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## Product Change Notification - JAON-20BQVK768 (Printer Friendly)

<b>Date:</b>	04 May 2017
<b>Product Category:</b>	Power Management - Power Switches; Power Management - PWM Controllers; Switching Regulators; Power MOSFET Drivers; Linear Regulators
<b>Notification subject:</b>	CCB 2837 Intermediate Notice: Qualification of Fabrication site (FAB 5) for Micrel products manufactured with the BCD05 process technology.
<b>Notification text:</b>	

**PCN Status:**

Intermediate notification

**Microchip Parts Affected:**

Please open the attachments found in the attachments field below labeled as PCN\_#\_Affected\_CPN.

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

**Description of Change:**

Qualification of Fabrication site (FAB 5) for Micrel products manufactured with the BCD05 process technology. This PCN is to inform you that qualification of the BCD05 process technology has completed and to provide the report for your review. Although we are providing you with the qualification data, products in this process technology will not ship from Fabrication site (FAB 5) until after the final PCN has been issued.

Please review the FAQ attached on this notification for additional information about this change.

**Pre Change:**

Fabricated at Micrel fabrication site (San Jose, CA, USA) (SJ) using 6 inch wafers.

**Post Change:**

Fabricated at Atmel Fabrication site FAB 5 (Colorado Springs, CO, USA) (COS) using 6 inch wafers

Note: Microchip previously announced that the qualification of this process technology (BCD05) will be qualified at Microchip Fabrication Sites using 8 inch wafers. That qualification will proceed and will be communicated when completed as indicated in PCN [CYER-31JLEX86](#). The Colorado Springs location will become the primary location and the only site that will ship products in this process technology (BCD05) while the Microchip Fabrication sites using 8 inch wafers will be backup fab sites, which can be used if there is some sort of critical issue.

**Pre and Post Change Summary:**

	<b>Pre Change</b>	<b>Post Change</b>	
Fabrication Location	Micrel Fabrication Site (San Jose, CA, USA)	Primary Fab Location: Atmel Fabrication site FAB 5 (Colorado Springs, CO USA)	Backup Fab Locations: Microchip Fabrication Sites (Tempe, AZ and Gresham, OR, USA)
Wafer Diameter	6 inches (150 mm)	6 inches (150 mm)	8 inches (200 mm)
Quality certification	ISO9001	ISO9001/TS16949	ISO/TS16949
Data sheet / specifications	No Change	No Change	No Change
Design/layout	No Change	No Change	No Change
Die Size	No change	No change	No change
Final test program	No change	No change	No change
Package Type/MSL	No Change	No Change	No Change

**Impacts to Data Sheet:**  
No impact anticipated.

**Change Impact:**  
None

**Reason for Change:**  
To improve productivity with the closure of the Micrel fab (SJ) as part of the integration of Micrel and Microchip.

**Change Implementation Status:**  
In Progress

**Estimated First Ship Date:**  
Catalog part numbers fabricated at FAB 5 will not ship until after the final PCN has been issued with the listed CPN(s) attached. Microchip will issue Final PCNs as mask sets are released to production at FAB 5.

NOTE: This FAB transition will vary by catalog part number (CPN) and may take several months/years to complete the transition that may result in several final PCNs.

**Summary Time Table of notable events to date:**

	December 2016					->	May 2017				May 2017 onwards
	48	49	50	51	52		18	19	20	21	
Workweek											
Initial PCN Issue Date				X							
Qualification Report							X				

Availability and Intermediate PCN issue date										
Final PCN Issue Date										Will be issued as catalog part numbers (CPNs) are released to production

**Method to Identify Change:**  
Traceability code.

**Qualification Report:**  
Please open the attachments included with this PCN labeled as PCN\_#\_Qual Report.

**Revision History:**  
**December 23, 2016:** Issued initial notification.  
**May 4, 2017:** Issued intermediate notification. Attached the Qualification Report.

