Product Change Notification / RMES-09ZZXT280

Date:

02-Aug-2021

Product Category:

32-bit Microcontrollers

PCN Type:

Manufacturing Change

Notification Subject:

CCB 4523 and 4523.001 Final Notice: Qualification of MTAI as an additional assembly site for selected ATSAMC20xx, ATSAMC21xx, ATSAMD20xx, ATSAMD21xx and ATSAMDA1xx device families available in 48L VQFN package.

Affected CPNs:

RMES-09ZZXT280_Affected_CPN_08022021.pdf
RMES-09ZZXT280_Affected_CPN_08022021.csv

Notification Text:

PCN Status: Final notification
PCN Type: Manufacturing Change
Microchip Parts Affected: Please open one of the icons found in the Affected CPNs section above.

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

Description of Change: Qualification of MTAI as an additional assembly site for selected ATSAMC20xx, ATSAMC21xx, ATSAMD20xx, ATSAMD21xx and ATSAMDA1xx device families available in 48L VQFN package.
Pre Change:

For wettable flank products:
Assembled at ASCL using gold (Au) bond wire, 8600 die attach, G700 molding compound material with 210 x 210 mils paddle size without locking holes leadframe.

or
Assembled at NSEB using gold (Au) or palladium coated copper wire with gold flash (CuPdAu) bond wire, EN-4900G or ATB-125 die attach, G700 molding compound material with 208 x 208 mils paddle size without locking holes leadframe.

or

Assembled at MMT using gold (Au) bond wire, 3280 die attach, G700 molding compound material with 217 x 217 mils paddle size with locking holes leadframe.

For non-wettable flank products:

Assembled at ASE using palladium coated copper wire with gold flash (CuPdAu) or palladium coated copper (PdCu) bond wire, EN-4900F die attach, G631H molding compound and C7025 leadframe material with 217 x 217 mils paddle size without locking holes.

or

Assembled at ASCL using palladium coated copper wire with gold flash (CuPdAu) bond wire, EN-4900GC die attach, G700 molding compound and C194 leadframe material with 210 x 210 mils paddle size without locking holes.

or

Assembled at MMT using gold (Au) bond wire, 3280 die attach, G700 molding compound and C194 leadframe material with 217 x 217 mils paddle size with locking holes leadframe.

Post Change:

For wettable flank products:

Assembled at ASCL using gold (Au) bond wire, 8600 die attach, G700 molding compound material with 210 x 210 mils paddle size without locking holes leadframe.

or

Assembled at NSEB using gold (Au) or palladium coated copper wire with gold flash (CuPdAu) bond wire, EN-4900G or ATB-125 die attach, G700 molding compound material with 208 x 208 mils paddle size without locking holes leadframe.

or

Assembled at MMT using gold (Au) bond wire, 3280 die attach, G700 molding compound material with 217 x 217 mils paddle size with locking holes leadframe.

or

Assembled at MTAI using gold (Au) bond wire, 3280 die attach, G700 molding compound material with 217 x 217 mils paddle size with locking holes leadframe.

For non-wettable flank products:

Assembled at ASE using palladium coated copper wire with gold flash (CuPdAu) or palladium coated copper (PdCu) bond wire, EN-4900F die attach, G631H molding compound and C7025 leadframe material with 217 x 217 mils paddle size without locking holes.

or

Assembled at ASCL using palladium coated copper wire with gold flash (CuPdAu) bond wire, EN-4900GC die attach, G700 molding compound and C194 leadframe material with 210 x 210 mils paddle size without locking holes.

or

Assembled at MMT using gold (Au) bond wire, 3280 die attach, G700 molding compound and C194 leadframe material with 217 x 217 mils paddle size with locking holes leadframe.

or

Assembled at MTAI using gold (Au) bond wire, 3280 die attach, G700 molding compound and C194 leadframe material with 217 x 217 mils paddle size with locking holes leadframe.

