



## Product Change Notification / RMES-09ZZXT280

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### 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			
<b>Assembly Site</b>	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)	<b>Microchip Technology Thailand  (HQ) (MTAI)</b>
<b>Wire material</b>	Au	Au or CuPdAu	Au	Au	Au or CuPdAu	Au	<b>Au</b>
<b>Die attach material</b>	8600	EN-4900G or ATB-125	3280	8600	EN-4900G or ATB-125	3280	<b>3280</b>
<b>Molding compound material</b>	G700	G700	G700	G700	G700	G700	<b>G700</b>
<b>Lead frame material</b>	C194	C194	C194	C194	C194	C194	<b>C194</b>
<b>Paddle size</b>	210 x 210 mils	208 x 208 mils	217 x 217 mils	210 x 210 mils	208 x 208 mils	217 x 217 mils	<b>217 x 217 mils</b>
<b>Lead Lock (Locking Holes)</b>	No	No	Yes	No	No	Yes	<b>Yes</b>

**For non-wettable flank products:**

<b>Assembly Site</b>	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)	<b>Microchip Technology Thailand  (HQ) (MTAI)</b>
<b>Wire material</b>	CuPdAu or PdCu	CuPdAu	Au	CuPdAu or PdCu	CuPdAu	Au	<b>Au</b>
<b>Die attach material</b>	EN-4900F	EN-4900GC	3280	EN-4900F	EN-4900GC	3280	<b>3280</b>
<b>Molding compound material</b>	G631H	G700	G700	G631H	G700	G700	<b>G700</b>
<b>Lead frame material</b>	C7025	C194	C194	C7025	C194	C194	<b>C194</b>
<b>Paddle size</b>	217 x 217 mils	210 x 210 mils	217 x 217 mils	217 x 217 mils	210 x 210 mils	217 x 217 mils	<b>217 x 217 mils</b>
<b>Lead Lock (Locking Holes)</b>	No	No	Yes	No	No	Yes	<b>Yes</b>

**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:**

Workweek	February 2021				>	August 2021				
	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.

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**MICROCHIP**

**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

<u>Misc.</u>	Assembly site	MTAI
	BD Number	BDM-002793 rev.A
	MP Code (MPC)	661P2YU5BVA1
	Part Number (CPN)	ATSAMC21G18A-MZTVAO
	Qual ID	REQ2100545 Rev. A
<u>Lead-Frame</u>	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
<u>Bond Wire</u>	Material	Au
<u>Die Attach</u>	Part Number	3280
	Conductive	Yes
<u>MC</u>	Part Number	G700LTD
<u>PKG</u>	PKG Type	VQFN Wettable flank
	Pin/Ball Count	48
	PKG width/size	7x7x1.0 mm



# MICROCHIP

## 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	
<b>Precondition Prior Perform Reliability Tests (At MSL Level 1)</b>	<b>Electrical Test :25°C</b> Magnum	JESD22- A113,  JIP/ IPC/JEDE C J-STD- 020E	231 per lot	Lot 1 0/231	Pass	Good Devices	
				Lot 2 0/231	Pass		
				Lot 3 0/231	Pass		
	<b>Bake</b> 150°C, 24 hrs System: HERAEUS			231 per lot			
	<b>Moisture Soak</b> 168h(85°C/85%RH) System: Climats Excal 5423-HE			231 per lot			
	<b>Reflow</b> 3x Convection-Reflow 265°C max System: Mancorp CR.5000F		231 per lot	Lot 1 0/231	Pass		
				Lot 2 0/231	Pass		
				Lot 3 0/231	Pass		
	<b>Electrical Test :25°C</b> Magnum SV 1024			231 per lot	Lot 1 0/231	Pass	
			Lot 2 0/231		Pass		
	Lot 3 0/231	Pass					

# PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
<b>UNBIASED HAST</b>	<b>Stress Condition:</b> (Standard) + 130°C, 85%RH, 96 hrs. System: HIRAYAMA HASTEST PC-422R8  <b>Electrical Test:</b> 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
	<b>Internal Package Analysis</b>		5 units per lot	Lot 1, 0/5  Lot 2, 0/5  Lot 3, 0/5	Pass  Pass  Pass	
<b>HAST</b>	<b>Stress Condition:</b> (Standard) 130°C, 85%RH, 96 hrs. VOLTS=5.5V System: HIRAYAMA HASTEST PC-422R8  <b>Electrical Test:</b> 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	
	<b>Internal Package Analysis</b>		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
<b>Temp Cycle</b>	<b>Stress Condition:</b> (Standard) -65°C to +150°C, 500 Cycles System : Votsch VTS <sup>2</sup> 7012  <b>Electrical Test:</b> 25°C /125°C System: Magnum	JESD22-A104	77 units per lot	Lot 1 0/77	Pass	Parts had been pre-conditioned at 260°C
				Lot 2 0/77	Pass	
				Lot 3 0/77	Pass	
	<b>Internal Package Analysis</b>		5 units per lot	Lot 1, 0/5 Lot 2, 0/5 Lot 3, 0/5	Pass Pass Pass	
	<b>Bond Strength:</b> 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	
<b>High Temperature Storage Life</b>	<b>Stress Condition:</b> Bake 175°C, 500 hrs System: HERAEUS  <b>Electrical Test:</b> 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
<b>Bond Strength, 0 Hour</b>	<b>System:</b> Dage Wire Pull (> 1.75 grams) Bond <i>Shear</i> (>12.6 grams)		5 units, 30 bonds per lot	Lot 1 0/30	Pass	
				Lot 2 0/30	Pass	
				Lot 3 0/30	Pass	
<b>Solderability</b>	Forward 245°C	J-STD-002D	22 units from 1 lot	0/22	Pass	
	Backward 215°C			0/22	Pass	
<b>Physical Dimension</b>	Physical Dimension, 30 units from 3 lots	JESD22 -B100/B108	10 units per lot	Lot 1 0/10	Pass	
				Lot 2 0/10	Pass	
				Lot 3 0/10	Pass	

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



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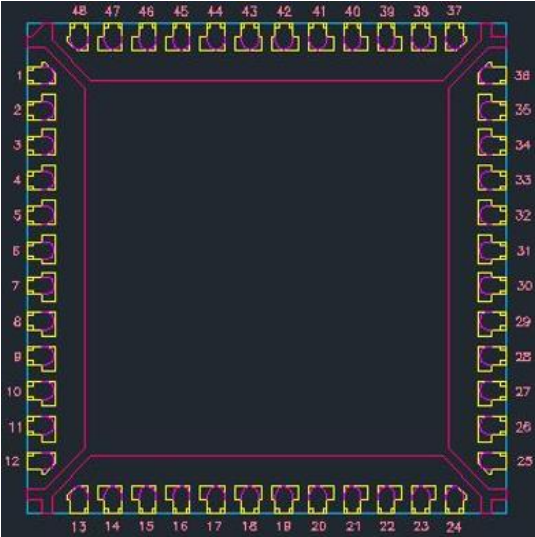
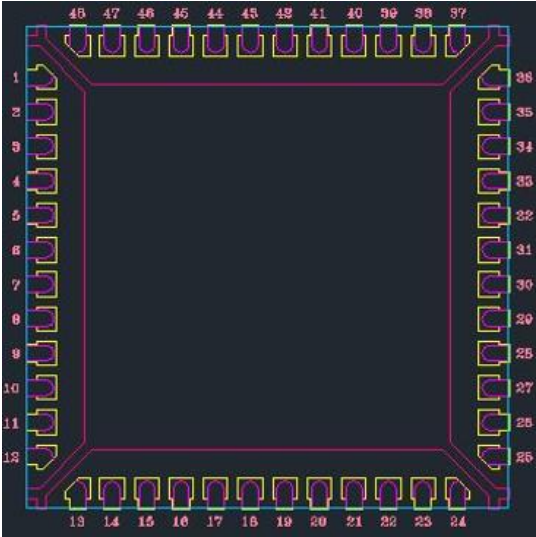
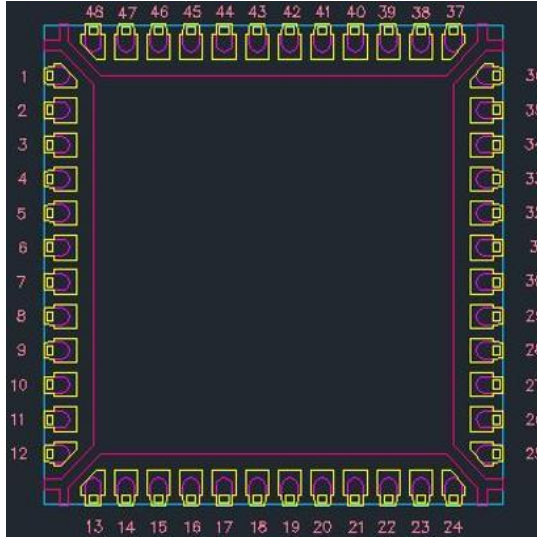
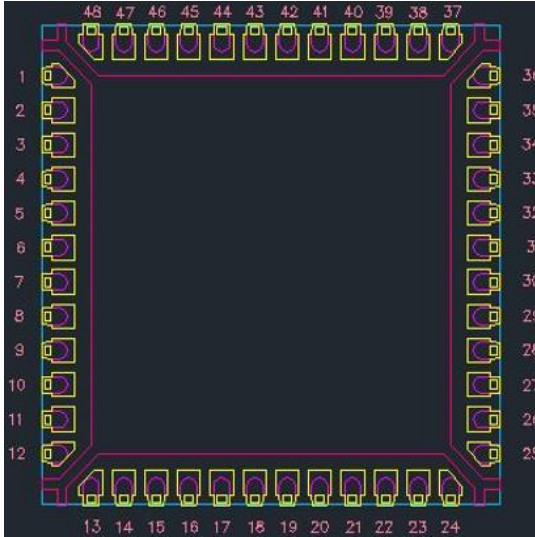
A Leading Provider of Smart, Connected and Secure Embedded Control Solutions

