Product Change Notification / ASER-18NDSR054

Date:

17-Mar-2021

Product Category:

Interface- Controller Area Network (CAN), Interface- LIN Transceiver

PCN Type:

Manufacturing Change

Notification Subject:

CCB 4086 and 4086.001 Final Notice: Qualification of MMT as an additional assembly site for ATA663xx, ATA656xx, ATA662xx and ATA657xx device families available in 8L VDFN (3.0x3.0x1.0mm) and 14L VDFN (3.0x4.5x0.9 mm) packages.

Affected CPNs:

ASER-18NDSR054_Affected_CPN_03172021.pdf
ASER-18NDSR054_Affected_CPN_03172021.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 MMT as an additional assembly site for ATA663xx, ATA656xx, ATA662xx and ATA657xx device families available in 8L VDFN (3.0x3.0x1.0mm) and 14L VDFN (3.0x4.5x0.9 mm) packages.

Pre Change: Assembled at ASCL using EN-4900 die attach, C7025 (8L VDFN) **or** C194 (14L VDFN) lead frame material without lead lock.

Post Change: Assembled at ASCL using EN-4900 die attach, C7025 (8L VDFN) **or** C194 (14L VDFN) lead frame material without lead lock.**or**

Assembled at MMT using 3280 die attach, C194 (8L and 14L VDFN) lead frame material with lead lock.

Pre and Post Change Summary:

	Pre Change	Post Change	
Assembly Site	ASE Group Chung-Li (ASCL)	ASE Group Chung-Li (ASCL)	Microchip Technology Thailand Branch (MMT)
Wire Material	CuPdAu	CuPdAu	CuPdAu
Die Attach Material	EN-4900	EN-4900	3280
Molding Compound Material	G700	G700	G700
Lead Frame Material	For 8L VDFN: C7025 For 14L VDFN: C194	For 8L VDFN: C7025 For 14L VDFN: C194	C194
Lead Lock (Locking Hole)	No	No	Yes

Impacts to Data Sheet: Yes, refer to POD comparison table.

Dimensions in mm

		ASCL			MMT		
Dimension	Symbol	**Min**	**Nom**	**max**	**Min**	**Nom**	**Max**
Overall height	A	0.80	0.85	0.90	0.80	0.90	1.00
Wettable flank step length	D3	-	-	0.040	-	-	0.085
Wettable flank step height	A4	0.10	-	0.15	0.10	-	0.19

Change Impact:
None

Reason for Change: To improve manufacturability by adding MMT as an additional assembly site.

Change Implementation Status: In Progress

Estimated First Ship Date: April 30, 2021 (date code: 2118)

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

Time Table Summary:

	January 2020					>	March 2021					April 2021			
Workweek	01	02	03	04	05		10	11	12	13	14	15	16	17	18
Initial PCN Issue Date				X											
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: January 24, 2020: Issued initial notification.

March 17, 2021: Issued final notification. Attached the qualification report and added estimated first ship date by April 30, 2021.

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

Attachments:

PCN_ASER-18NDSR054_Qual_Report.pdf
PCN_ASER-18NDSR054_Pre and Post Change_Summary.pdf

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

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CCB 4086 and 4086.001
Lead Frame Comparison
PCN #: ASER-18NDSR054

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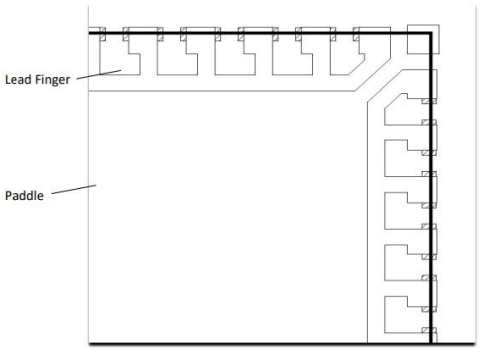
Qualification of MMT as an additional assembly site for ATA663xx, ATA656xx, ATA662xx and ATA657xx device families available in 8L VDFN (3.0x3.0x1.0mm) and 14L VDFN (3.0x4.5x0.9 mm) packages.