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

**Attachment(s):**

[Frequently Asked Questions\\_FAB Transfer.pdf](#)  
[PCN\\_JAON-20BQVK768\\_Qual Report.pdf](#)  
[PCN\\_JAON-20BQVK768\\_Affected CPN.pdf](#)  
[PCN\\_JAON-20BQVK768\\_Affected CPN.xls](#)

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

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To opt out of future offer or information emails (other than product change notification emails), click here to go to [microchipDIRECT](#) and login, then click on the "My account" link, click on "Update profile" and un-check the box that states "Future offers or information about Microchip's products or services."



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**MICROCHIP**

# **QUALIFICATION REPORT SUMMARY**

**PCN #: JAON-20BQVK768**

**Date**  
**April 6, 2017**

**Qualification of Fabrication site (FAB 5) for Micrel products  
manufactured with the BCD05 process technology.**

PART NUMBER	PACKAGE TYPE	ASSEMBLY LOCATION	FAB LOCATION	PROCESS NAME
MIC2104YML	QFN33-16L	UNISEM, MALAYSIA	MICROCHIP FAB-5 Colorado Springs	BCD05/CSI05

## DIE QUALIFICATION RESULTS

TEST DESCRIPTION	METHOD/CONDITIONS	DATE CODE	LOT ID.	168 HR Rej/ss	500 HR Rej/ss	1000 HR Rej/ss	COMMENTS
<b>HTOL</b> <b>High Temperature Operating Life Test</b>	JESD22, Method 108	1643	R6X0362 UNIS173100082.000	0/82	0/82	0/82	*Units went straight to 1000 hours. No read out at 500 hours.
	Ta = +125°C	1702	6Y2663 UNIS174200177.100B	0/80	-*	0/80	
	Vcc = +75V	1703	6Y0748 UNIS174300027.000	0/79	-*	0/78**	

\*Lot 2 under 500HR went straight to 1000 HR skipping the 500 HR read.

\*\* Lot 3 started with 79 units, one device removed at 168 hours, 78 units went straight to straight to 1000 hours

TEST DESCRIPTION	METHOD/CONDITIONS	DATE CODE	LOT ID.	168 HR Rej/ss	408 HR Rej/ss	COMMENTS
<b>HTOL</b> <b>High Temperature Operating Life Test</b>	JESD22, Method 108	1702	R6X0362 UNIS173100082.000	0/77	0/77	*77 units went straight to 408 hours. No read out at 168 hours.
	Ta = +150°C	1703	B6Y0748 UNIS174300027.000	-*	0/77	

## ELECTROSTATIC DISCHARGE

TEST DESCRIPTION	METHOD/CONDITIONS	DATE CODE	LOT ID.	STRESS	RESULT Rej/ss	COMMENTS
<b>ESD-HBM</b> Human Body Model ATE Test @ Room +25C	R= 1500 Ohms C= 100 pF 1X +/- Voltage	1643	R6X0362 UNIS173100082.000	+/-1000V	0/3	Note: ESD ratings are, device specific. All products, qualified on the 6" Micrel, process technologies at, Microchip Fabs will have the, same or better ESD and, Latch-up performance as the 6" products fabricated at San Jose wafer fabrication site.
<b>ESD-CDM</b> Charged Device Model ATE Test @ Room +25C	JESD22-C101 1X +/- Voltage	1643	R6X0362 UNIS173100082.000	+/-1500V	0/3	
TEST DESCRIPTION	METHOD/CONDITIONS	DATE CODE	LOT ID.	STRESS	RESULT Rej/ss	COMMENTS
<b>LATCH-UP</b>	JESD-78 A = +25°C	1643	R6X0362 UNIS173100082.000	I/O LU O/V LU	0/6 0/6	Same as SJ 6 inch