Pre and Post Change Summary:***For wettable flank products:***

	Pre Change			Post Change			
Assembly Site	ASE Group Chung-Li (ASCL)	UTAC Thai Limited (UTL-1) LTD. (NSEB)	Microchip Technology Thailand (Branch) / (MMT)	ASE Group Chung-Li (ASCL)	UTAC Thai Limited (UTL-1) LTD. (NSEB)	Microchip Technology Thailand (Branch) / (MMT)	**Microchip Technology Thailand (HQ) (MTAI)**
Wire material	Au	Au or CuPdAu	Au	Au	Au or CuPdAu	Au	**Au**
Die attach material	8600	EN-4900G or ATB-125	3280	8600	EN-4900G or ATB-125	3280	**3280**
Molding compound material	G700	G700	G700	G700	G700	G700	**G700**
Lead frame material	C194	C194	C194	C194	C194	C194	**C194**
Paddle size	210 x 210 mils	208 x 208 mils	217 x 217 mils	210 x 210 mils	208 x 208 mils	217 x 217 mils	**217 x 217 mils**
Lead Lock (Locking Holes)	No	No	Yes	No	No	Yes	**Yes**

For non-wettable flank products:

Assembly Site	ASE Inc. (ASE)	ASE Group Chung-Li (ASCL)	Microchip Technology Thailand (Branch) / (MMT)	ASE Inc. (ASE)	ASE Group Chung-Li (ASCL)	Microchip Technology Thailand (Branch) / (MMT)	**Microchip Technology Thailand (HQ) (MTAI)**
Wire material	CuPdAu or PdCu	CuPdAu	Au	CuPdAu or PdCu	CuPdAu	Au	**Au**
Die attach material	EN-4900F	EN-4900GC	3280	EN-4900F	EN-4900GC	3280	**3280**
Molding compound material	G631H	G700	G700	G631H	G700	G700	**G700**
Lead frame material	C7025	C194	C194	C7025	C194	C194	**C194**
Paddle size	217 x 217 mils	210 x 210 mils	217 x 217 mils	217 x 217 mils	210 x 210 mils	217 x 217 mils	**217 x 217 mils**
Lead Lock (Locking Holes)	No	No	Yes	No	No	Yes	**Yes**

Impacts to Data Sheet: None.

Change Impact: None.

Reason for Change: To improve on-time delivery performance by qualifying MTAI as an additional assembly site.
Change Implementation Status: In Progress
Estimated First Ship Date: August 23, 2021 (date code: 2135)

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

Time Table Summary:

	February 2021				>	August 2021				
Workweek	06	07	08	09		32	33	34	35	36
Initial PCN Issue Date				X						
Qual Report Availability						X				
Final PCN Issue Date										
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:
February 25, 2021: Issued initial notification.
August 2, 2021: Issued final notification. Attached the Qualification Report. Provided estimated first ship date to be on August 23, 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_RMES-09ZZXT280_Pre and Post Change Summary.pdf
PCN_RMES-09ZZXT280 Qual Report.pdf

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

Terms and Conditions:

If you wish to receive Microchip PCNs via email please register for our PCN email service at our PCN home page select register then fill in the required fields. You will find instructions about registering for Microchips PCN email service in the PCN FAQ section.

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.

QUALIFICATION REPORT SUMMARY
RELIABILITY LABORATORY

PCN #: RMES-09ZZXT280

Date:
July 16, 2021

Qualification of MTAI as an additional assembly site for selected ATSAMC20xx, ATSAMC21xx, ATSAMD20xx, ATSAMD21xx and ATSAMDA1xx device families available in 48L VQFN package. This is a Q100 grade 1 qualification.

Purpose: Qualification of MTAI as an additional assembly site for selected ATSAMC20xx, ATSAMC21xx, ATSAMD20xx, ATSAMD21xx and ATSAMDA1xx device families available in 48L VQFN package.

