Product Change Notification - KSRA-07HVQF409

Date:
22 Jan 2020

Product Category:
8-bit Microcontrollers; Capacitive Touch Sensors

Affected CPNs:

Notification subject:
CCB 4031 Initial Notice: Qualification of Microchip Technology Tempe – Fab 2 (TMGR) as an additional fabrication site for selected Atmel products.

Notification text:

PCN Status:
Initial 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 Microchip Technology Tempe - Fab 2 (TMGR) as an additional fabrication site for selected Atmel products.

Pre Change:
Fabricated at Microchip Technology Colorado - Fab 5 (MCSO) using 6 inch wafer

Post Change:
Fabricated at Microchip Technology Colorado - Fab 5 (MCSO) using 6 inch wafer or Microchip Technology Tempe - Fab 2 (TMGR) using 8 inch wafer

Pre and Post Change Summary:

<table>
<thead>
<tr>
<th>Fabrication Supplier and Location</th>
<th>Pre Change</th>
<th>Post Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabrication Supplier and Location</td>
<td>Microchip Technology Colorado - Fab 5 (MCSO)</td>
<td>Microchip Technology Colorado - Fab 5 (MCSO)</td>
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<tr>
<td>Wafer Diameter</td>
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<tr>
<td>Die size</td>
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<tr>
<td>Quality Certification</td>
<td>ISO9001/TS16949 or IATF16949</td>
<td>ISO9001/TS16949 or IATF16949</td>
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Impacts to Data Sheet:
None

Change Impact:
None

Reason for Change:
To improve manufacturability and on-time delivery performance by qualifying a second fabrication source at Microchip Technology Tempe - Fab 2 (TMGR) fabrication site.

Change Implementation Status:
In Progress

Estimated Qualification Completion Date:
June 2020

Note: Please be advised the qualification completion times may be extended because of unforeseen business conditions however implementation will not occur until after qualification has completed and
a final PCN has been issued. The final PCN will include the qualification report and estimated first ship date. Also note that after the estimated first ship date guided in the final PCN customers may receive pre and post change parts.

**Time Table Summary:**

<table>
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<tr>
<th>Workweek</th>
<th>December 2019</th>
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<th>June 2020</th>
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<td>Initial PCN Issue Date</td>
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<td>Qual Report Availability</td>
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<tr>
<td>Final PCN Issue Date</td>
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**Method to Identify Change:**
Traceability code

**Qualification Plan:**
Please open the attachments included with this PCN labeled as PCN_##_Qual_Plan.

**Revision History:**
*December 11, 2019:* Issued initial notification.
*January 08, 2020:* Re-issued initial notification to update the Qualification Plan and Affected CPN list.
*January 22, 2020:* Re-issued initial notification to revise the Affected CPN list based on the updated scope.

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

**Attachment(s):**
PCN_KSRA-07HVQF409_Qual_Plan.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.
Affected Catalog Part Numbers (CPN)

ATMEGA1284P-PU
ATMEGA1284-PU
ATMEGA1284P-MU
ATMEGA1284-MU
ATMEGA1284P-AU
ATMEGA1284-AU
ATMEGA1284P-MUR
ATMEGA1284-MUR
ATMEGA1284P-AUR
ATMEGA1284-AUR
ATTINY88-PU
ATTINY88-MMU
ATTINY88-MMH
ATTINY88-MU
ATTINY88-AU
ATTINY88-MMUR
ATTINY88-MMHR
ATTINY88-MUR
AT42QT1110-MUR
AT42QT2100-MUR
ATTINY88-MURA1
ATTINY88-AUR
AT42QT1110-AUR
ATMEGA128-16MU
ATMEGA128A-MU
ATMEGA128A-AUA2
ATMEGA128L-8AU
ATMEGA128A-AU
ATMEGA128-16AU
ATMEGA128A-AU-HCM
ATMEGA128L-8MN
ATMEGA128A-MN
ATMEGA128-16MN
ATMEGA128-16AN
ATMEGA128A-AN
ATMEGA128-16MNR
ATMEGA128L-8MNR
ATMEGA128A-MNR
ATMEGA128-16ANR
ATMEGA128L-8ANR
ATMEGA128A-ANR
ATMEGA128A-MUR
ATMEGA128L-8MUR
ATMEGA128-16MUR
ATMEGA128A-AUR
ATMEGA128L-8AUR
KSRA-07HVQF409 - CCB 4031 Initial Notice: Qualification of Microchip Technology Tempe – Fab 2 (TMGR) as an additional fabrication site for selected Atmel products.