## PACKAGE QUALIFICATION RESULTS

TEST DESCRIPTION	METHOD/CONDITIONS	DATE CODE	LOT ID.	Rej/ss	COMMENTS
<b>Level 1 Pre-conditioning Flow</b> Use samples to perform  UHAST/BHAST/TCY	<b>JESD22-A113</b>	1643	R6X0362 UNIS173100082.000	0/375	
		1702	6Y2663 UNIS174200177.100	0/272	
		1703	B6Y0748 UNIS174300027.000	0/431	
TEST DESCRIPTION	METHOD/CONDITIONS	DATE CODE	LOT ID.	96 HR Rej/ss	COMMENTS
<b>UHAST</b>  <b>With Level 1 Pre-conditioning</b>  Tpeak + 260°C 3X Reflow	Ta= +131°C/85%RH  JESD22-A118 (UNBIASED)	1643	R6X0362 UNIS173100082.000	0/82	
		1702	6Y2663 UNIS174200177.100	0/82	
		1703	B6Y0748 UNIS174300027.000	0/82	
TEST DESCRIPTION	METHOD/CONDITIONS	DATE CODE	LOT ID.	96 HR Rej/ss	COMMENTS
<b>BHAST</b>  <b>With Level 1 Pre-conditioning</b>  Tpeak + 260°C 3X Reflow	JESD22-A110 (BIASED)  Ta= +130°C/85%RH  Vcc = +75V	1643	R6X0362 UNIS173100082.000	0/82	
		1702	6Y2663 UNIS174200177.100	0/82	
		1703	B6Y0748 UNIS174300027.000	0/82	
TEST DESCRIPTION	METHOD/CONDITIONS	DATE CODE	LOT ID.	500 CY Rej/ss	COMMENTS
<b>TEMP CYCLE</b>  <b>With Level 1 Pre-conditioning</b>  Tpeak + 260°C 3X Reflow	JESD22-A104  Ta = -65°C / +150°C	1643	R6X0362 UNIS173100082.000	0/82	
		1702	6Y2663 UNIS174200177.100	0/82	
		1703	B6Y0748 UNIS174300027.000	0/82	
TEST DESCRIPTION	METHOD/CONDITIONS	DATE CODE	LOT ID.	500 HR Rej/ss	COMMENTS
<b>HTSL</b>  <b>High Temperature Storage Life</b>	JESD22-A103  Ta = +175°C	1643	R6X0362 UNIS173100082.000	0/50	
TEST DESCRIPTION	METHOD/CONDITIONS	DATE CODE	LOT ID.	1000 HR Rej/ss	COMMENTS
<b>HTSL</b>  <b>High Temperature Storage Life</b>	JESD22-A103  Ta = +150°C	1643	R6X0362 UNIS173100082.000	0/50	
<b>FLAMMABILITY</b>	UL-94V-0  Certified	All mold compounds used by Micrel meet this standard. See the UL website on-line list of material flammability certifications. Micrel requires a Certificate of Compliance from the assembly house and we verify the certifications on the web.			

JAON-20BQVK768 - CCB 2837 Intermediate Notice: Qualification of Fabrication site (FAB 5) for Micrel products manufactured with the BCD05 process technology.

Affected Catalog Part Numbers (CPN)

PCN_JAON-20BQVK768
CATALOG_PART_NBR
258-0238-010
MIC2026A-1YM
MIC2026A-1YM-TR
MIC2026A-2YM
MIC2026A-2YM-TR
MIC2076A-1YM
MIC2076A-1YM-TR
MIC2076A-2YM
MIC2076A-2YM-TR
MIC2101YML-TR
MIC2102YML-TR
MIC2103YML-TR
MIC2104YML-TR
MIC2124YMM
MIC2124YMM-TR
MIC2125YML-T5
MIC2125YML-TR
MIC2126YML-T5
MIC2126YML-TR
MIC2127AYML-T5
MIC2127AYML-TR
MIC2128YML-T5
MIC2128YML-TR
MIC2150YML-TR
MIC2151YML-TR
MIC2155YML-TR
MIC2156YML-TR
MIC2164-2YMM
MIC2164-2YMM-TR
MIC2164-3YMM
MIC2164-3YMM-TR
MIC2164CYMM
MIC2164CYMM-TR
MIC2164YMM
MIC2164YMM-TR
MIC2165YMME
MIC2165YMME-TR
MIC2166YMME
MIC2166YMME-TR
MIC2174-1YMM
MIC2174-1YMM-TR
MIC2174C-1YMM
MIC2174C-1YMM-TR

JAON-20BQVK768 - CCB 2837 Intermediate Notice: Qualification of Fabrication site (FAB 5) for Micrel products manufactured with the BCD05 process technology.