CCB: 4523 & 4523.001

Misc.	Assembly site	MTAI
	BD Number	BDM-002793 rev.A
	MP Code (MPC)	661P2YU5BVA1
	Part Number (CPN)	ATSAMC21G18A-MZTVAO
	Qual ID	REQ2100545 Rev. A
Lead-Frame	Paddle size	217 x 217 mils
	Material	C194
	DAP Surface Prep	Bare Copper
	Treatment	Yes
	Process	Etched
	Lead-lock	Yes
	Part Number	10104803
	Lead Plating	Matte Tin
	Strip Size	70 x 250 mm
	Strip Density	240 units/strip
Bond Wire	Material	Au
Die Attach	Part Number	3280
	Conductive	Yes
MC	Part Number	G700LTD
PKG	PKG Type	VQFN Wettable flank
	Pin/Ball Count	48
	PKG width/size	7x7x1.0 mm

Package Qualification Report

Manufacturing Information

Wafer Lot No.	Assembly Lot No.
U08D921194285.410	MTAI213803798.000
U08D921194285.410	MTAI213901128.000
U08D921194285.410	MTAI213900689.000

Result ☑ Pass ☐ Fail ☐ ____________________

661P2 in 48L VQFN-WFS 7x7 package from MTAI assembly pass reliability test per QCI-39000 which was conducted at MPHL rel 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
Precondition Prior Perform Reliability Tests (At MSL Level 1)	**Electrical Test :25°C** Magnum	JESD22-A113, JIP/ IPC/JEDEC J-STD-020E	231 per lot	Lot 1 0/231 Lot 2 0/231 Lot 3 0/231	Pass Pass Pass	Good Devices
	Bake 150°C, 24 hrs System: HERAEUS		231 per lot			
	Moisture Soak 168h(85°C/85%RH) System: Climats Excal 5423-HE		231 per lot			
	Reflow 3x Convection-Reflow 265°C max System: Mancorp CR.5000F		231 per lot	Lot 1 0/231 Lot 2 0/231 Lot 3 0/231	Pass Pass Pass	
	Electrical Test :25°C Magnum SV 1024		231 per lot	Lot 1 0/231 Lot 2 0/231 Lot 3 0/231	Pass Pass Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
UNBIASED HAST	**Stress Condition:** (Standard) + 130°C, 85%RH, 96 hrs. System: HIRAYAMA HASTEST PC-422R8 **Electrical Test:** 25°C System: Magnum	JESD22-A118	77 units per lot	Lot 1 0/77 Lot 2 0/77 Lot 3 0/77	Pass Pass Pass	Parts had been pre-conditioned at 260°C
	Internal Package Analysis		5 units per lot	Lot 1, 0/5 Lot 2, 0/5 Lot 3, 0/5	Pass Pass Pass	
HAST	**Stress Condition:** (Standard) 130°C, 85%RH, 96 hrs. VOLTS=5.5V System: HIRAYAMA HASTEST PC-422R8 **Electrical Test:** 25°C /125°C System: Magnum	JESD22-A110	77 units per lot	Lot 1 0/77 Lot 2 0/77 Lot 3 0/77	Pass Pass Pass	
	Internal Package Analysis		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
Temp Cycle	**Stress Condition:** (Standard) -65°C to +150°C, 500 Cycles System : Votsch VTS²7012 **Electrical Test:** 25°C /125°C System: Magnum	JESD22-A104	77 units per lot	Lot 1 0/77 Lot 2 0/77 Lot 3 0/77	Pass Pass Pass	Parts had been pre-conditioned at 260°C
	Internal Package Analysis		5 units per lot	Lot 1, 0/5 Lot 2, 0/5 Lot 3, 0/5	Pass Pass Pass	
	Bond Strength: Wire Pull (> 1.75 grams) Bond *Shear (>12.6 grams)* System: Dage		5 units, 30 bonds per lot	Lot 1 0/30 Lot 2 0/30 Lot 3 0/30	Pass Pass Pass	
High Temperature Storage Life	**Stress Condition:** Bake 175°C, 500 hrs System: HERAEUS **Electrical Test:** 25°C /125°C System: Magnum	JESD22-A103	45 units per lot	Lot 1 0/45 Lot 2 0/45 Lot 3 0/45	Pass Pass Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
Bond Strength, 0 Hour	**System:** Dage Wire Pull (> 1.75 grams) Bond *Shear (>12.6 grams)*		5 units, 30 bonds per lot	Lot 1 0/30 Lot 2 0/30 Lot 3 0/30	Pass Pass Pass	
Solderability	Forward 245ºC Backward 215ºC	J-STD-002D	22 units from 1 lot	0/22 0/22	Pass Pass	
Physical Dimension	Physical Dimension, 30 units from 3 lots	JESD22 -B100/B108	10 units per lot	Lot 1 0/10 Lot 2 0/10 Lot 3 0/10	Pass Pass Pass	