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



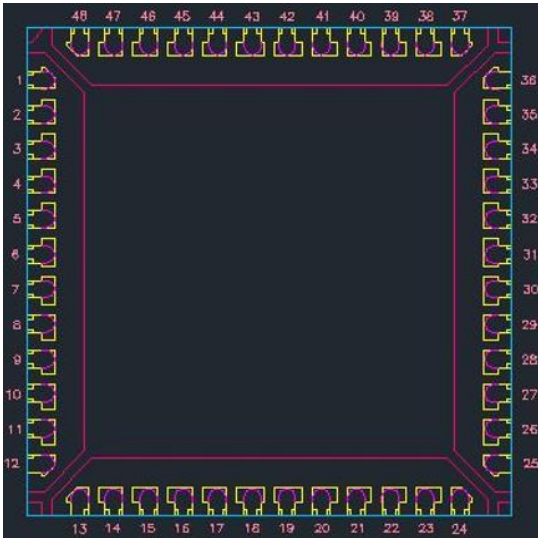
SMART | CONNECTED | SECURE

# Leadframe design comparison – for wettable flank products

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

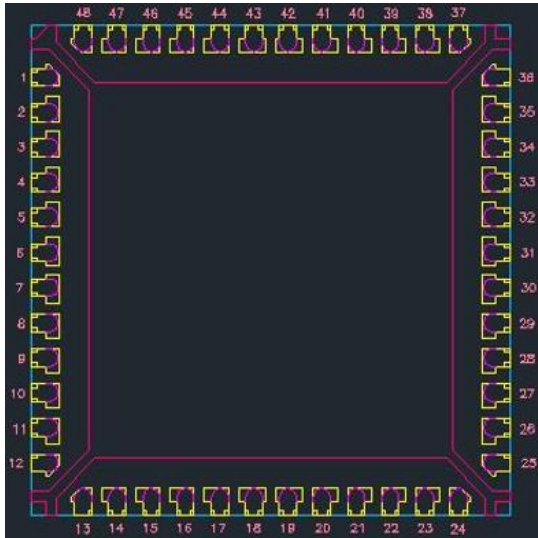
# Leadframe design comparison – for non-wettable flank products