Affected Catalog Part Numbers (CPN)

PCN_JAON-20BQVK768
CATALOG_PART_NBR
MIC2176-1YMM
MIC2176-1YMM-TR
MIC2176-2YMM
MIC2176-2YMM-TR
MIC2176-3YMM
MIC2176-3YMM-TR
MIC2230-AAYML-TR
MIC2230-G4YML-TR
MIC2230-GFHYML-TR
MIC2230-GSYML-TR
MIC2230-J4YML-TR
MIC2230-S4YML-TR
MIC2230-SSYML-TR
MIC2238-AAYML-TR
MIC2238-G4YML-TR
MIC2238-GFHYML-TR
MIC2238-GSYML-TR
MIC2238-J4YML-TR
MIC2238-S4YML-TR
MIC2238-SSYML-TR
MIC2267YML-TR
MIC24420YML-TR
MIC24421YML-TR
MIC25400YML-TR
MIC38150HYHL-TR
MIC38300HYHL-TR
MIC4600YML-T5
MIC4600YML-TR
MIC5011YM
MIC5011YM-TR
MIC5011YN
MIC5013YM
MIC5013YM-TR
MIC5013YN
MIC59150YME
MIC59150YME-TR
MIC59300-1.2WU
MIC59300-1.2WU-TR
MIC59300-1.2YME
MIC59300-1.2YME-TR
MIC59300WU
MIC59300WU-TR
MIC59300YME

JAON-20BQVK768 - CCB 2837 Intermediate Notice: Qualification of Fabrication site (FAB 5) for Micrel products manufactured with the BCD05 process technology.

Affected Catalog Part Numbers (CPN)

PCN_JAON-20BQVK768
CATALOG_PART_NBR
MIC59300YME-TR
MIC61150-10YML-TR
MIC61150-10YMME
MIC61150-10YMME-TR
MIC61150YML-TR
MIC61150YMME
MIC61150YMME-TR
MIC61300-10YML-TR
MIC61300-10YMME
MIC61300-10YMME-TR
MIC61300YML-TR
MIC61300YMME
MIC61300YMME-TR
MIC94161YCS-TR
MIC94162YCS-TR
MIC94163YCS-TR
MIC94164YCS-TR
MIC94165YCS-TR
SPN011029G
SPN011029G-TR



# Micrel San Jose CA (SJ) to Microchip Colorado Springs CO (MCSO) Fab Transfer of BCD05 Frequently Asked Questions (FAQ)

Revision 2 – April 25, 2017

**Why is Microchip making this change?** The Micrel 6 inch fabrication facility in San Jose is closing. The Microchip 6 inch fabrication facility located at Colorado Springs CO, USA will provide more capacity that will ensure continuity of supply. Microchip's fabrication sites have improved defect control/inspections and more efficient/diversified fab equipment.

## What is and what is not changing?

	<b>Pre Change</b>	<b>Post Change</b>
<b>Fabrication Location</b>	Micrel Fabrication Site (San Jose, CA, USA)	Microchip Fabrication Sites (Colorado Springs CO, USA)
<b>Wafer Diameter</b>	6 inches (150 mm)	6 inches (150 mm)
<b>Quality certification</b>	ISO9001	ISO/TS16949
<b>Data sheet / specifications</b>	No Change	No Change
<b>Design/layout</b>	No Change	No Change
<b>Die Size</b>	No Change	No Change
<b>Final test program</b>	No Change	No Change
<b>Package Type/MSL</b>	No Change	No Change

**Why is Microchip qualifying the MCSO 6” location in addition to the 8” locations for the BCD05 process technology?** The reason the MCSO 6” location is being qualified is because the fabrication equipment/processes are a better match between the SJ and MCSO fab and will provide better efficiencies for sustaining inventories of BCD05 products. While the 8” locations will provide a suitable backup location which can be used if there is some sort of critical issue and to ensure inventory levels can keep up with demand.

**What products are affected and what is the notification strategy?** Microchip has identified the parts affected and is implementing a notification strategy with a three phase Product/Process Change Notice (PCN) approach.

