



## Product Change Notification / JAON-01ZBFS506

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### Date:

22-Apr-2024

### Product Category:

32-Bit Microcontrollers

### PCN Type:

Manufacturing Change

### Notification Subject:

CCB 3490.001 Final Notice: Qualification of UMC Fab 8N as an additional fabrication site for selected PIC32CM1216MC00032, PIC32CM6408MC00032, PIC32CM1216MC00048, and PIC32CM6408MC00048 device families available in 32L VQFN (5x5x1.0mm), 32L TQFP (7x7x1.0mm), 48L VQFN (7x7x0.9mm) and 48L TQFP (7x7x1.0mm) packages.

### Affected CPNs:

[JAON-01ZBFS506\\_Affected\\_CPN\\_04222024.pdf](#)

[JAON-01ZBFS506\\_Affected\\_CPN\\_04222024.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 UMC Fab 8N as an additional fabrication site for selected PIC32CM1216MC00032, PIC32CM6408MC00032, PIC32CM1216MC00048, and PIC32CM6408MC00048 device families available in 32L VQFN (5x5x1.0mm), 32L TQFP (7x7x1.0mm), 48L VQFN (7x7x0.9mm) and 48L TQFP (7x7x1.0mm) packages.

### Pre and Post Change Summary:

	Pre Change	Post Change	
<b>Fabrication Supplier and Location</b>	United Microelectronics Corporation – Fab 8D Hsin-Chu Taiwan (U08D)	United Microelectronics Corporation – Fab 8D Hsin-Chu Taiwan (U08D)	United Microelectronics Corporation – Fab 8N SuZhou China (U08N)
<b>Quality Certification</b>	ISO/TS16949	ISO/TS16949	ISO/TS16949
<b>Die Size</b>	No Change	No Change	No Change
<b>Wafer Diameter</b>	8 inches	8 inches	8 inches

**Impacts to Data Sheet:**None

**Change Impact:**None

**Reason for Change:**To improve manufacturability and on-time delivery performance by qualifying UMC Fab 8N as an additional fabrication site.

**Change Implementation Status:**In Progress

**Estimated First Ship Date:**September 15, 2021 (date code: 2138)

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

**Time Table Summary:**

	September 2021					>	April 2024				
Workweek	36	37	38	39	40		14	15	16	17	18
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:**September 08, 2021: Issued final notification.

April 16, 2024: Re-issued final notification to include qual report. Updated affected CPN list due to updated CCB scope.

April 22, 2024: Re-issued final notification to correct Fab Supplier name.

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

## **Attachments:**

[PCN\\_JAON-01ZBFS506 Qual\\_Report.pdf](#)

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

## **Terms and Conditions:**

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JAON-01ZBFS506 - CCB 3490.001 Final Notice: Qualification of UMC Fab 8N as an additional fabrication site for selected PIC32CM1216MC00032, PIC32CM6408MC00032, PIC32CM1216MC00048, and PIC32CM6408MC00048 device families available in 32L VQFN (5x5x1.0mm), 32L TQFP (7x7x1.0mm), 48L VQFN (7x7x0.9mm) and 48L TQFP (7x7x1.0mm) packages.

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Affected Catalog Part Numbers (CPN)

