

# Product Change Notification - IIRA-15EPQR322

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**Date:** 10 Sep 2014

**Product Category:** Analog (Thermal, Power Management & Safety)

**Notification subject:** CCB 1402.01 Final Notice: Qualification of C194 lead-frame in 3L SOT-23A package at LPI assembly site.

**Notification text:**

**PCN Status:**

Final notification

**Microchip Parts Affected:**

See attachments of affected catalog part numbers (CPN) labeled as...

PCN\_IIRA-15EPQR322\_Affected\_CPN.xls

PCN\_IIRA-15EPQR322\_Affected\_CPN.pdf

**Description of Change:**

Qualification of C194 lead-frame in 3L SOT-23A package at LPI assembly site.

**Impacts to Data Sheet:**

None

**Reason for Change:**

To improve on time delivery performance by qualifying an additional lead-frame material (C194).

**Change Implementation Status:**

Complete

**Estimated First Ship Date:**

October 10, 2014 (date code: 1441)

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

**Markings to Distinguish Revised from Unrevised Devices:**

Traceability code

**Revision History:**

**April 28, 2014:** Issued initial notification.

**September 10, 2014:** Issued final notification. Attached the Qualification Report. Revised the estimated first ship date from July 15, 2014 to October 10, 2014.

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\\_IIRA-15EPQR322\\_Qual Report.pdf](#) [PCN\\_IIRA-15EPQR322\\_Affected CPN.pdf](#) [PCN\\_IIRA-15EPQR322\\_Affected CPN.xls](#)

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

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|                       |
|-----------------------|
| PCN_IIRA-15EPQR322    |
| CATALOG_PART_NBR      |
| MCP1702T-1202E/CB     |
| MCP1702T-1502E/CB     |
| MCP1702T-1802E/CB     |
| MCP1702T-2102E/CB     |
| MCP1702T-2202E/CB     |
| MCP1702T-2302E/CB     |
| MCP1702T-2502E/CB     |
| MCP1702T-2702E/CB     |
| MCP1702T-2802E/CB     |
| MCP1702T-3002E/CB     |
| MCP1702T-3302E/CB     |
| MCP1702T-3602E/CB     |
| MCP1702T-4002E/CB     |
| MCP1702T-4101E/CB     |
| MCP1702T-4502E/CB     |
| MCP1702T-4702E/CB     |
| MCP1702T-5002E/CB     |
| MCP1702T-5002E/CBV07  |
| MCP1702T-5102E/CB     |
| MCP1703AT-1202E/CB    |
| MCP1703AT-1502E/CB    |
| MCP1703AT-1802E/CB    |
| MCP1703AT-2052E/CB    |
| MCP1703AT-2052E/CBV02 |
| MCP1703AT-2502E/CB    |
| MCP1703AT-2502E/CBV03 |
| MCP1703AT-2802E/CB    |
| MCP1703AT-3002E/CB    |
| MCP1703AT-3302E/CB    |
| MCP1703AT-4002E/CB    |
| MCP1703AT-5001E/CB    |
| MCP1703AT-5002E/CB    |
| MCP1703T-1202E/CB     |
| MCP1703T-1502E/CB     |
| MCP1703T-1502E/CBVAO  |
| MCP1703T-1802E/CB     |
| MCP1703T-2402E/CB     |
| MCP1703T-2502E/CB     |
| MCP1703T-2502E/CBV04  |
| MCP1703T-2802E/CB     |
| MCP1703T-3002E/CB     |
| MCP1703T-3002E/CBVAO  |
| MCP1703T-3302E/CB     |
| MCP1703T-3302E/CBV05  |
| MCP1703T-3602E/CB     |

|                      |
|----------------------|
| MCP1703T-4002E/CB    |
| MCP1703T-4502E/CB    |
| MCP1703T-5001E/CB    |
| MCP1703T-5002E/CB    |
| MCP1703T-5002E/CBV01 |
| MCP1703T-5002E/CBV06 |
| MCP1754ST-1802E/CB   |
| MCP1754ST-3302E/CB   |
| MCP1754ST-5002E/CB   |



**QUALIFICATION REPORT**  
RELIABILITY LABORATORY

**PCN #: IIRA-15EPQR322**

**Date**  
**August 14, 2014**

**Qualification of C194 lead-frame in 3L SOT-23A package at  
LPI assembly site**

**Distribution**

Somnuek T.  
V.Danginis  
Wichai K.  
Mitch R.  
Irina K.  
Sunisa K.  
Marco H.  
Supakorn L.  
Chaweng W.  
Gerry O.