CCB 4523 and 4523.001
Lead Frame design comparison
PCN #: RMES-09ZZXT280

A Leading Provider of Smart, Connected and Secure Embedded Control Solutions

Qualification of MTAI as an additional assembly site for selected ATSAMC20xx, ATSAMC21xx, ATSAMD20xx, ATSAMD21xx and ATSAMDA1xx device families available in 48L VQFN package.

Leadframe design comparison – for wettable flank products

	ASCL	NSEB	MMT	MTAI - New
Lead frame material	C194	C194	C194	C194
Paddle size	210 x 210 mils	208 x 208 mils	217 x 217 mils	217 x 217 mils
Lead Lock (Locking Holes)	No	No	Yes	Yes

Leadframe design comparison – for non-wettable flank products

	ASE	ASCL	MMT	MTAI - New
Lead frame material	C7025	C194	C194	C194
Paddle size	217 x 217 mils	210 x 210 mils	217 x 217 mils	217 x 217 mils
Lead Lock (Locking Holes)	No	No	Yes	Yes

Affected Catalog Part Numbers (CPN)

ATSAMD20G14A-MUTA4
ATSAMD20G15A-MUTA4
ATSAMD20G16A-MUTA4
ATSAMD20G17A-MUTA4
ATSAMD20G14A-MUT
ATSAMD20G15A-MUT
ATSAMD20G16A-MUT
ATSAMD20G17A-MUT
ATSAMD20G18A-MUT
ATSAMD20G18A-MUTA3
ATSAMD20G17A-MUTA3
ATSAMD20G14A-MUTA2
ATSAMD20G15A-MUTA2
ATSAMD20G16A-MUTA2
ATSAMD20G17A-MUTA2
ATSAMD20G18A-MUTA2
ATSAMD21G17D-MF
ATSAMD21G17L-MF
ATSAMD21G17D-MZ
ATSAMD21G17D-MU
ATSAMD21G17L-MU
ATSAMD21G17L-MN
ATSAMD21G17L-MNT
ATSAMD21G17D-MUT
ATSAMD21G17L-MUT
ATSAMD21G17D-MFT
ATSAMD21G17L-MFT
ATSAMD21G17D-MZT
ATSAMD21G15B-MF
ATSAMD21G16B-MF
ATSAMD21G16B-MU
ATSAMD21G15B-MU
ATSAMD21G16L-MNT
ATSAMD21G16L-MNTP01
ATSAMD21G16B-MUT
ATSAMD21G15B-MUT
ATSAMD21G16L-MUT
ATSAMD21G15B-MFT
ATSAMD21G16B-MFT
ATSAMD21G16B-MZ
ATSAMD21G15B-MZ
ATSAMD21G16L-MNTA7
ATSAMDA1G16B-MBT
ATSAMDA1G15B-MBT
ATSAMDA1G14B-MBT
ATSAMD21G16L-MUTN01