PIC32CM1216MC00048-E/U5B  
PIC32CM6408MC00048-E/U5B  
PIC32CM1216MC00032-E/RTB  
PIC32CM6408MC00032-E/RTB  
PIC32CM1216MC00048-E/Y8X  
PIC32CM6408MC00048-E/Y8X  
PIC32CM1216MC00032T-E/RTB  
PIC32CM6408MC00032T-E/RTB  
PIC32CM1216MC00032-E/PT  
PIC32CM6408MC00032-E/PT  
PIC32CM1216MC00032T-E/PT  
PIC32CM6408MC00032T-E/PT  
PIC32CM6408MC00048T-E/Y8X  
PIC32CM1216MC00048T-E/U5B  
PIC32CM6408MC00048T-E/U5B  
PIC32CM1216MC00048T-E/Y8X  
PIC32CM6408MC00048T-I/U5BS2  
PIC32CM6408MC00048-I/U5B  
PIC32CM1216MC00048-I/Y8X  
PIC32CM6408MC00048-I/Y8X  
PIC32CM1216MC00032T-I/PT  
PIC32CM6408MC00032T-I/PT  
PIC32CM1216MC00048T-I/U5B  
PIC32CM1216MC00048T-I/U5BESU  
PIC32CM6408MC00048T-I/U5B  
PIC32CM1216MC00048T-I/Y8X  
PIC32CM6408MC00048T-I/Y8X  
PIC32CM1216MC00032-I/PT  
PIC32CM6408MC00032-I/PT  
PIC32CM1216MC00048-I/U5B  
PIC32CM1216MC00048-I/U5BESU  
PIC32CM1216MC00032-I/RTB  
PIC32CM6408MC00032-I/RTB  
PIC32CM1216MC00032T-I/RTB  
PIC32CM6408MC00032T-I/RTB



**QUALIFICATION REPORT SUMMARY**  
**RELIABILITY LABORATORY**

**PCN #: JAON-01ZBFS506**

**Date:**  
**January 05, 2024**

**Qualification of UMC Fab 8N as an additional fabrication site for selected PIC32CM1216MC00032, PIC32CM6408MC00032, PIC32CM1216MC00048, and PIC32CM6408MC00048 device families available in 32L VQFN (5x5x1.0mm), 32L TQFP (7x7x1.0mm), 48L VQFN (7x7x0.9mm) and 48L TQFP (7x7x1.0mm) packages.**

**Purpose:** Qualification of UMC Fab 8N as an additional fabrication site for selected PIC32CM1216MC00032, PIC32CM6408MC00032, PIC32CM1216MC00048, and PIC32CM6408MC00048 device families available in 32L VQFN (5x5x1.0mm), 32L TQFP (7x7x1.0mm), 48L VQFN (7x7x0.9mm) and 48L TQFP (7x7x1.0mm) packages.

**I. Summary:**

In keeping with guidelines established in Microchip specification QCI-39000, one lot of PIC32CMxxxx MC rev A1 was used for qualification testing of the PIC32CMxxxx MC device rev A1. One lot of rev A2 was used for the qualification testing of the rev A2.

This qualification will release the 66P02, PIC32CMxxxx MC device rev A1 and rev A2 to production for the [-40°C; +85°C] temperature range, for industrial at UMC8N.

**II. Device Description:**

Device	PIC32CMxxxx MC
MSL	5239
Product	32-bit Microcontrollers
Document Control Number	ML0420220030
Document Revision	D
CCB No.	3490.001

**III. Qualification Material:**

<b>Test Lot</b>	<b>Lot 1</b>	<b>Lot 2</b>
WAFER LOT	U08N922050413.100 (NQFJK)	U08N92228490.100 (NQY0G)
ASSEMBLY LOT	MTAI220702875.00	MTAI222603710.00
PACKAGE	48L TQFP	48L TQFP
QUAL #	QTP4434	QTP4467
QUAL TESTS	EFR, EDR/ HTOL, EDR/ Data-retention, EDR, ESD HBM, ESD CDM, LU	EFR, EDR/ HTOL, EDR/ Data-retention, ESD HBM, ESD CDM, LU

#### IV. Qualification Data:

##### Early Life Failure Rate

Test Method	AEC Q100
Test Condition	150°C/48 hours
Sample Size	Lot 1: 816; Lot 2: 818
Lot 1	0/816
Lot 2	0/818

Tested at 25°C, 85°C, and -40°C after stress.

##### Endurance Cycling and Dynamic Life Test

Test Method	AEC-Q100-005 + JESD22A-108
Test Condition	25K Flash & 25K EEPROM cycling 85°C (EDR) + 500 hours 150°C (DLT)
Sample Size	Lot 1: 162, Lot 2: 80
Lot 1	0/162
Lot 2	0/80

Tested at 25°C, 85°C and -40°C after stress.