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ATMEGA32A-AUR626
ATMEGA32L-8AUR
ATMEGA32-16AUR
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ATMEGA64-16MU
ATMEGA64L-8MU
ATMEGA64A-AU
ATMEGA64-16AU
ATMEGA64L-8AU
ATMEGA64-16AU0
ATMEGA64A-MN
ATMEGA64A-AN
ATMEGA64A-ANR
ATMEGA64A-MUR
ATMEGA64-16MUR
ATMEGA64L-8MUR
ATMEGA64A-AUR
ATMEGA64-16AUR
ATMEGA64L-8AUR
ATMEGA64-16AURA0
ATTINY261A-MF
ATTINY261A-XU
ATTINY261A-SU
ATTINY261A-PU
ATTINY261A-MU
ATTINY261A-MN
ATTINY261A-MNR
ATTINY261A-XUR
ATTINY261A-SUR
ATTINY261A-MUR
ATTINY261A-MFR
ATTINY261A-MFRA0
ATTINY48-PU
AT42QT20C07-MMU
ATTINY48-MMU
ATTINY48-MMH
ATTINY48-MU
ATTINY48-AU
ATTINY48-AU907
ATTINY48-MMUR
ATTINY48-MMHR
ATTINY48-MUR522
ATTINY48-MUR547
ATTINY48-MUR
ATTINY48-AUR
ATMEGA88A-PU
ATMEGA88PA-PU
ATMEGA88PA-MMH
ATMEGA88A-MMH
ATMEGA88A-MU
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ATMEGA88PA-AU
ATMEGA88A-AU
ATMEGA88PA-AUA6
ATMEGA88PA-AUA5
ATMEGA88PA-PN
ATMEGA88PA-MMN
ATMEGA88PA-MN
ATMEGA88PA-AN
ATMEGA88PA-MMNR
ATMEGA88PA-MNR
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ATMEGA88PA-MURA6
ATMEGA88PA-MURA06
ATMEGA88PA-AUR
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ATMEGA88A-AUR
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ATMEGA168PA-AN
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ATMEGA168PA-ANR
ATMEGA168PA-MMHR
ATMEGA168A-MMHR
ATMEGA168PA-MUR
ATMEGA168A-MUR
ATMEGA168PA-MURA1
ATMEGA168PA-MUR431
ATMEGA168PA-AUR
ATMEGA168A-AUR
ATTINY861A-XU
ATTINY861A-SU
ATTINY861A-SUA0
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ATTINY24A-SSNR
ATTINY24A-CCUR
ATTINY24A-SSUR
ATTINY24A-SSUR880
ATTINY24A-SSURA0
ATTINY24A-SSURB65
ATTINY24A-MMHR
ATTINY24A-MUR
ATTINY24A-MURA0
ATTINY24A-SSFR
ATTINY24A-MM8R
ATTINY24A-MFR
ATTINY461A-XU
ATTINY461A-SU
ATTINY461A-PU
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ATMEGA328P-W-NG
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ATMEGA164PA-MCH
ATMEGA164A-MU
ATMEGA164PA-MU

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ATTINY4313-MMH
ATTINY4313-MU
ATTINY4313-SUR
ATTINY4313-MMHR
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ATTINY20-SSU
ATTINY20-XU
ATTINY20-MMH
AT42QT1050-MMH
ATTINY20-CCUR
ATTINY20-SSURB47
ATTINY20-SSUR
AT42QT1070-SSUR
AT42QT1070-SSUR852
ATTINY20-SSUR704
ATTINY20-SSUR892
ATTINY20-SSUR988
ATTINY20-SSURA01
ATTINY20-SSURA87
ATTINY20-XUR
AT42QT1050-UUR
ATTINY20-UUR
AT42QT1070-MMHR
ATTINY20-MMHR
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ATTINY20-MMHRA0
ATTINY40-XU
AT42QT2120-XU
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AT42QT2120-MMH
ATTINY40-MMH
ATTINY40-XUR