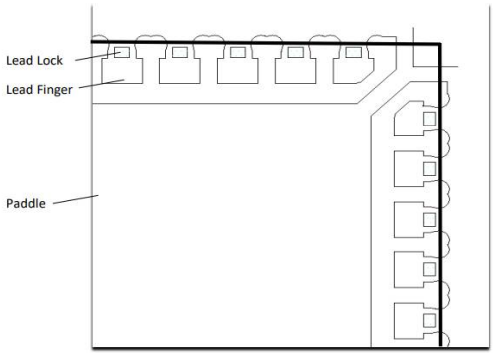
LEAD FRAME COMPARISON

ASCL



Lead Lock	No

MMT



Lead Lock	Yes

Mold compound material fills the lead lock hole, which provides improved protection against moisture penetration along the edge of the leads (pins) of the package.

QUALIFICATION REPORT SUMMARY

RELIABILITY LABORATORY

PCN #: ASER-18NDSR054

Date:
February 25, 2021

Qualification of MMT as an additional assembly site for ATA656xx and ATA657xx device families available in 14L VDFN (3.0x4.5x0.9mm) package. The qualification of MMT as an additional assembly site for ATA663xx, ATA656xx and ATA662xx device families available in 8L VDFN (3.0x3.0x1.0mm) package will qualify by similarity (QBS). This is AEC-Q006 Grade 0 Qualification.

Package Qualification Report

Purpose: **Qualification of MMT as an additional assembly site for ATA656xx and ATA657xx device families available in 14L VDFN (3.0x4.5x0.9mm) package. The qualification of MMT as an additional assembly site for ATA663xx, ATA656xx and ATA662xx device families available in 8L VDFN (3.0x3.0x1.0mm) package will qualify by similarity (QBS). This is AEC-Q006 Grade 0 Qualification.**

Misc.	Assembly site	MMT
	BD Number	BDM-002332
	MP Code (MPC)	77A09JQBBVA1
	Part Number (CPN)	ATA6565-GNQW0
	MSL information	1
	Assembly Shipping Media (T/R, Tube/Tray)	T&R
	Base Quantity Multiple (BQM)	6000
	Reliability Site	MPHIL
	Qual ID	QTP4141 Rev. A
	CCB No.	4086 and 4086.001
Lead-Frame	Paddle size	1,9 x 4,3 mm
	Material	C194
	DAP Surface Prep	Selective Ag plating
	Treatment	Rough Cu
	Process	etch
	Lead-lock	Yes
	Lead Plating	Matte tin
	Strip Size	70x250mm
	Strip Density	780
Bond Wire	Material	CuPdAu
Die Attach	Part Number	3280
	Conductive	yes
MC	Part Number	G700
PKG	PKG Type	VDFN-WFS
	Pin/Ball Count	14
	PKG width/size	3x4.5mm

Package Qualification Report

Manufacturing Information:

Lot	Device	Assembly Lot No.
1	77A09JQBBVA1	MMT-204102172.000
2	77A09JQBBVA1	MMT-204102173.000
3	77A09JQBBVA1	MMT-204102174.000

Result ☑ Pass ☐ Fail ☐ _____

AEC-Q006 Grade 0 Qualification of DFN14 3x4.5mm package in MMT using 0.8mil CuPdAu bond wire with 77k devices from Fab4 (MSL 1), pass reliability test per AEC-Q006 which was conducted at MPHL reliability lab. This package is qualified Moisture/Reflow Sensitivity Classification Level 1 at 260°C reflow temperature per IPC/JEDEC J-STD-020E standard.

