# Product Change Notification / GBNG-20XTKS327

## Date:

03-Nov-2020

## Product Category:

8-bit Microcontrollers

## PCN Type:

Manufacturing Change

## Notification Subject:

CCB 3634.003 Final Notice: Qualification of MMT as an additional assembly site for selected Atmel products available in 32L VQFN (5x5x0.9mm) package with MSL 1 classification.

## Affected CPNs:

GBNG-20XTKS327_Affected_CPN_11032020.pdf
GBNG-20XTKS327_Affected_CPN_11032020.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 MMT as an additional assembly site for selected Atmel products available in 32L VQFN (5x5x0.9mm) package with MSL 1 classification.

**Pre Change:**
For ATMEGA168PBxxx, ATMEGA48PBxxx and ATMEGA88PBxxx device families:
Assembled at ASCL assembly site with MSL 1 classification using Cu bond wire, EN-4900G die attach, 138x138 paddle size.

For ATMEGA1608xxx and ATMEGA808xxx device families:
Assembled at ASCL assembly site with MSL 3 classification using PdCu bond wire, EN-4900G die attach, 138x138 paddle size.

For ATMEGA328PBxxx device family:Assembled at ASCL assembly site with MSL 3 classification using CuPdCu bond wire, EN-4900G die attach, 138x138 paddle size

**Post Change:**
For ATMEGA168PBxxx, ATMEGA48PBxxx and ATMEGA88PBxxx device families:
Assembled at ASCL assembly site with MSL 1 classification using Cu bond wire, EN-4900G die attach, 138x138 paddle size.
**Or**
Assembled at MMT assembly site with MSL 1 classification using CuPdAu bond wire, 3280 die attach, 150x150 paddle size.

For ATMEGA1608xxx, ATMEGA808xxx and ATMEGA328PBxxx device families:
Assembled at MMT assembly site with MSL 1 classification using CuPdAu bond wire, 3280 die attach, 150x150 paddle size.

**Pre and Post Change Summary:**For ATMEGA168PBxxx, ATMEGA48PBxxx and ATMEGA88PBxxx device families:

| | | Pre Change | Post Change | |
|---|---|---|---|---|
| **Assembly Site** | | ASE Group Chung-Li (ASCL) | ASE Group Chung-Li (ASCL) | Microchip Technology Thailand (Branch) (MMT) |
| **MSL Classification** | | MSL 1 | MSL 1 | MSL1 |
| **Wire material** | | Cu | Cu | CuPdAu |
| **Die attach material** | | EN-4900G | EN-4900G | 3280 |
| **Molding compound material** | | G700 | G700 | G700 |
| **Lead frame** | **Material** | C194 | C194 | C194 |
| | **Paddle size** | 138 x138 | 138 x138 | 150x150 |
| | **Design** | Please see attached Pre and Post Change summary. | | |

For ATMEGA1608xxx, ATMEGA808xxx and ATMEGA328PBxxx device families:

| | | Pre Change | | Post Change |
|---|---|---|---|---|
| **Assembly Site** | | ASE Group Chung-Li (ASCL) | | Microchip Technology Thailand (Branch) (MMT) |
| **MSL Classification** | | MSL 3 | | MSL1 |
| **Wire material** | | PdCu Note 1 | CuPdAu Note 2 | CuPdAu |
| **Die attach material** | | EN-4900G | | 3280 |
| **Molding compound material** | | G700 | | G700 |
| **Lead frame** | **Material** | C194 | | C194 |
| | **Paddle size** | 138 x138 | | 150x150 |
| | **Design** | Please see attached Pre and Post Change summary. | | |

Note 1: Applicable with ATMEGA1608xxx and ATMEGA808xxx device families.
Note 2: Applicable with ATMEGA328PBxxx device family.

**Impacts to Data Sheet:**
None

**Change Impact:**
None

**Reason for Change:**
To improve productivity and on-time delivery performance by qualify MMT as an additional assembly site.

**Change Implementation Status:**
In Progress

**Estimated First Ship Date:** November 15, 2020 (date code: 2047)

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

**Time Table Summary:**

| | **November 2020** | | | | |
|---|---|---|---|---|---|
| Workweek | 45 | 46 | 47 | 48 | 49 |
| 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:**
**November 3, 2020:** Issued final notification. Attached the Qualification Report. Provided estimated first ship date to be on November 15, 2020.

