



## Product Change Notification / ASER-28RAPG851

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**Date:**

10-Jan-2023

**Product Category:**

Power Management - System Supervisors/Voltage Detectors

**PCN Type:**

Manufacturing Change

**Notification Subject:**

CCB 5128 Final Notice: Qualification of a new lead frame design and G700 as a new mold compound material for selected MIC277xxx device family available in 5L SOT-23 package assembled at STAR assembly site.

**Affected CPNs:**

[ASER-28RAPG851\\_Affected\\_CPN\\_01102023.pdf](#)

[ASER-28RAPG851\\_Affected\\_CPN\\_01102023.csv](#)

**Notification Text:**

**PCN Status:**Final Notification

**PCN Type:**Manufacturing Change

**Microchip Parts Affected:**Please open one of the files found in the Affected CPNs section.

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

**Description of Change:**Qualification of a new lead frame design and G700 as a new mold compound material for selected MIC277xxx device family available in 5L SOT-23 package assembled at STAR assembly site.

**Pre and Post Change Summary:**

|                              | Pre Change                                                               | Post Change                                                              |
|------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Assembly Site                | Stars Microelectronics<br>(Thailand) Public Company<br>Limited<br>(STAR) | Stars Microelectronics<br>(Thailand) Public Company<br>Limited<br>(STAR) |
| Wire Material                | Au                                                                       | Au                                                                       |
| Die Attach Material          | 84-1LMISR4                                                               | 84-1LMISR4                                                               |
| Molding Compound<br>Material | G600                                                                     | G700                                                                     |
| Lead-Frame Material          | C194                                                                     | C194                                                                     |
| DAP Surface Prep             | NiPdAu with Roughened                                                    | NiPdAuAg with Roughened                                                  |
|                              | See Pre and Post Change Summary for comparison.                          |                                                                          |

**Impacts to Data Sheet:**None

**Change Impact:**None

**Reason for Change:**To improve productivity by qualifying a new lead frame design and G700 mold compound.

**Change Implementation Status:**In Progress

**Estimated First Ship Date:**February 10, 2023 (date code: 2306)

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

**Time Table Summary:**

|                          | May 2022 |        |        |        |        | > | January 2023 |   |   |   |   | February 2023 |   |   |   |
|--------------------------|----------|--------|--------|--------|--------|---|--------------|---|---|---|---|---------------|---|---|---|
| Workweek                 | 1<br>9   | 2<br>0 | 2<br>1 | 2<br>2 | 2<br>3 |   | 1            | 2 | 3 | 4 | 5 | 6             | 7 | 8 | 9 |
| Initial PCN Issue Date   | x        |        |        |        |        |   |              |   |   |   |   |               |   |   |   |
| Qual Report Availability |          |        |        |        |        |   |              | x |   |   |   |               |   |   |   |
| Final PCN Issue Date     |          |        |        |        |        |   |              | x |   |   |   |               |   |   |   |
| Estimated Implementation |          |        |        |        |        |   |              |   |   |   |   | x             |   |   |   |

|      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Date |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

**Method to Identify Change:**Traceability code

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

**Revision History:**May 3, 2022: Issued initial notification.

January 10, 2023: Issued final notification. Attached the Qualification Report. Provided estimated first ship date to be on February 10, 2023.

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

## Attachments:

[PCN ASER-28RAPG851\\_Qual Report.pdf](#)

[PCN\\_ASER-28RAPG851\\_Pre and Post Change Summary.pdf](#)

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

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Affected Catalog Part Numbers (CPN)

MIC2774H-17YM5-TR  
MIC2774H-22YM5-TR  
MIC2774H-25YM5-TR  
MIC2774H-28YM5-TR  
MIC2774H-29YM5-TR  
MIC2774H-44YM5-TR  
MIC2774L-17YM5-TR  
MIC2774L-22YM5-TR  
MIC2774L-23YM5-TR  
MIC2774L-25YM5-TR  
MIC2774L-28YM5-TR  
MIC2774L-29YM5-TR  
MIC2774L-31YM5-TR  
MIC2774L-44YM5-TR  
MIC2774L-46YM5-TR  
MIC2774N-17YM5-TR  
MIC2774N-22YM5-TR  
MIC2774N-23YM5-TR  
MIC2774N-25YM5-TR  
MIC2774N-28YM5-TR  
MIC2774N-29YM5-TR  
MIC2774N-31YM5-TR  
MIC2774N-44YM5-TR  
MIC2775-17YM5-TR  
MIC2775-22YM5-TR  
MIC2775-23YM5-TR  
MIC2775-25YM5-TR  
MIC2775-26YM5-TR  
MIC2775-28YM5-TR  
MIC2775-29YM5-TR  
MIC2775-31YM5-TR  
MIC2775-44YM5-TR  
MIC2775-46YM5-TR  
MIC2776L-YM5-TR  
MIC2776N-YM5-TR  
MIC2777-17YM5-TR  
MIC2777-22YM5-TR  
MIC2777-23YM5-TR  
MIC2777-25YM5-TR  
MIC2777-26YM5-TR  
MIC2777-28YM5-TR  
MIC2777-29YM5-TR  
MIC2777-31YM5-TR  
MIC2777-44YM5-TR  
MIC2775-29YM5-TX  
MIC2774H-23YM5-TR

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ASER-28RAPG851 - CCB 5128 Final Notice: Qualification of a new lead frame design and G700 as a new mold compound material for selected MIC277xxx device family available in 5L SOT-23 package assembled at STAR assembly site.

