

Product Change Notification - GBNG-11DXBN660

Date: 16 Aug 2017
Product Category: Interface- Serial Peripherals
Notification subject: CCB 2770 Initial Notice: Qualification of CuPdAu bond wire and C194 lead frame material in selected products of the 150K wafer technology available in 20L QFN package at NSEB assembly site.
Notification text: **PCN Status:** Final 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 palladium coated copper with gold flash (CuPdAu) bond wire and C194 lead frame material in selected products of the 150K wafer technology available in 20L QFN package at NSEB assembly site.

Pre Change:
 Using gold (Au) bond wire and EFTEC-64T lead frame material.

Post Change:
 Using palladium coated copper with gold flash (CuPdAu) bond wire and C194 lead frame material.

Pre and Post Change Summary:

| | Pre Change | Post Change |
|----------------------------------|--------------------|--------------------|
| Assembly Site | NSEB assembly site | NSEB assembly site |
| Wire material | Au wire | CuPdAu wire |
| Die attach material | 8600 | 8600 |
| Molding compound material | G700LTD | G700LTD |
| Lead frame material | EFTEC-64T | C194 |

Impacts to Data Sheet:
 None

Change Impact:
 None

Reason for Change:
 To improve manufacturability by qualifying palladium coated copper with gold flash (CuPdAu) bond wire and C194 lead frame material at NSEB assembly site.

Change Implementation Status:
 In Progress

Estimated First Ship Date:
 September 16, 2017 (1737)

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

Time Table Summary:

| | October 2016 | | | | -> | August 2017 | | | | | September 2017 | | | |
|-------------------------------|--------------|----|----|----|----|-------------|----|----|----|----|----------------|----|----|----|
| | 41 | 42 | 43 | 44 | | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| Workweek | | | | | | | | | | | | | | |
| Initial PCN Issue Date | | | X | | | | | | | | | | | |
| 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:
October 20, 2016: Issued initial notification.
August 16, 2017: Issued final notification. Attached the Qualification Report. Provided estimated first ship date on September 16, 2017

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_GBNG-11DXBN660_Affected_CPN.pdf](#)
[PCN_GBNG-11DXBN660_Qual Report.pdf](#)
[PCN_GBNG-11DXBN660_Affected_CPN.xlsx](#)

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

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GBNG-11DXBN660 - CCB 2770 Final Notice: Qualification of CuPdAu bond wire and C194 lead frame material in selected products of the 150K wafer technology available in 20L QFN package at NSEB assembly site.

Affected Catalog Part Number (CPN)

| PCN_GBNG-11DXBN660 |
|---------------------------|
| CATALOG_PART_NBR |
| MCP23008-E/ML |
| MCP23008T-E/ML |
| MCP23S08-E/ML |
| MCP23S08T-E/ML |



MICROCHIP

QUALIFICATION REPORT SUMMARY
RELIABILITY LABORATORY

PCN #: GBNG-11DXBN660

Date
May 25, 2017

Qualification of palladium coated copper with gold flash (CuPdAu) bond wire and C194 lead frame material in selected products of the 150K wafer technology available in 20L QFN package at NSEB assembly site.



MICROCHIP PACKAGE QUALIFICATION REPORT

| | |
|----------------------------|--|
| Purpose | Qualification of palladium coated copper with gold flash (CuPdAu) bond wire and C194 lead frame material in selected products of the 150K wafer technology available in 20L QFN package at NSEB assembly site. |
| CN | ES094303 |
| QUAL ID | Q17038 |
| MP CODE | C5BQ14G4XA00 |
| Part No. | MCP23008-E/ML |
| Bonding No. | BDM-001185 Rev. A |
| CCB No. | 2770 |
| <u>Package</u> | |
| Type | 20L QFN |
| Package size | 4x4x0.9 mm |
| Die thickness | 11 mils |
| Die size | 47.20 x 55.60 mils |
| <u>Lead Frame</u> | |
| Paddle size | 114 x 114 mils |
| Material | C194-FH |
| Surface | Ag on lead + Ag ring |
| Process | Etched |
| Lead Lock | Yes |
| Part Number | FR0995 |
| Treatment | In-house roughening |
| <u>Material</u> | |
| Epoxy | 8600 |
| Wire | CuPdAu wire |
| Mold Compound | G700LTD |
| Plating Composition | Matte Tin |



