Product Change Notification / RMES-10YAUB493

Date:

11-Jul-2022

Product Category:

Microprocessors

PCN Type:

Manufacturing Change

Notification Subject:

CCB 4898 and 4898.001 Final Notice: Qualification of a new die size for Die # 2 for selected catalog part numbers (CPN) SAM9X60D1G-I/4FB, SAM9X60D1GT-I/4FB, SAM9X60D5M-I/4FB, SAM9X60D5MT-I/4FB available in 233L TFBGA (14x14x1.2mm) and U2 component for selected catalog part number (CPN) SAM9X60D1G-I/LZB available in 152L MODULE (28x28x2.4mm) packages.

Affected CPNs:

RMES-10YAUB493_Affected_CPN_07112022.pdf
RMES-10YAUB493_Affected_CPN_07112022.csv

Notification Text:

PCN Status: Final 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 a new die size for Die # 2 for selected catalog part numbers (CPN) SAM9X60D1G-I/4FB, SAM9X60D1GT-I/4FB, SAM9X60D5M-I/4FB, SAM9X60D5MT-I/4FB available in 233L TFBGA (14x14x1.2mm) and U2 component for selected catalog part number (CPN) SAM9X60D1G-I/LZB available in 152L MODULE (28x28x2.4mm) packages.

Pre and Post Change Summary:

	Pre Change	Post Change
Die Size change for Die # 2 and U2 component	With change in die size. See Pre and Post Change Summary for comparison.	

Impacts to Data Sheet: None

Change Impact None

Reason for Change: To improve manufacturability by qualifying a new die size for Die # 2 for selected catalog part numbers (CPN) SAM9X60D1G-I/4FB, SAM9X60D1GT-I/4FB, SAM9X60D5M-I/4FB, SAM9X60D5MT-I/4FB available in 233L TFBGA (14x14x1.2mm) and U2 component for selected catalog part number (CPN) SAM9X60D1G-I/LZB available in 152L MODULE (28x28x2.4mm) packages.

Change Implementation Status: In Progress

Estimated First Ship Date:
July 15, 2022 (date code: 2229)

Note: Please be advised that after the estimated first ship date customers may receive pre and post change parts.

Time Table Summary:

	July 2022				
Workweek	28	29	30	31	32
Qual Report Availability		x			
Final PCN Issue Date		x			
Estimated Implementation Date		x			

Method to Identify Change: Traceability code

Qualification Report: Please open the attachments included with this PCN labeled as PCN_#_Qual_Report.

Revision History: July 11, 2022: Issued final 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_RMES-10YAUB493_Pre and Post Change_Summary.pdf
PCN_RMES-10YAUB493_Qual Report.pdf

Please contact your local Microchip sales office with questions or concerns regarding this notification.

Terms and Conditions:

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QUALIFICATION REPORT SUMMARY

PCN #: RMES-10YAUB493

Date:
April 20, 2022

Qualification of a new die size for Die # 2 for selected catalog part numbers (CPN) SAM9X60D1G-I/4FB, SAM9X60D1GT-I/4FB, SAM9X60D5M-I/4FB, SAM9X60D5MT-I/4FB available in 233L TFBGA (14x14x1.2mm) and U2 component for selected catalog part number (CPN) SAM9X60D1G-I/LZB available in 152L MODULE (28x28x2.4mm) packages.

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Package Qualification Report

Purpose: Qualification of a new die size for Die # 2 for selected catalog part numbers (CPN) SAM9X60D1G-I/4FB, SAM9X60D1GT-I/4FB, SAM9X60D5M-I/4FB, SAM9X60D5MT-I/4FB available in 233L TFBGA (14x14x1.2mm) and U2 component for selected catalog part number (CPN) SAM9X60D1G-I/LZB available in 152L MODULE (28x28x2.4mm) packages.