ATSAMD21G15B-MZT
ATSAMD21G16B-MZT
ATSAMD20G16B-MZ
ATSAMD20G15B-MZ
ATSAMD20G16B-MU
ATSAMD20G15B-MU
ATSAMD20G14B-MU
ATSAMD20G16B-MN
ATSAMD20G14B-MN
ATSAMD20G15B-MN
ATSAMD20G16B-MNT
ATSAMD20G14B-MNT
ATSAMD20G15B-MNT
ATSAMD20G16B-MUT
ATSAMD20G14B-MUT
ATSAMD20G15B-MUT
ATSAMC21G18A-MZ
ATSAMC21G17A-MZ
ATSAMC21G16A-MZ
ATSAMC21G15A-MZ
ATSAMC20G18A-MZ
ATSAMC20G17A-MZ
ATSAMC20G16A-MZ
ATSAMC20G15A-MZ
ATSAMC21G17A-MU
ATSAMC20G15A-MNT
ATSAMC20G16A-MNT
ATSAMC20G17A-MNT
ATSAMC20G18A-MNT
ATSAMC21G15A-MNT
ATSAMC21G16A-MNT
ATSAMC21G17A-MNT
ATSAMC21G18A-MNT
ATSAMC21G18A-MUT
ATSAMC20G15A-MUT
ATSAMC20G16A-MUT
ATSAMC20G17A-MUT
ATSAMC20G18A-MUT
ATSAMC21G15A-MUT
ATSAMC21G16A-MUT
ATSAMC21G17A-MUT
ATSAMC21G18A-MUTN01
ATSAMC21G18A-MZT
ATSAMC21G17A-MZT
ATSAMC21G16A-MZT
ATSAMC21G15A-MZT
ATSAMC20G18A-MZT
ATSAMC20G17A-MZT
ATSAMC20G16A-MZT

ATSAMC20G15A-MZT

ATSAMD20G18A-MUA1

ATSAMD20G14A-MUA1

ATSAMD20G16A-MUA1

ATSAMD20G17A-MUA1

ATSAMD20G15A-MUA1

ATSAMD20G14A-MUTA1

ATSAMD20G15A-MUTA1

ATSAMD20G16A-MUTA1

ATSAMD20G17A-MUTA1

ATSAMD20G18A-MUTA1

ATSAMD21G17A-MF

ATSAMD21G18A-MF

ATSAMD21G18A-MZ

ATSAMD21G17A-MZ

ATSAMD21G18A-MU

ATSAMD21G17A-MU

ATSAMD21G17A-MUA1

ATSAMD21G18A-MUA1

ATSAMD21G18A-MU-SLL

ATSAMD21G17A-MUT

ATSAMD21G18A-MUT

ATSAMD21G18A-MUTA0

ATSAMD21G17A-MUTA1

ATSAMD21G18A-MUTA1

ATSAMD21G17A-MUTA0

ATSAMD21G18A-MUTN01

ATSAMD21G17A-MFT

ATSAMD21G18A-MFT

ATSAMD21G18A-MZT

ATSAMD21G17A-MZT

ATSAMD20G14A-MUA4

ATSAMD20G15A-MUA4

ATSAMD20G16A-MUA4

ATSAMD20G17A-MUA4

ATSAMD20G14A-MU

ATSAMD20G15A-MU

ATSAMD20G16A-MU

ATSAMD20G17A-MU

ATSAMD20G18A-MU

ATSAMD20G18A-MUA2

ATSAMD20G14A-MUA2

ATSAMD20G15A-MUA2

ATSAMD20G16A-MUA2

ATSAMD20G17A-MUA2

ATSAMD20G14A-MN

ATSAMD20G15A-MN

ATSAMD20G16A-MN

ATSAMD20G17A-MN

ATSAMD20G18A-MN

ATSAMD20G14A-MNT

ATSAMD20G15A-MNT

ATSAMD20G16A-MNT

ATSAMD20G17A-MNT

ATSAMD20G18A-MNT