Phase 1: Microchip will issue an initial PCN. The PCN number is [JAON-20BQVK768](#) and it will include the following information:

- a. Qualification plan.
- b. Anticipated quarter and year for availability of the qualification report.
- c. Affected parts list

Phase 2: Microchip will issue an intermediate PCN after qualification has completed. Included in this PCN is:

- a. Qualification report
- b. Complete list of Catalog Part Numbers (CPN) for the qualified BCD05 process technology.

The objective of this PCN is to notify customers that the BCD05 process technology has completed qualification and provide the report.

Phase 3: Microchip will issue Final PCNs as Microchip fabricated CPNs are released to production. Each of these PCNs will include:

- a. The Estimated First Ship Date (EFSD) of each CPN.

Please note that there will be multiple PCNs issued over several months/years before implementation on all products has completed. Products from Microchip Fabs will not ship until after a phase 3 PCN has been issued and applicable CPN listed.

**How does Microchip issue PCN's to customers?** Microchip provides a PCN service. As part of this service customers have the option to receive PCNs via email if they register for PCN email service or view PCNs without registration on Microchips website. For information about how to register for PCN email service and all PCN services please view our PCN policy. The link to Microchip's PCN policy is:

[http://ww1.microchip.com/downloads/en/DeviceDoc/PCN\\_EOL%20Policy\\_MCHP.pdf](http://ww1.microchip.com/downloads/en/DeviceDoc/PCN_EOL%20Policy_MCHP.pdf)

## **What is Microchip's fabrication transfer qualification strategy?** Microchip is using the following approach:

1. Copy functional (i.e. match the fab process films/design rules and device structures). There will be no changes to the product datasheet specifications.
2. Follow Micrel's original qualification guidelines (JEDEC JC14 compliant). The qualification plan will be included in the initial PCN as referenced above.

## **How does the qualification data pertain to my device?**

Numerous catalog part numbers of various product types are produced from the BCD05 process technology. Since it is not practical to qualify each individual part number, Microchip verifies the functionality and parametrics of each individual underlying product type. For the BCD05 process technology qualification, a representative CPN was selected to be the primary qualification device.

For primary qualification devices, the following methodology is used: Three fab lots go through high temperature operation life (HTOL)/package level qualification testing and one fab lot goes through electrostatic discharge (ESD) and latch up (LU) testing to represent when the technology is qualified for production.

All lots must pass high temperature operation life (HTOL), ESD, LU, preconditioning, temperature cycling, unbiased HAST, biased HAST, pressure pot, and high temperature storage testing per JEDEC guidelines. Please note that for ESD & LU tests, the acceptance criteria is to meet or exceed current Micrel San Jose 6" fabbed product. All CPNs will be represented by the BCD05 qualification report that will be included in the phase 2 intermediate PCN.



**How will Microchip verify functionality of the Microchip fabricated material?** To ensure that the Microchip fabricated devices behave statistically the same as the respective Micrel fabricated material, Microchip will perform production ATE testing and/or bench testing using Micrel SJ and MCSO fabricated samples. Then Microchip will compare the electrical distributions for the critical test parameters with the expectation that they are statistically equivalent.

**Will the Catalog Part Number (CPN) change?** No. The CPN will not change.

**How can I determine if a product was fabricated in the Micrel or Microchip Fab?** The trace code can be used to determine the difference between Micrel SJ and MCSO fabricated material. The customers will be required to provide the trace codes to the local Microchip sales office for assistance in determining the die source. The trace code is located on the product's top marking.

**What is Microchip's experience with Fab transfers?** Microchip has successfully completed several Fab transfers over the last 16 years representing millions of devices shipped to a large variety of customers within the automotive, medical, aerospace, industrial, and commercial segments.

**Can I obtain Microchip fabricated samples for evaluation and/or qualification?** Yes, customers should contact their authorized Microchip support channel to enter a request for samples.

**How will Microchip manage stability of supply during the transition?** Microchip has built Micrel San Jose fabricated inventory based on historic monthly ship rates to fulfill customer orders until Microchip fabricated inventory is available.