CCB: 4902, 4898 and 4898.001

Misc.	Assembly site	ASEK
	BD Number	BD-000186-01_289L_TFBGA_4BB_ASE
	MP Code (MPC)	3413A74BBD02
	Part Number (CPN)	ATSAMA5D28C-D1G-CU
	MSL information	MSL 3, 260C
	Reliability Site	MPHIL
	Qual ID	QTP4581 Rev. A
Substrate	Core Material	CCL-HL832NX (A-HS)
	Core Thickness	0.26mm
	Part Number	A30115-0
	SM Material	AUS308
	Paddle Size #1	211X214 mils
	Paddle Size #2	192x368 mils
	Number of Layers	4
Bond Wire	Material	CuPdAu
Die Attach	Part Number (Die1)	ATB-125
	Conductive	Non-Conductive
	Part Number (Die2)	ATB-125
	Conductive	Non-Conductive
MC	Part Number	KE-G1250NAS
PKG	PKG Type	289 TFBGA
	PKG width/size	14x14
	Solder Ball Material	SAC1205 (LF35)

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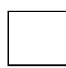
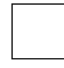
Package Qualification Report

Manufacturing Information

Lot	Assembly Lot #
1	ASE223100048.000
2	ASE223100047.000
3	ASE223100046.000

Result Pass  Fail  ____________________

SAMA5D2 (92U03) with DDR2 25nm 1Gb (Side by Side) device using 289 Balls TFBGA 14x14mm at ASEK pass reliability test per AEC-Q006 which was conducted at MPHL rel lab. This package qualified Moisture/Reflow Sensitivity Classification Level 3 at 260°C reflow temperature per IPC/JEDEC J-STD-020E standard.

PACKAGE QUALIFICATION REPORT

<table>
<tr><th>Test Number (Reference)</th><th>Test Condition</th><th>Standard / Method</th><th>Qty. (Acc.)</th><th>Def/SS</th><th>Result</th><th>Remarks</th></tr>
<tr><td rowspan="3">Precondition Prior Perform Reliability Tests (At MSL Level 3)</td><td>Electrical Test : 25°C, 85°C
System: D10 tester / Thermonics
Bake 150°C, 24 hrs
System: HERAEUS</td><td>JESD22-A113</td><td rowspan="3">231 units per lot</td><td>Lot 1
0/265</td><td>Pass</td><td></td></tr>
<tr><td>30°C/60%RH Moisture Soak 192hrs.
System: Climats Excal 5423-HE

3x Convection-Reflow 260°C max
System: Mancorp CR.5000F</td><td rowspan="2">IPC/JEDEC J-STD-020E</td><td>Lot 2
0/265</td><td>Pass</td><td></td></tr>
<tr><td>Electrical Test : 25°C, 85°C
System: D10 Tester / Thermonics</td><td>Lot 3
0/265</td><td>Pass</td><td></td></tr>
<tr><td rowspan="4">Temperature Cycle</td><td>Stress Condition: (Standard)
-55°C to +125°C, 500 Cycles
System: Votsch VTS²7012

Electrical Test : 85°C
System: D10 Tester / Thermonics</td><td>JESD22-A104</td><td>77 units per lot</td><td>Lot 1
0/90
Lot 2
0/89
Lot 3
0/90</td><td>Pass

Pass

Pass</td><td></td></tr>
<tr><td>Acoustic Microscopy</td><td></td><td>22 units per lot</td><td>Lot 1
0/22
Lot 2
0/22
Lot 3
0/22</td><td>Pass

Pass

Pass</td><td></td></tr>
<tr><td>Internal Package Analysis / Cross-section</td><td></td><td>5 units per lot</td><td>Lot 1
0/5
Lot 2
0/5
Lot 3
0/5</td><td>Pass

Pass

Pass</td><td></td></tr>
<tr><td>Bond Strength: 3 units per test
Wire Pull (>4.0g)
Bond Shear (>10g)
Stitch Pull (>3g)
System: Dage</td><td></td><td>6 units per lot</td><td>Lot 1
0/6
Lot 2
0/6
Lot 3
0/6</td><td>Pass