##### Endurance Cycling and Data Retention

Test Method	AEC-Q100-005 + JEDEC JESD22-A103
Test Condition	25K Flash & 25K EEPROM cycling 85°C (EDR) + 500 hours 175°C (Data-retention)
Sample Size	Lot 1: 81, Lot 2: 80
Lot 1	0/81
Lot 2	0/80

Tested at 25°C and 85°C after stress.



**Endurance Cycling**

Test Method	AEC-Q100-005
Test Condition	25°C, 100K Flash
Sample Size (77 ea. Min)	Lot 1: 89, Lot 2: 83
Lot 1	0/89
Lot 2	0/83

Tested at 25°C and 85°C after stress.

Test Method	AEC-Q100-005
Test Condition	25°C, 100K EEPROM
Sample Size (77 ea. Min)	Lot 1: 90, Lot 2: 79
Lot 1	0/90
Lot 2	0/79

Tested at 25°C and 85°C after stress.

## ESD, Latch-Up and CDM

Test	Reference Method	Sample Size/Lot	Result
ESD – HBM	AEC Q100-002E JS-001-2017	Lot 1  0/3 +/- 500V 0/3 +/- 1000V 0/3 +/- 2000V 0/3 +/- 3000V 0/3 +/- 4000V 0/3 +/- 5000V	HBM +/- 5000V  ML082021000N
ESD – HBM	AEC Q100-002E JS-001-2017	Lot 2  0/3 +/- 500V 0/3 +/- 1000V 0/3 +/- 2000V 0/3 +/- 3000V 0/3 +/- 4000V 0/3 +/- 5000V	HBM +/- 5000V  ML122021003S
ESD-CDM	AEC-Q100-011C1 (ANSI/ESD 5.3.1-2009) JS-002-2014	Lot 1  0/3 +/- 250V 0/3 +/- 300V 0/3 +/- 400V 0/3 +/- 500V 0/3 +/- 600V 0/3 +/- 750V 0/3 +/- 1000V 0/3 +/- 1500V 0/3 +/- 2000V	+/- 2000V  ML082021000K
ESD-CDM	AEC-Q100-011C1 (ANSI/ESD 5.3.1-2009) JS-002-2014	Lot 2  0/3 +/- 250V 0/3 +/- 500V 0/3 +/- 750V 0/3 +/- 1000V 0/3 +/- 1500V 0/3 +/- 2000V	+/- 2000V  ML122021003T
Latch-up	AEC Q100-004D JEDEC JESD78E	Lot 1	Pass – 25°C Pass – 125°C

		0/6 +25°C 0/6 +125°C	ML0820210000
Latch-up	AEC Q100-004D JEDEC JESD78E	Lot 2  0/6 +25°C 0/6 +125°C	Pass – 25°C Pass – 125°C  ML0120220034

Tested at 25°C and 85°C before and after stress.

**V. MTBF/FIT data**

These calculations are based on DLT data from 66K1x process UMC8N	
Activation Energy	0.7 eV
Application Temperature	55 degrees C

	Latent Failure	MTBF (Hours)
Device Hours	268 195 160	N/A
Fit Rate - 50% Confidence	2.6	386 923 827
Fit Rate - 60% Confidence	3.4	292 696 576
Fit Rate - 90% Confidence	8.6	116 475 678

Note: One FIT is one fail in  $10^9$  device hours

**VI. Conclusion:**

Based on the results above, the PIC32CMxxxx MC devices comply with the reliability guidelines implemented in the qualification plan. Therefore, the PIC32CMxxxx MC (66P02) rev A1 and rev A2 device families are released to production for the [-40°C; +85°C] temperature range, for industrial at UMC8N as per guidelines established in Microchip specification QCI-39000, "Worldwide Quality Conformance Requirements".