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

## Attachments:

PCN_GBNG-20XTKS327_Pre and Post Change Summary.pdf
PCN_GBNG-20XTKS327_Qual_Report.pdf

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

**Terms and Conditions:**

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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)

ATMEGA168PB-MU
ATMEGA168PB-MN
ATMEGA168PB-MNR
ATMEGA168PB-MUR
ATMEGA88PB-MU
ATMEGA48PB-MU
ATMEGA88PB-MN
ATMEGA48PB-MN
ATMEGA88PB-MNR
ATMEGA48PB-MNR
ATMEGA88PB-MUR
ATMEGA48PB-MUR
ATMEGA88PB-MURB75
ATMEGA808-MF
ATMEGA1608-MF
ATMEGA1608-MU
ATMEGA808-MU
ATMEGA1608-MUR
ATMEGA808-MUR
ATMEGA1608-MFR
ATMEGA808-MFR
ATMEGA328PB-MU
ATMEGA328PB-MN
ATMEGA328PB-MNR
ATMEGA328PB-MUR

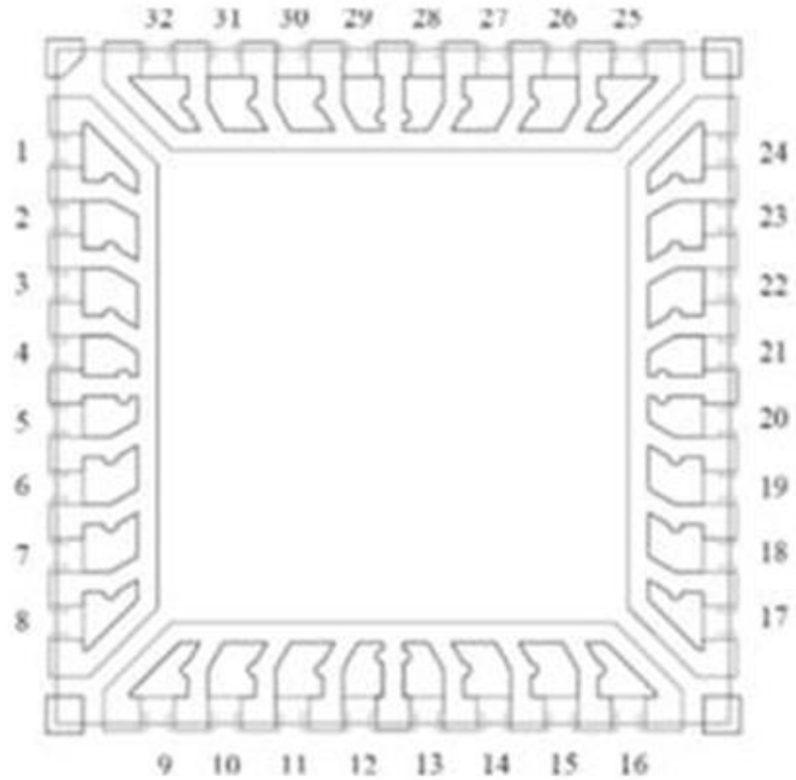
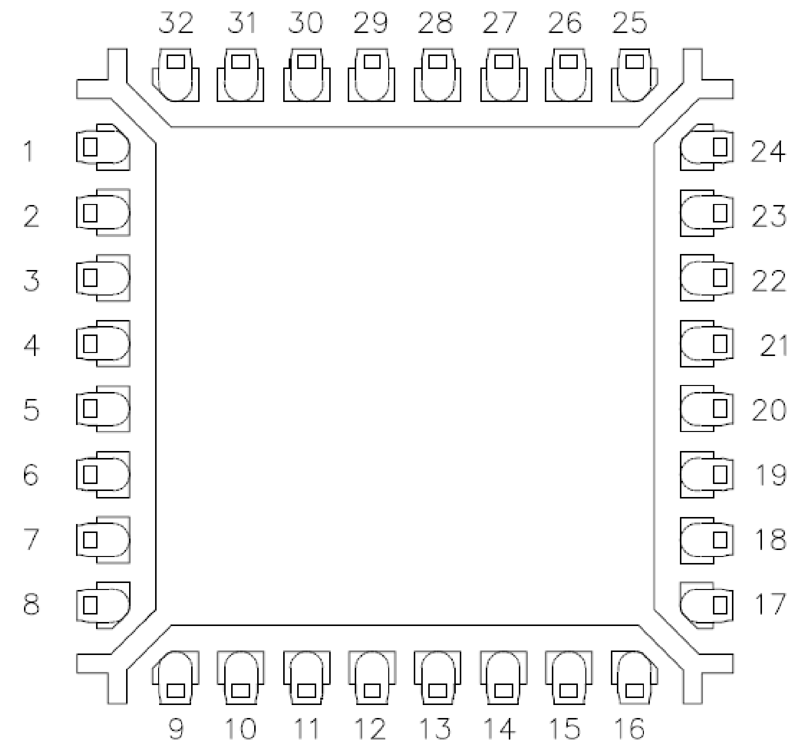
# PCN #: GBNG-20XTKS327