**ASE**



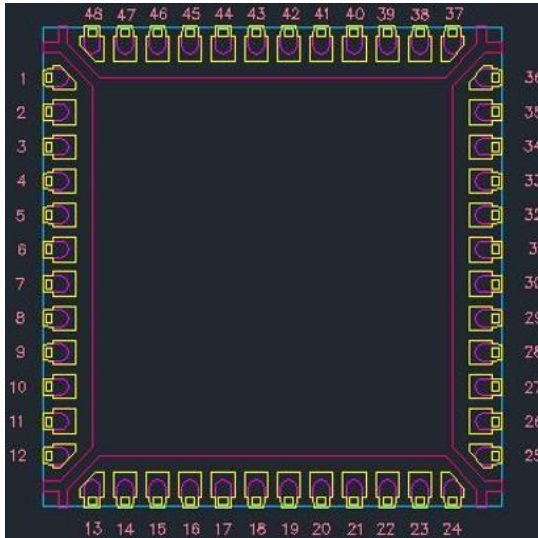
Lead frame material	C7025
Paddle size	217 x 217 mils
Lead Lock (Locking Holes)	No

**ASCL**



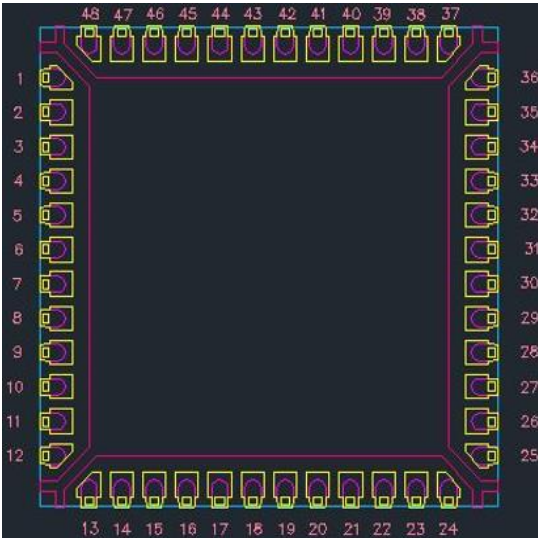
Lead frame material	C194
Paddle size	210 x 210 mils
Lead Lock (Locking Holes)	No

**MMT**



Lead frame material	C194
Paddle size	217 x 217 mils
Lead Lock (Locking Holes)	Yes

**MTAI - New**



Lead frame material	C194
Paddle size	217 x 217 mils
Lead Lock (Locking Holes)	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



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RMES-09ZZXT280 - CCB 4523 and 4523.001 Final Notice: Qualification of MTAI as an additional assembly site for selected ATSAMC20xx, ATSAMC21xx, ATSAMC20xx, ATSAMC21xx and ATSAMDA1xx device families available in 48L VQFN package.

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ATSAMD21G15B-MZT  
ATSAMD21G16B-MZT  
ATSAMD20G16B-MZ  
ATSAMD20G15B-MZ  
ATSAMD20G16B-MU  
ATSAMD20G15B-MU  
ATSAMD20G14B-MU  
ATSAMD20G16B-MN  
ATSAMD20G14B-MN  
ATSAMD20G15B-MN  
ATSAMD20G16B-MNT  
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ATSAMC21G15A-MZT  
ATSAMC20G18A-MZT  
ATSAMC20G17A-MZT  
ATSAMC20G16A-MZT

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ATSAMC20G15A-MZ1  
ATSAMD20G18A-MUA1  
ATSAMD20G14A-MUA1  
ATSAMD20G16A-MUA1  
ATSAMD20G17A-MUA1  
ATSAMD20G15A-MUA1  
ATSAMD20G14A-MUTA1  
ATSAMD20G15A-MUTA1  
ATSAMD20G16A-MUTA1  
ATSAMD20G17A-MUTA1  
ATSAMD20G18A-MUTA1  
ATSAMD21G17A-MF  
ATSAMD21G18A-MF  
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ATSAMD21G17A-MZ  
ATSAMD21G18A-MU  
ATSAMD21G17A-MU  
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ATSAMD21G18A-MUTN01  
ATSAMD21G17A-MFT  
ATSAMD21G18A-MFT  
ATSAMD21G18A-MZT  
ATSAMD21G17A-MZT  
ATSAMD20G14A-MUA4  
ATSAMD20G15A-MUA4  
ATSAMD20G16A-MUA4  
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ATSAMD20G17A-MUA2  
ATSAMD20G14A-MN  
ATSAMD20G15A-MN  
ATSAMD20G16A-MN  
ATSAMD20G17A-MN

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ATSAMD20G18A-MN

ATSAMD20G14A-MNT

ATSAMD20G15A-MNT

ATSAMD20G16A-MNT

ATSAMD20G17A-MNT

ATSAMD20G18A-MNT