Rangsun K.  
A. Navarro  
J. Fernandez  
Jeffrey J.  
Maitree Y.  
Rhoderick O.  
Fannie L.  
Ponpitug Y.  
Chalermpon P.  
Arnel N.



## **MICROCHIP**

### **PACKAGE QUALIFICATION REPORT**

|                    |                                                                             |
|--------------------|-----------------------------------------------------------------------------|
| <b>Purpose</b>     | Qualification of C194 lead-frame in 3L SOT-23A package at LPI assembly site |
| <b>CN</b>          | BC140753                                                                    |
| <b>QUAL ID</b>     | Q14049                                                                      |
| <b>MP CODE</b>     | HBAA1YM7XA12                                                                |
| <b>Part No.</b>    | MCP1702T-1202E/CB                                                           |
| <b>Bonding No.</b> | BDE-002639 Rev. 01                                                          |
| <b>CCB No.:</b>    | 1402.01                                                                     |

#### **Package**

|                      |                  |
|----------------------|------------------|
| <b>Type</b>          | 3L SOT-23A       |
| <b>Die thickness</b> | 8 mils           |
| <b>Die size</b>      | 46.5 x 41.5 mils |

#### **Lead Frame**

|                    |              |
|--------------------|--------------|
| <b>Paddle size</b> | 59 x 47 mils |
| <b>Material</b>    | C194         |
| <b>Surface</b>     | bare Cu      |
| <b>Process</b>     | Stamped      |
| <b>Lead Lock</b>   | No           |
| <b>Part Number</b> | 9200311      |
| <b>Treatment</b>   | none         |

#### **Wire:**

|                 |    |
|-----------------|----|
| <b>Material</b> | Au |
|-----------------|----|

#### **Backside Film:**

|                     |        |
|---------------------|--------|
| <b>Part Number</b>  | 8006NS |
| <b>Manufacturer</b> | Henkel |
| <b>Conductive</b>   | No     |

#### **Die attach epoxy:**

|                     |        |
|---------------------|--------|
| <b>Part Number</b>  | 84-3J  |
| <b>Manufacturer</b> | Henkel |
| <b>Conductive</b>   | No     |

#### **Mold Compound:**

|                           |           |
|---------------------------|-----------|
| <b>Part Number</b>        | G600      |
| <b>Manufacturer</b>       | Sumitomo  |
| <b><u>Lead finish</u></b> | Matte tin |



## MICROCHIP PACKAGE QUALIFICATION REPORT

### Manufacturing Information

| Assembly Lot No. | Wafer Lot No.     | Date Code |
|------------------|-------------------|-----------|
| LPI-15050062     | TMPE214128875.120 | 1418YRY   |
| LPI-15050063     | TMPE214128875.120 | 1418YS1   |
| LPI-15050064     | TMPE214128875.120 | 1418YS4   |

**Result** ☒ Pass ☐ Fail ☐ \_\_\_\_\_

3L SOT-23A assembled by LPI 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.

**Prepared By:**  **Date:** August 14, 2014 (Sr. Reliability Engineer)

(Mr. Udom Suksansakul)

**Approved By:**  **Date:** August 14, 2014 (Reliability Manager)

(Mr. Somnuek Thongprasert)

# PACKAGE QUALIFICATION REPORT

| Test Number<br>(Reference)                                                              | Test Condition                                                                                                                                                              | Standard/<br>Method           | Qty.<br>(Acc.) | Def/SS | Result | Remarks |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------|--------|--------|---------|
| <b>Moisture/Reflow<br/>Sensitivity<br/>Classification<br/>Test (At MSL<br/>Level 1)</b> | 85°C/ 85%RH Moisture Soak 168 hrs.<br>System: TABAI ESPEC Model PR-3SPH<br>3x Convection-Reflow 265°C max<br>System: Vitronics Soltec MR1243<br><br>( IPC/JEDEC J-STD-020D) | IPC/JEDEC<br>C J-STD-<br>020D | 135            | 0/135  | Pass   |         |

|                                                                                         |                                                                        |                 |        |       |      |                 |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------|--------|-------|------|-----------------|
| <b><u>Precondition<br/>Prior Perform<br/>Reliability Tests<br/>(At MSL Level 1)</u></b> | <b>Electrical Test</b> :+25°C and 125°C<br>System: TTS                 | JESD22-<br>A113 | 693(0) | 693   |      | Good<br>Devices |
|                                                                                         | Bake 150°C, 24 hrs.<br>System: CHINEE                                  |                 |        | 693   |      |                 |
|                                                                                         | 85°C/85%RH Moisture Soak 168 hrs.<br>System: TABAI ESPEC Model PR-3SPH |                 |        | 693   |      |                 |
|                                                                                         | 3x Convection-Reflow 265°C max<br>System: Vitronics Soltec MR1243      |                 |        | 693   |      |                 |
|                                                                                         | <b>Electrical Test</b> :+25°C and 125°C<br>System: TTS                 |                 |        | 0/693 | Pass |                 |