# CCB 3634.003
# PRE AND POST CHANGE SUMMARY

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

**Qualification of MMT as an additional assembly site for selected Atmel products available in 32L VQFN (5x5x0.9mm) package with MSL 1 classification.**

# Lead frame Comparison

| ASCL | MMT |
| --- | --- |
|   |   |



Microchip

**QUALIFICATION REPORT SUMMARY**
RELIABILITY LABORATORY

**PCN #: GBNG-20XTKS327**

**Date**
**October 24, 2019**

**Qualification of MMT as an additional assembly site for selected Atmel products available in 32L VQFN (5x5x0.9mm) package with MSL 1 classification. This is Q006 Grade 1 qualification.**

# PACKAGE QUALIFICATION REPORT

**Purpose: Qualification of MMT as an additional assembly site for selected Atmel products available in 32L VQFN (5x5x0.9mm) package with MSL 1 classification. This is Q006 Grade 1 qualification.**

| | | |
|---|---|---|
| **Misc.** | **Assembly site** | MMT |
| | **BD Number** | BDM-001981 |
| | **MP Code (MPC)** | 59B20YRXBA01 |
| | **Part Number (CPN)** | ATMEGA4808-MF |
| | **Qual ID** | QTP3731 Rev. A |
| | **CCB No.** | 3634 and 3634.003 |
| **Lead-Frame** | **Paddle size** | 150x150 |
| | **Material** | C194 |
| | **Surface** | CU |
| | **Treatment** | BOT with Bare Cu on Paddle |
| | **Process** | Etching |
| | **Lead-lock** | YES |
| | **Part Number** | 10103202 |
| | **Lead Plating** | Matte Tin |
| | **Strip Size** | 70x250 |
| | **Strip Density** | 440 |
| **Bond Wire** | **Material** | CuPdAu |
| **Die Attach** | **Part Number** | 3280 |
| | **Conductive** | Yes |
| **Mold Compound** | **Part Number** | G700 |
| **PKG** | **PKG Type** | VQFN |
| | **Pin/Ball Count** | 32 |
| | **PKG width/size** | 5 x 5 mm |
| | **MSL** | 1 |

# PACKAGE QUALIFICATION REPORT

## Manufacturing Information:

| Assembly Lot No. |
| --- |
| MMT-200101627.000 |
| MMT-200101628.000 |
| MMT-200101629.000 |

**Result** Pass Fail ____________________

Mega4809 TQFP48 59B20 Fab4 MMT Cu Wire is qualified **AECQ006 Grade 1** and Passed Moisture/ Reflow Sensitivity Classification Level 1 at 260°C reflow temperature per IPC/JEDEC J-STD-020D standard. No delaminations were observed on all the units.

# 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<br>System: Magnum 08 | JESD22-A113 | 693(0) | 0/693 | Pass | |
| | Bake 150°C, 24 hrs<br>System: HERAEUS | | 693(0) | 0/693 | Pass | |
| | 85°C/85%RH Moisture Soak 168 hrs.<br>System: Climats Excal 5423-HE | IPC/JEDEC J-STD-020E | 693(0) | 0/693 | Pass | |
| | 3x Convection-Reflow 265°C max | | 693(0) | 693(0) | Pass | |
| | System: Mancorp CR.5000F | | 693(0) | 693(0) | Pass | |
| | **Electrical Test :**+25°C<br>System: Magnum 08 | 231 units of 3 Lots | 693(0) | 0/693 | Pass | |