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS	Result	Remarks
Moisture/Reflow Sensitivity Classification Test (At MSL Level 1)	**Electrical Test:** +25°C, +150°C System: V93K/RASCO 85°C/85%RH Moisture Soak 168 hrs. System: Climats Excal 5423-HE 3x Convection-Reflow 265°C max System: Mancorp CR.5000F (IPC/JEDEC J-STD-020E)	IPC/JEDEC	45 units per lot	Lot 1 0/45 Lot 2 0/45 Lot 3 0/45	Pass Pass Pass	
Precondition Prior Perform Reliability Tests (At MSL Level 1)	**Electrical Test:** +25°C, +150°C System: V93K/RASCO Bake 150°C, 24 hrs System: HERAEUS 85°C/85%RH Moisture Soak 168hrs. System: Climats Excal 5423-HE 3x Convection-Reflow 260°C max System: Mancorp CR.5000F **Electrical Test:** +25°C, +150°C System: V93K/RASCO All units before HAST, UHAST, TCT were submitted to this MSL1 preconditioning	JESD22-A113	276 units per lot	Lot 1 0/305 Lot 2 0/304 Lot 3 0/290	Pass Pass Pass	
Temperature Cycle	**Stress Condition:** (Standard) -55°C to +150°C, 1500 cycles System: Votsch VTS^{2}7012 **Electrical Test:** +150°C System: V93K/RASCO	JESD22-A104	77 units per lot	Lot 1 0/89 Lot 2 0/90 Lot 3 0/85	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		4 units per lot	Lot 1 0/4 Lot 2 0/4 Lot 3 0/4	Pass Pass Pass	2020 – 003180 2020 – 003181 2020 – 003179
	Bond Strength: 0.8 mils Wire Pull (>4.0g) Bond *Shear* (>10.0g) Stitch Pull (>3.0g) System: Dage		3 units for WP, 3 units for BS and SP per test	Lot 1 0/6 Lot 2 0/6 Lot 3 0/6	Pass Pass Pass	Per lot: 42 wires from the total samples size.

PACKAGE QUALIFICATION REPORT

Temperature Cycle	**Stress Condition:** (Standard) -55°C to +150°C, 3000 Cycles System: Votsch VTS²7012 **Electrical Test:** +150°C System: V93K/RASCO	JESD22-A104	70 units per lot	Lot 1 0/78 Lot 2 0/78 Lot 3 0/73	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		4 units per lot	Lot 1 0/4 Lot 2 0/4 Lot 3 0/4	Pass Pass Pass	2020 – 004096 2020 – 004095 2020 – 004094
	Bond Strength: 0.8 mils Wire Pull (>4.0g) Bond *Shear* (>10.0g) Stitch Pull (>3.0g) System: Dage		3 units for WP, 3 units for BS and SP per test	Lot 1 0/6 Lot 2 0/6 Lot 3 0/6	Pass Pass Pass	Per lot: 42 wires from the total samples size.
HAST	**Stress Condition:** (Standard) + 130°C, 85%RH, 96hrs. **VOLTS=5.0V** System: HIRAYAMA HASTEST PC-422R8 **Electrical Test:** +25°C, +150°C System: V93K/RASCO	JESD22-A110	77 units per lot	Lot 1 0/80 Lot 2 0/80 Lot 3 0/80	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		4 units per lot	Lot 1 0/4 Lot 2 0/4 Lot 3 0/4	Pass Pass Pass	2020 – 002579 2020 – 002580 2020 – 002581