## PACKAGE QUALIFICATION REPORT

| Test Number<br>(Reference)           | Test Condition                                                                                                                                               | Standard/<br>Method | Qty.<br>(Acc.) | Def/SS.      | Result | Remarks                                                   |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------|--------------|--------|-----------------------------------------------------------|
| <b>Temp Cycle</b>                    | <b>Stress Condition:</b><br>-65°C to +150°C, 500 Cycles<br>System : TABAI ESPEC TSA-70H<br><b>Electrical Test:</b> + 125°C<br>System: TTS                    | JESD22-A104         | 231(0)         | 231<br>0/231 | Pass   | Parts had been pre-conditioned at 260°C<br>77 units / lot |
| <b>UNBIASED-HAST</b>                 | <b>Stress Condition:</b><br>+130°C/85%RH, 96 hrs.<br>System: HAST 6000X<br><b>Electrical Test:</b> +25°C<br>System: TTS                                      | JESD22-A118         | 231(0)         | 231<br>0/231 | Pass   | Parts had been pre-conditioned at 260°C<br>77 units / lot |
| <b>HAST</b>                          | <b>Stress Condition:</b><br>+130°C/85%RH, 96 hrs. <b>Bias Volt:</b> 16 Volts<br>System: HAST 6000X<br><b>Electrical Test:</b> +25°C and 125°C<br>System: TTS | JESD22-A110         | 231(0)         | 231<br>0/231 | Pass   | Parts had been pre-conditioned at 260°C<br>77 units / lot |
| <b>High Temperature Storage Life</b> | <b>Stress Condition:</b><br>Bake 175°C, 504 hrs.<br>System: SHEL LAB<br><b>Electrical Test :</b> +25°C and 125°C<br>System: TTS                              | JESD22-A103         | 45(0)          | 45<br>0/45   | Pass   | 45 units                                                  |

## PACKAGE QUALIFICATION REPORT

| Test Number<br>(Reference)                | Test Condition                                                                                                                                                                                                     | Standard/<br>Method | Qty.<br>(Acc.)  | Def/SS.                  | Result | Remarks       |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|--------------------------|--------|---------------|
| <b>Solderability</b><br><b>Temp 215°C</b> | <b>Steam Aging:</b> Temp 93°C,8Hrs<br>System: SAS-3000<br>Solder Dipping: Solder Temp.215°C<br>Solder material: SnPb Sn63,Pb37<br>System: ERSA RA 2200D<br>Visual Inspection: External Visual Inspection           | JESD22B-102E        | 22 (0)          | 22<br><br>22<br><br>0/22 | Pass   |               |
| <b>Solderability</b><br><b>Temp 245°C</b> | <b>Steam Aging:</b> Temp 93°C,8Hrs<br>System: SAS-3000<br>Solder Dipping:Solder Temp.245°C<br>Solder material:Pb Free Sn 95.5Ag3.9 Cu0.6<br>System: ERSA RA 2200D<br>Visual Inspection: External Visual Inspection | JESD22B-102E        | 22 (0)          | 22<br><br>22<br><br>0/22 | Pass   |               |
| <b>Bond Line Thickness</b>                | Bond Line Thickness                                                                                                                                                                                                | -                   | 15(0)           | 15(0)                    | Pass   | 5 units / lot |
| <b>Physical Dimensions</b>                | Physical Dimension,<br>30 units from 1 lot                                                                                                                                                                         | JESD22-B100/B108    | 30(0)<br>Units  | 0/30                     | Pass   |               |
| <b>Bond Strength Data Assembly</b>        | Wire Pull (> 4.0 grams)                                                                                                                                                                                            | M2011               | 30 (0)<br>Wires | 0/30                     | Pass   |               |
|                                           | Bond Shear (18.00 grams)                                                                                                                                                                                           | JESD22-B116         | 30 (0)<br>bonds | 0/30                     | Pass   |               |