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MIC2774H-26YM5-TR  
MIC2774H-31YM5-TR  
MIC2774H-46YM5-TR  
MIC2774L-26YM5-TR  
MIC2774N-26YM5-TR  
MIC2774N-46YM5-TR  
MIC2776H-YM5-TR  
MIC2777-46YM5-TR  
MIC2774N-29YM5-TX  
MIC2776L-YM5-TX  
MIC2776N-YM5-TX



## **QUALIFICATION REPORT SUMMARY**

**PCN #: ASER-28RAPG851**

**Date:  
December 27, 2022**

**Qualification of a new lead frame design and G700 as a new mold compound material for selected MIC277xxx device family available in 5L SOT-23 package assembled at STAR assembly site.**



## **MICROCHIP**

### **PACKAGE QUALIFICATION REPORT**

|                            |                                                                                                                                                                                        |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>             | Qualification of a new lead frame design and G700 as a new mold compound material for selected MIC277xxx device family available in 5L SOT-23 package assembled at STAR assembly site. |
| <b>CCB:</b>                | 5128                                                                                                                                                                                   |
| <b>CN</b>                  | E000107956                                                                                                                                                                             |
| <b>QUAL ID</b>             | R2200962 Rev. A                                                                                                                                                                        |
| <b>MP CODE</b>             | 27802T6BXC09                                                                                                                                                                           |
| <b>Part No.</b>            | MIC2774L-31YM5-TR                                                                                                                                                                      |
| <b>Bonding No.</b>         | BD-000675 Rev.01                                                                                                                                                                       |
| <b><u>Package</u></b>      |                                                                                                                                                                                        |
| <b>Type</b>                | 5L SOT-23                                                                                                                                                                              |
| <b><u>Lead Frame</u></b>   |                                                                                                                                                                                        |
| <b>Paddle size</b>         | 52 x 72 mils                                                                                                                                                                           |
| <b>Material</b>            | C194                                                                                                                                                                                   |
| <b>Surface</b>             | NiPdAuAg with Roughened (Thickness: AuAg = 0.2-2.5 ulnch, Pd = 0.2-0.8 ulnch, Ni = 10-50 ulnch)                                                                                        |
| <b>Process</b>             | STAMP                                                                                                                                                                                  |
| <b>Lead Lock</b>           | No                                                                                                                                                                                     |
| <b>Part Number</b>         | MLEP00026MIC-T                                                                                                                                                                         |
| <b>Treatment</b>           | RT+UPG                                                                                                                                                                                 |
| <b><u>Material</u></b>     |                                                                                                                                                                                        |
| <b>Epoxy</b>               | 84-1LMISR4                                                                                                                                                                             |
| <b>Wire</b>                | Au wire                                                                                                                                                                                |
| <b>Mold Compound</b>       | G700                                                                                                                                                                                   |
| <b>Plating Composition</b> | NiPdAu (PPF)                                                                                                                                                                           |



## **MICROCHIP** **PACKAGE QUALIFICATION REPORT**

### **Manufacturing Information**

| <b>Assembly Lot No.</b> | <b>Wafer Lot No.</b> | <b>Date Code</b> |
|-------------------------|----------------------|------------------|
| STAR230600043.000       | GRSM422321190.810    | 2219PBK          |
| STAR230600049.000       | GRSM422321190.810    | 2219PBU          |
| STAR230700002.000       | GRSM422321190.810    | 2220PC3          |

### **Result**

☒ Pass ☐ Fail ☐ \_\_\_\_\_

5L SOT-23 assembled by STAR 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-020E standard.

# PACKAGE QUALIFICATION REPORT

| Test Number<br>(Reference)                                                                  | Test Condition                               | Standard/<br>Method | Qty.<br>(Acc.) | Def/SS | Result | Remarks      |
|---------------------------------------------------------------------------------------------|----------------------------------------------|---------------------|----------------|--------|--------|--------------|
| <u>Precondition</u><br><u>Prior Perform</u><br><u>Reliability Tests</u><br>(At MSL Level 1) | <b>Electrical Test:</b> +25°C<br>System: TMT | JESD22-A113         | 693(0)         | 0/693  |        | Good Devices |
|                                                                                             | Bake 150°C, 24 hrs                           | JIP/                |                | 0/693  |        |              |
|                                                                                             | System: CHINEE                               | IPC/JEDEC           |                | 0/693  |        |              |
|                                                                                             | 85°C/85%RH Moisture Soak 168 hrs.            | J-STD-020E          |                | 0/693  |        |              |
|                                                                                             | System: TABAI ESPEC Model PR-3SPH            |                     |                | 0/693  |        |              |
|                                                                                             | 3x Convection-Reflow 265°C max               |                     |                |        |        |              |
|                                                                                             | System: Vitronics Soltec MR1243              |                     |                |        |        |              |
|                                                                                             | <b>Electrical Test:</b> +25°C<br>System: TMT |                     | 693(0)         | 0/693  | Pass   |              |