MICROCHIP PACKAGE QUALIFICATION REPORT

Manufacturing Information

| Assembly Lot No. | Wafer Lot No. | Date Code |
|-------------------|-------------------|-----------|
| NSEB174100377.000 | TMPE216205905.210 | 1701UG0 |
| NSEB174100378.000 | TMPE216205905.210 | 1701UG1 |
| NSEB174200004.000 | TMPE216205905.210 | 1702UEY |

Result

Pass Fail _____

20L QFN (4x4x0.9) assembled by UTL (NSEB) pass reliability test per QCI-39000. This package was qualified the Moisture/Reflow Sensitivity Classification Level 1 at 260°C reflow temperature per IPC/JEDEC J-STD-020D standard.

PACKAGE QUALIFICATION REPORT

| Test Number (Reference) | Test Condition | Standard/ Method | Qty. (Acc.) | Def/SS | Result | Remarks |
|---|---|---------------------------|----------------|--------|--------|---------|
| Moisture/Reflow Sensitivity Classification Test (At MSL Level 1) | 85°C/ 85%RH Moisture Soak 168 hrs. System: TABAI ESPEC Model PR-3SPH 3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243 (IPC/JEDEC J-STD-020D) | IPC/JEDEC C J-STD-020D | 198 | 0/198 | Pass | |

| | | | | | | |
|---|--|-------------|--------|-------|------|--------------|
| <u>Precondition Prior Perform Reliability Tests (At MSL Level 1)</u> | Electrical Test :+25°C and 85°C System: J750 | JESD22-A113 | 693(0) | 693 | Pass | Good Devices |
| | Bake 150°C, 24 hrs System: CHINEE | | | 693 | | |
| | 85°C/85%RH Moisture Soak 168 hrs. System: TABAI ESPEC Model PR-3SPH | | | 693 | | |
| | 3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243 | | | 693 | | |
| | Electrical Test :+25°C and 85°C System: J750 | | | 0/693 | | |

PACKAGE QUALIFICATION REPORT

| Test Number (Reference) | Test Condition | Standard/ Method | Qty. (Acc.) | Def/SS. | Result | Remarks |
|--------------------------------------|---|----------------------------|----------------|--------------|--------|---|
| Temp Cycle | Stress Condition: (Standard) -65°C to +150°C, 500 Cycles System : TABAI ESPEC TSA-70H Electrical Test: + 85°C System: J750 | JESD22-A104 | 231(0) | 231 0/231 | Pass | Parts had been pre-conditioned at 260°C |
| UNBIASED-HAST | Stress Condition: (Standard) +130°C/85%RH, 96 hrs. System: HAST 6000X Electrical Test: +25°C System: J750 | JESD22-A118 | 231(0) | 231 0/231 | Pass | Parts had been pre-conditioned at 260°C 77 units / lot |
| HAST | Stress Condition: (Standard) +130°C/85%RH, 96 hrs. Volt: 5.0 Volts System: HAST 6000X Electrical Test: + 25°C and 85°C System: J750 | Bias JESD22-A110 | 231(0) | 231 0/231 | Pass | Parts had been pre-conditioned at 260°C 77 units / lot |
| High Temperature Storage Life | Stress Condition: Bake 175°C, 504 hrs System: SHEL LAB Electrical Test : +25°C and 85°C System: J750 | JESD22-A103 | 45(0) | 45 0/45 | Pass | 45 units |
| Bond Strength | Wire Pull (>7.0 grams) | M2011 | 30 (0) Wires | 0/30 | Pass | |
| Data Assembly | Bond Shear (>15.00 grams) | JESD22-B116 | 30 (0) bonds | 0/30 | Pass | |