Pass

Pass</td><td></td></tr>
</table>

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS	Result	Remarks
Temperature Cycle	**Stress Condition:** (Standard) -55°C to +125°C, **1000 Cycles** System: Votsch VTS²7012 **Electrical Test :** 85°C System: D10 Tester / Thermonics	JESD22-A104	70 units per lot	Lot 1 0/79 Lot 2 0/78 Lot 3 0/77	Pass Pass Pass	
	Acoustic Microscopy		22 units per lot	Lot 1 0/22 Lot 2 0/22 Lot 3 0/22	Pass Pass Pass	
	Internal Package Analysis / Cross-section		5 units per lot	Lot 1 0/5 Lot 2 0/5 Lot 3 0/5	Pass Pass Pass	
	Bond Strength: 3 units per test Wire Pull (>4.0g) Bond *Shear* (>10g) Stitch Pull (>3g) System: Dage		6 units per lot	Lot 1 0/6 Lot 2 0/6 Lot 3 0/6	Pass Pass Pass	
HAST	**Stress Condition:** (Standard) +110°C/85%RH, **264 hrs** System: HIRAYAMA HASTEST PC-422R8 **Electrical Test :** 25°C, 85°C System: D10 Tester / Thermonics	JESD22-A118	77 units per lot	Lot 1 0/90 Lot 2 0/90 Lot 3 0/90	Pass Pass Pass	
	Acoustic Microscopy		22 units per lot	Lot 1 0/22 Lot 2 0/22 Lot 3 0/22	Pass Pass Pass	
	Internal Package Analysis / Cross-section		5 units per lot	Lot 1 0/5 Lot 2 0/5 Lot 3 0/5	Pass Pass Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS	Result	Remarks
HAST	**Bond Strength:** 3 units per test Wire Pull (>4.0g) Bond *Shear* (>10g) Stitch Pull (>3g) System: Dage		6 units per lot	Lot 1 0/7 Lot 2 0/6 Lot 3 0/6	Pass Pass Pass	
	Stress Condition: (Standard) +110°C/85%RH, **528 hrs** System: HIRAYAMA HASTEST PC-422R8 **Electrical Test :** 25°C, 85°C System: D10 Tester / Thermonics	JESD22-A118	70 units per lot	Lot 1 0/79 Lot 2 0/79 Lot 3 0/79	Pass Pass Pass	
	Acoustic Microscopy		22 units per lot	Lot 1 0/22 Lot 2 0/22 Lot 3 0/22	Pass Pass Pass	
	Internal Package Analysis / Cross-section		5 units per lot	Lot 1 0/5 Lot 2 0/5 Lot 3 0/5	Pass Pass Pass	
	Bond Strength: 3 units per test Wire Pull (>4.0g) Bond *Shear* (>10g) Stitch Pull (>3g) System: Dage		6 units per lot	Lot 1 0/6 Lot 2 0/6 Lot 3 0/6	Pass Pass Pass	
UHAST	**Stress Condition:** (Standard) +110°C/85%RH, **264 hrs.** no bias System: HIRAYAMA HASTEST PC-422R8 **Electrical Test :** 25°C System: D10 Tester	JESD22-A118	77 units per lot	Lot 1 0/84 Lot 2 0/85 Lot 3 0/85	Pass Pass Pass	
	Stress Condition: (Standard) +110°C/85%RH, **528 hrs.** no bias System: HIRAYAMA HASTEST PC-422R8 **Electrical Test :** 25°C System: D10 Tester	JESD22-A118	70 units per lot	Lot 1 0/84 Lot 2 0/85 Lot 3 0/85	Pass Pass Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
HTSL	**Stress Condition:** Bake 150°C, **504 hrs.** System: HERAEUS **Electrical Test :** 25°C, 85°C System: D10 Tester / Thermonics	JESD22-A10	45 units per lot	Lot 1 0/59 Lot 2 0/60 Lot 3 0/65	Pass Pass Pass	
	Internal Package Analysis / Cross-section		5 units per lot	Lot 1 0/5 Lot 2 0/5 Lot 3 0/5	Pass Pass Pass	
	Stress Condition: Bake 150°C, **1008 hrs**. System: HERAEUS **Electrical Test :** 25°C, 85°C System: D10 Tester / Thermonics	JESD22-A103	44 units per lot	Lot 1 0/54 Lot 2 0/55 Lot 3 0/60	Pass Pass Pass	
	Internal Package Analysis / Cross-section		5 units per lot	Lot 1 0/5 Lot 2 0/5 Lot 3 0/5	Pass Pass Pass	
Bond Strength	Wire Pull (>4.0g) Bond *Shear* (>10g) Stitch Pull (>3g) System: Dage		5 units 3 lots 30 bonds		Pass	
Physical Dimension	Physical Dimension, 10 units per 3 lots	JESD22 B100 and B108	10 units per lot	30	Pass	