Date: Tuesday, January 21, 2020
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ATTINY841-MMH
ATTINY841-MU
ATTINY841-SSUR
ATTINY841-MMHR
ATTINY841-MUR
ATTINY441-SSU
ATTINY441-MMH
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ATTINY441-MMHR
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ATTINY441-MUR
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ATTINY102F-SSF
ATTINY104-SSF
ATTINY102-SSN
ATTINY102F-SSN
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ATTINY102-SSNR
ATTINY102F-SSNR
ATTINY104-SSNR
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ATTINY102-M7R
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ATTINY102-SSFRA
ATTINY102F-SSFRA
ATTINY104-SSFRA
ATTINY104F-SSFRA
ATTINY102-M8R
ATTINY102F-M8R
ATMEGA32M1-MU
ATMEGA16M1-MU
ATMEGA32M1-AU
ATMEGA16M1-AU
ATMEGA32M1-AUR
ATTINY167-W-NG
ATTINY167-XU
ATTINY167-XU
ATTINY87-XU
ATTINY167-SU
ATTINY167-SU
ATTINY167-MU
ATTINY87-MU
ATTINY167-MMU
ATTINY167-XUR
ATTINY87-XUR
ATTINY87-SUR
ATTINY167-SUR
ATTINY87-MUR
ATTINY167-MUR
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ATTINY167-MMUR
ATTINY167-MMURB20
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ATMEGA32U4-MU
ATMEGA32U4RC-MU
ATMEGA32U4-AU
ATMEGA16U4-AU
ATMEGA32U4RC-AU
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ATMEGA6450A-AUR
ATMEGA6490A-AUR
ATMEGA6490P-AUR
ATMEGA6450P-AUR
KSRA-07HVQF409 - CCB 4031 Initial Notice: Qualification of Microchip Technology Tempe – Fab 2 (TMGR) as an additional fabrication site for selected Atmel products.

ATMEGA649A-MUR
ATMEGA645P-MUR
ATMEGA645A-MUR
ATMEGA649P-MUR
ATMEGA649A-AUR
ATMEGA645A-AUR
ATMEGA645P-AUR
ATMEGA649P-AUR
ATMEGA3250PA-AU
ATMEGA3290A-AU
ATMEGA3250A-AU
ATMEGA3290PA-AU
ATMEGA329A-MU
ATMEGA329PA-MU
ATMEGA325A-MU
ATMEGA325PA-MU
ATMEGA329PA-AU
ATMEGA325A-AU
ATMEGA325PA-AU
ATMEGA329A-AU
ATMEGA325A-MN
ATMEGA325A-AN
ATMEGA325A-MNR
ATMEGA325A-ANR
ATMEGA3250PA-AUR
ATMEGA3290A-AUR
ATMEGA3250A-AUR
ATMEGA3290PA-AUR
ATMEGA329PA-MUR
ATMEGA325A-MUR
ATMEGA325PA-MUR
ATMEGA325PA-AUR
ATMEGA329A-AUR
ATMEGA329PA-AUR
ATMEGA325A-AUR
ATMEGA169PA-MCH
ATMEGA165PA-MU
ATMEGA165A-MU
ATMEGA169PA-MU
ATMEGA169A-MU
ATMEGA165PA-AU
ATMEGA169PA-AU
ATMEGA169A-AU
ATMEGA165A-AU
ATMEGA165PA-MN
ATMEGA169PA-MN
ATMEGA169PA-AN
ATMEGA169PA-MNR
ATMEGA165PA-MNR
KSRA-07HVQF409 - CCB 4031 Initial Notice: Qualification of Microchip Technology Tempe – Fab 2 (TMGR) as an additional fabrication site for selected Atmel products.

Date: Tuesday, January 21, 2020
QUALIFICATION PLAN SUMMARY

PCN #: KSRA-07HVQF409

Date:
November 01, 2019

Qualification of Microchip Technology Tempe – Fab 2 (TMGR) as an additional fabrication site for selected Atmel products.
Purpose: Qualification of Microchip Technology Tempe – Fab 2 (TMGR) as an additional fabrication site for selected Atmel products.

CCB No: 4031

Die Qualification Plan: 3 lots per QCI-39000

<table>
<thead>
<tr>
<th>Test / Evaluation</th>
<th>Test Conditions / Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating (Dynamic) Life</td>
<td>• 150°C for 408 hrs at Vdd max</td>
</tr>
<tr>
<td>High Temp. Retention Bake (DLT)</td>
<td>• 504 hrs @ 175°C.</td>
</tr>
<tr>
<td>High Temperature Operating Life (HTOL)</td>
<td>• 10,000 flash Erase/Write cycles at 85°C</td>
</tr>
<tr>
<td></td>
<td>• 100,000 EEPROM Erase/Write cycles at 85°C</td>
</tr>
<tr>
<td>ESD HBM</td>
<td>• Tested at 500V, 1000V, and 2000V</td>
</tr>
<tr>
<td>Latch-up</td>
<td>• Should meet a minimum of +/- 105mA injection on I/O pins with a clamp of 1.5 x VMax on the positive injection and 0.5 x VMax on the negative injection. Power supply pin shall be stressed at 1.5 x VMax with a 200mA clamp.</td>
</tr>
<tr>
<td>Electrical Validation</td>
<td>• 30 units from one wafer lot. Datalog parameters at room, hot and cold at vcc min/max and frequency min/max. Collection of this data may be done as part of any qualification test’s pre or post functional testing or from a separate group of parts.”</td>
</tr>
</tbody>
</table>
## Package Qualification Plan