| Test Number (Reference) | Test Condition | Standard / Method | Qty. (Acc.) | Def/SS | Result | Remarks |
|---|---|---|---|---|---|---|
| **Temp Cycle**<br>Parts had been pre-conditioned at 260°C | **Stress Condition:** (Standard)<br>-65°C to +150°C, 500 Cycles<br>System : VOTSCH VT 7012 S2 | JESD22-A104 | 231(0) | | | |
| | **Electrical Test :**+125°C<br>System: Magnum 08 | 77 units of 3 Lots | 231(0) | 0/231 | Pass | |
| | **Bond Strength:**<br>WBP/WSP (Cpk ≥ 1.67)<br>Bond Shear (Cpk≥1.67) | | 15(0) | 0/15 | Pass | |
| | **Stress Condition:** (Standard)<br>-65°C to +150°C, 1000 Cycles<br>System : VOTSCH VT 7012 S2 | | 213(0) | | | |
| | **Electrical Test :**+125°C<br>System: Magnum 08 | | 213(0) | 0/213 | Pass | |
| | WBP/WSP (Cpk ≥ 1.67)<br>Bond Shear (Cpk≥1.67) | | | | | |

# PACKAGE QUALIFICATION REPORT

| Test Number (Reference) | Test Condition | Standard/ Method | Qty. (Acc.) | Def/SS. | Result | Remarks |
|---|---|---|---|---|---|---|
| **UNBIASED-HAST**<br><br>Parts had been pre-conditioned at 260°C | **Stress Condition:** (Standard)<br>+130°C/85%RH, 96 hrs.<br>System: HIRAYAMA HASTEST PC-422R8 | JESD22-A118 | 231(0) | | | |
| | **Electrical Test:**+25°C<br>System: Magnum 08 | 77 units of 3 Lots | 231(0) | 0/231 | Pass | |
| | **Stress Condition:** (Standard)<br>+130°C/85%RH,192 hrs.<br>System: HIRAYAMA HASTEST PC-422R8 | | 231(0) | | | |
| | **Electrical Test :**+25°C<br>System: Magnum 08 | | 231(0) | 0/231 | Pass | |
| **Biased HAST**<br><br>Parts had been pre-conditioned at 260°C | **Stress Condition:** (Standard)<br>+130°C/85%RH, 96 hrs. **Bias Volt:** 5.5 Volts<br>System: HIRAYAMA HASTEST PC-422R8 | JESD22-A110 | 231(0) | | | |
| | **Electrical Test :**+25°C , +125°C<br>System: Magnum 08 | 77 units of 3 Lots | 231(0) | 0/231 | Pass | |
| | **Bond Strength:**<br>WBP/WSP (Cpk ≥ 1.67)<br>Bond Shear (Cpk≥1.67) | | 15(0) | 0/15 | Pass | |
| | **Stress Condition:** (Standard)<br>+130°C/85%RH, 192 hrs. **Bias Volt:** 5.5 Volts<br>System: HIRAYAMA HASTEST PC-422R8 | | 213(0) | | | |
| | **Electrical Test :**+25°C , +125°C<br>System: Magnum 08 | | 213(0) | 0/213 | Pass | |
| | **Bond Strength:**<br>WBP/WSP (Cpk ≥ 1.67)<br>Bond Shear (Cpk≥1.67) | | 15(0) | 0/15 | Pass | |

# PACKAGE QUALIFICATION REPORT

| Test Number (Reference) | Test Condition | Standard/ Method | Qty. (Acc.) | Def/SS. | Result | Remarks |
|---|---|---|---|---|---|---|
| **High Temperature Storage Life** | **Stress Condition:**<br>Bake 175°C, 500 hrs<br>System: HERAEUS | JESD22-A103<br>45 units of 3 Lot | 135(0) | | | |
| | **Electrical Test :**+25°C , +125°C<br>System: Magnum 08 | | 135(0) | 0/135 | Pass | |
| | **Stress Condition:**<br>Bake 175°C, 1000 hrs<br>System: HERAEUS | | 132(0) | | | |
| | **Electrical Test :**+25°C , +125°C<br>System: Magnum 08 | | 132(0) | 0/132 | Pass | |
| **Bond Strength**<br>**Data Assembly** | WBP/WSP ( Cpk ≥1.67) : **From 30 wires for minimum of 5 units** | M2011.8<br>MIL-STD-883 | | 0/30 | Pass | |
| | Bond Shear ( Cpk ≥1.67) : **From 30 bonds for minimum of 5 units** | | | 0/30 | Pass | |