG256I
A3P250-FG256
A3P250-FG256I
A3P250-FG256IX94
A3P250-FG256T
A3P250-FGG256
A3P250-FGG256GW
A3P250-FGG256I
A3P250-FGG256T
A3P250-FGG256X365
A3P250-FGG256X399
A3P250L-1FGG256I
A3P250L-FG256I
A3P250L-FGG256
A3P250L-FGG256I
A3P400-1FG144
A3P400-1FG144I
A3P400-1FGG144
A3P400-1FGG144I
A3P400-2FG144
APA300-FGG256IX95
APA300-FGG256M
APA450-FG256
APA450-FG256A
APA450-FG256I
APA450-FG256IX458
APA450-FGG256
APA450-FGG256A
APA450-FGG256I
APA450-FGG256IQ303
APA450-FGG256IQ304
APA450-FGG256IQ305
APA450-FGG256IXN10
APA450-FGG256IXN11
APA450-FGG256IXV52
APA450-FGG256Q300
APA450-FGG256Q301
APA600-FG256
APA600-FG256A
APA600-FG256I
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APA600-FG256IX95
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APA600-FGG256IXR03
APA600-FGG256M
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A2F200M3F-1CS288I
A2F200M3F-1CSG288
A2F200M3F-1CSG288I
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A2F200M3F-CS288I
A2F200M3F-CSG288
A2F200M3F-CSG288I
AFS250-1FG256
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M1AFS250-FGG256I
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U1AFS250-FG256I
U1AFS250-FGG256
U1AFS250-FGG256I
AGL600V2-CS281
AGL600V2-CS281I
AGL600V2-CSG281
AGL600V2-CSG281I
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AGL600V5-CS281I
AGL600V5-CSG281
AGL600V5-CSG281I
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APA450-FG144
APA450-FG144A
APA450-FG144I
APA450-FGG144
APA450-FGG144A
APA450-FGG144I
AX250-1FG256
AX250-1FG256I
AX250-1FG256M
AX250-1FGG256
AX250-1FGG256I
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AX250-2FG256
AX250-2FG256I
AX250-2FGG256
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AX250-FG256
AX250-FG256I
AX250-FG256M
AX250-FGG256
AX250-FGG256I
AX250-FGG256M