PACKAGE QUALIFICATION REPORT

HAST	**Bond Strength:** 0.8 mils Wire Pull (>4.0g) Bond *Shear* (>10.0g) Stitch Pull (>3.0g) System: Dage		3 units for WP, 3 units for BS and SP per test	Lot 1 0/6 Lot 2 0/6 Lot 3 0/6	Pass Pass Pass	Per lot: 42 wires from the total samples size.
	Stress Condition: (Standard) + 130°C, 85%RH, 192hrs. **VOLTS=5.0V** System: HIRAYAMA HASTEST PC-422R8 **Electrical Test:** +25°C, +150°C System: V93K/RASCO	JESD22-A110	70 units per lot	Lot 1 0/70 Lot 2 0/70 Lot 3 0/70	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		4 units per lot	Lot 1 0/4 Lot 2 0/4 Lot 3 0/4	Pass Pass Pass	2019 – 003002 2019 – 003003 2019 – 002987
	Bond Strength: 0.8 mils Wire Pull (>4.0g) Bond *Shear* (>10.0g) Stitch Pull (>3.0g) System: Dage		3 units for WP, 3 units for BS and SP per test	Lot 1 0/6 Lot 2 0/6 Lot 3 0/6	Pass Pass Pass	Per lot: 42 wires from the total samples size.
UHAST	**Stress Condition:** (Standard) + 130°C, 85%RH, 96hrs. **NO BIAS** System: HIRAYAMA HASTEST PC-422R8 **Electrical Test:** +25°C System: V93K/RASCO	JESD22-A110	77 units per lot	Lot 1 0/90 Lot 2 0/90 Lot 3 0/80	Pass Pass Pass	

PACKAGE QUALIFICATION REPORT

HTSL	**Stress Condition:** Bake 175°C, 1000 hrs. System: HERAEUS **Electrical Test:** +25°C, +150°C System: V93k/RASCO	JESD22-A103	45 units per lot	Lot 1 0/70 Lot 2 0/70 Lot 3 0/70	Pass Pass Pass	
	Internal Package Analysis		4 units per lot	Lot 1 0/4 Lot 2 0/4 Lot 3 0/4	Pass Pass Pass	2020 – 002855 2020 – 002856 2020 – 002857
	Stress Condition: Bake 175°C, 2000 hrs. System: HERAEUS **Electrical Test:** +25°C, +150°C System: V93k/RASCO	JESD22-A103	44 units per lot	Lot 1 0/57 Lot 2 0/59 Lot 3 0/59	Pass Pass Pass	
	Internal Package Analysis		4 units per lot	Lot 1 0/4 Lot 2 0/4 Lot 3 0/4	Pass Pass Pass	2020 – 003784 2020 – 003785 2020 – 003786
Bond Strength: **0h data**	0.8 mils Wire Pull (>4.0g) Bond Shear (>10.0g) Stitch Pull (>3.0g) System: Dage		5 units for WP, 5 units for BS and SP per test	Lot 1 0/10 Lot 2 0/10 Lot 3 0/10	Pass Pass Pass	5 units for wire pull (14 wires per unit) 5 units for Bond Shear (5*14 wires) and Stitch Pull (5*14 wires)
Solderability	Condition: Aging: 155C Bake, 4h Pot temperature: Pb free / 245C Dipping time: 5+/- 0.5 sec	J-STDF-002D	22 units, 1 lot	Lot 1 0/22	Pass	Generic data from assembly >95% lead coverage
Physical Dimension		JESD22-B100 and B108		3 Lots	Pass	Generic data from assembly

ASER-18NDSR054 - CCE ATA656xx ATA662xx and ATA657xx device families available in 8L VDFN (3.0x3.

Affected Catalog Part Numbers(CPN)

ATA663254-GBQW
ATA663211-GBQW
ATA663255-GBQW
ATA663232-GBQW
ATA663231-GBQW
ATA663201-GBQW
ATA663203-GBQW
ATA6562-GBQW0
ATA6566-GBQW0
ATA6563-GBQW0
ATA6564-GBQW0
ATA6565-GCQW0
ATA6562-GBQW1
ATA6561-GBQW
ATA6560-GBQW
ATA6564-GBQW1
ATA6563-GBQW1
ATA6566-GBQW1
ATA6560-GBQW-N
ATA6561-GBQW-N
ATA6565-GCQW1
ATA6625-GBQW
ATA6570-GCQW0
ATA6570-GCQW1
ATA6571-GCQW0-VAO
ATA6571-GCQW1-VAO
ATA663254-GBQW-VAO
ATA663231-GBQW-VAO
ATA6560-GBQW-VAO