<table>
<thead>
<tr>
<th>Misc.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembly site</td>
<td>MMT</td>
</tr>
<tr>
<td>BD Number</td>
<td>A-064764 / A</td>
</tr>
<tr>
<td>MP Code (MPC)</td>
<td>35473YRXBC01</td>
</tr>
<tr>
<td>Part Number (CPN)</td>
<td>ATMega328P-15MZ</td>
</tr>
<tr>
<td>MSL information</td>
<td>MSL-1/260</td>
</tr>
<tr>
<td>Assembly Shipping Media (T/R, Tube/Tray)</td>
<td>T/R</td>
</tr>
<tr>
<td>Base Quantity Multiple (BQM)</td>
<td>5000</td>
</tr>
<tr>
<td>Reliability Site</td>
<td>MPHIL</td>
</tr>
<tr>
<td>CCB No.</td>
<td>4031</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lead-Frame</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddle size</td>
<td>150x150 mils</td>
</tr>
<tr>
<td>Material</td>
<td>C194</td>
</tr>
<tr>
<td>DAP Surface Prep</td>
<td>Bare CU</td>
</tr>
<tr>
<td>Treatment</td>
<td>None</td>
</tr>
<tr>
<td>Process</td>
<td>Saw Singulated</td>
</tr>
<tr>
<td>Part Number</td>
<td>10103202</td>
</tr>
<tr>
<td>Lead Plating</td>
<td>Matte Tin</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Bond Wire</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>CuPdAu</td>
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</table>

<table>
<thead>
<tr>
<th>Die Attach</th>
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<tbody>
<tr>
<td>Part Number</td>
<td>3280</td>
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<tr>
<td>Conductive</td>
<td>Yes</td>
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<table>
<thead>
<tr>
<th>MC</th>
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<tbody>
<tr>
<td>Part Number</td>
<td>G700LTD</td>
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</table>

<table>
<thead>
<tr>
<th>PKG</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PKG Type</td>
<td>VQFN</td>
</tr>
<tr>
<td>Pin/Ball Count</td>
<td>32</td>
</tr>
<tr>
<td>PKG width/size</td>
<td>5x5x0.9mm</td>
</tr>
<tr>
<td>Test Name</td>
<td>Conditions</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Standard Pb-free Solderability</td>
<td>J-STD-002; Perform 8 hour steam aging for Matte tin finish and 1 hour steam aging for NiPdAu finish prior to testing. Standard Pb-free: Matte tin/ NiPdAu finish, SAC solder, wetting temp 245°C for both SMD &amp; through hole packages.</td>
</tr>
<tr>
<td>Backward Solderability</td>
<td>J-STD-002; Perform 8 hours steam aging for Matte tin finish and 1 hour steam aging for NiPdAu finish prior to testing. Backward: Matte tin/ NiPdAu finish, SnPb solder, wetting temp 215°C for SMD.</td>
</tr>
<tr>
<td>Wire Bond Pull - WBP</td>
<td>Mil. Std. 883-2011</td>
</tr>
<tr>
<td>Wire Bond Shear - WBS</td>
<td>CDF-AEC-Q100-001</td>
</tr>
<tr>
<td>Wire Sweep</td>
<td></td>
</tr>
<tr>
<td>Die Shear</td>
<td>Mil. Std. 883-2011</td>
</tr>
<tr>
<td>Physical Dimensions</td>
<td>Measure per JESD22 B100 and B108</td>
</tr>
<tr>
<td>External Visual</td>
<td>Mil. Std. 883-2009/2010</td>
</tr>
<tr>
<td>Preconditioning - Required for surface mount devices</td>
<td>+150°C Bake for 24 hours, moisture loading requirements per MSL level + 3X reflow at peak reflow temperature per Jedec-STD-020E for package type; Electrical test pre and post stress at +25°C MSL1/MSL3 @ 260°C</td>
</tr>
<tr>
<td>Biased HAST</td>
<td>+130°C/85% RH for 96 hrs. Electrical test pre and post stress at +25°C.</td>
</tr>
<tr>
<td>Unbiased HAST</td>
<td>+130°C/85% RH for 96 hrs. Electrical test pre and post stress at +25°C.</td>
</tr>
<tr>
<td>Temp Cycle</td>
<td>-65°C to +150°C for 500 cycles. Electrical test pre and post stress at hot temp; 3 gram force WBP, on 5 devices from 1 lot, test following Temp Cycle stress.</td>
</tr>
</tbody>
</table>