CCB 4898 and 4898.001
Pre and Post Change Summary
PCN#: RMES-10YAUB493

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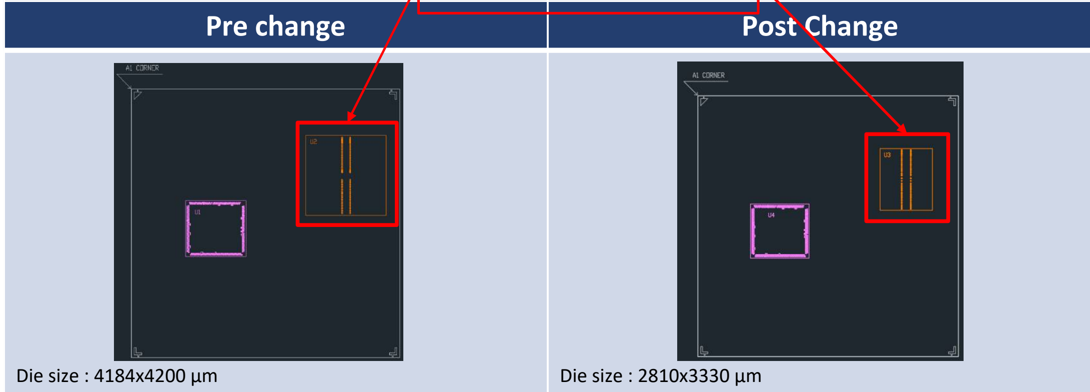
DDR2 -1Gb

Note: Not-to-scale

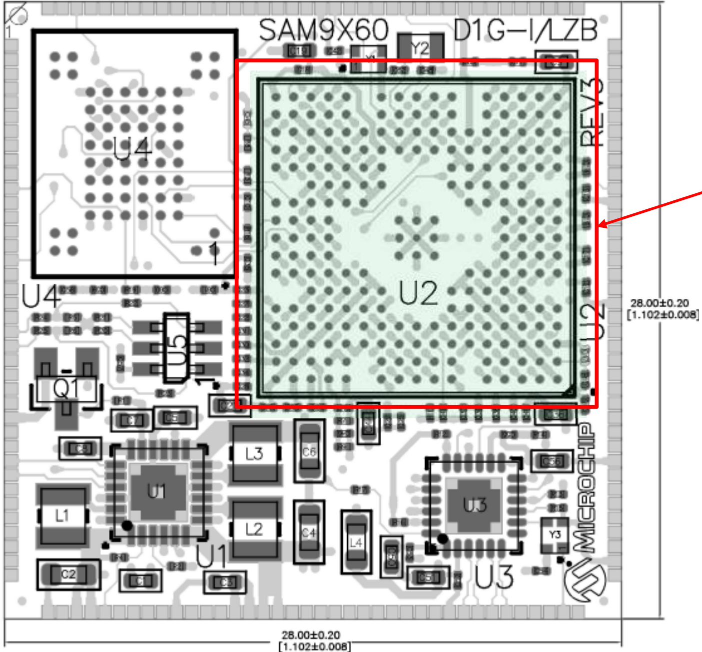
Die # 2 Location

DDR2 -512Mb



Note: Not-to-scale

Location of Die Size Change



Note: No change in U2 component location

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RMES-10YAUB493 - CCB 4898 SAM9X60D SAM9X60D SAM9X60D5MT-I/4FB available in 233L TFBGA (14x14x1.

Affected Catalog Part Numbers(CPN)

SAM9X60D1G-I/4FB
SAM9X60D1GT-I/4FB
SAM9X60D5M-I/4FB
SAM9X60D5MT-I/4FB
SAM9X60D1G-I/LZB