# PACKAGE QUALIFICATION REPORT

| Test Number<br>(Reference) | Test Condition                                                                                                                                                                                                                  | Standard/<br>Method | Qty.<br>(Acc.) | Def/SS. | Result | Remarks                                                       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------|---------|--------|---------------------------------------------------------------|
| Temp Cycle                 | <b>Stress Condition:</b><br>-65°C to +150°C, 500 Cycles<br>System: TABAI ESPEC TSA-70H<br><br><b>Electrical Test:</b> +25°C<br>System: TMT<br><br><b>Bond Strength:</b><br>Wire Pull (>3.00 grams)<br>Bond Shear (>21.10 grams) | JESD22-A104         |                | 0/231   |        | Parts had been pre-conditioned at 260°C<br><br>77 units / lot |
|                            |                                                                                                                                                                                                                                 |                     | 231(0)         | 0/231   | Pass   |                                                               |
|                            |                                                                                                                                                                                                                                 |                     | 15(0)          | 0/15    | Pass   |                                                               |
|                            |                                                                                                                                                                                                                                 |                     | 15(0)          | 0/15    | Pass   |                                                               |
| UNBIASED-HAST              | <b>Stress Condition:</b><br>+130°C/85%RH, 96 hrs.<br>System: HAST 6000X<br><br><b>Electrical Test:</b> +25°C<br>System: TMT                                                                                                     | JESD22-A118         |                | 0/231   |        | Parts had been pre-conditioned at 260°C<br><br>77 units / lot |
|                            |                                                                                                                                                                                                                                 |                     | 231(0)         | 0/231   | Pass   |                                                               |
| HAST                       | <b>Stress Condition:</b><br>+130°C/85%RH, 96 hrs. <b>Bias Volt:</b> 5.5 Volts<br>System: HAST 6000X<br><br><b>Electrical Test:</b> +25°C<br>System: TMT                                                                         | JESD22-A110         |                | 0/231   |        | Parts had been pre-conditioned at 260°C<br><br>77 units / lot |
|                            |                                                                                                                                                                                                                                 |                     | 231(0)         | 0/231   | Pass   |                                                               |

# PACKAGE QUALIFICATION REPORT

| Test Number<br>(Reference)                   | Test Condition                                                                                                                                                                                                         | Standard/<br>Method   | Qty.<br>(Acc.) | Def/SS. | Result | Remarks |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------|---------|--------|---------|
| <b>High<br/>Temperature<br/>Storage Life</b> | <b>Stress Condition:</b><br>Bake 175°C, 504 hrs.<br>System: SHEL LAB                                                                                                                                                   | JESD22-<br>A103       |                | 0/45    |        |         |
|                                              | <b>Electrical Test:</b> +25°C<br>System: TMT                                                                                                                                                                           |                       | 45(0)          | 0/45    | Pass   |         |
| <b>Solderability<br/><br/>Temp 215°C</b>     | <b>Steam Aging:</b> Temp 93°C, 1Hrs<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            | J-STD-002             | 22(0)          | 0/22    |        |         |
|                                              |                                                                                                                                                                                                                        |                       |                | 0/22    |        |         |
|                                              |                                                                                                                                                                                                                        |                       |                | 0/22    | Pass   |         |
| <b>Solderability<br/><br/>Temp 245°C</b>     | <b>Steam Aging:</b> Temp 93°C, 1Hrs<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 | J-STD-002             | 22(0)          | 0/22    |        |         |
|                                              |                                                                                                                                                                                                                        |                       |                | 0/22    |        |         |
|                                              |                                                                                                                                                                                                                        |                       |                | 0/22    | Pass   |         |
| <b>Physical<br/>Dimensions</b>               | Physical Dimension,<br>10 units / 1 lot                                                                                                                                                                                | JESD22-<br>B100/B108  | 30(0)<br>Units | 0/30    | Pass   |         |
| <b>Bond Strength<br/><br/>Data Assembly</b>  | Wire Pull (>3.00 grams)                                                                                                                                                                                                | Mil. Std.<br>883-2011 | 30(0)<br>Wires | 0/30    | Pass   |         |
|                                              | Bond Shear (>21.10 grams)                                                                                                                                                                                              | CDF-AEC-<br>Q100-001  | 30(0)<br>bonds | 0/30    | Pass   |         |

# CCB 5128

## Pre and Post Change Summary

### PCN #: ASER-28RAPG851



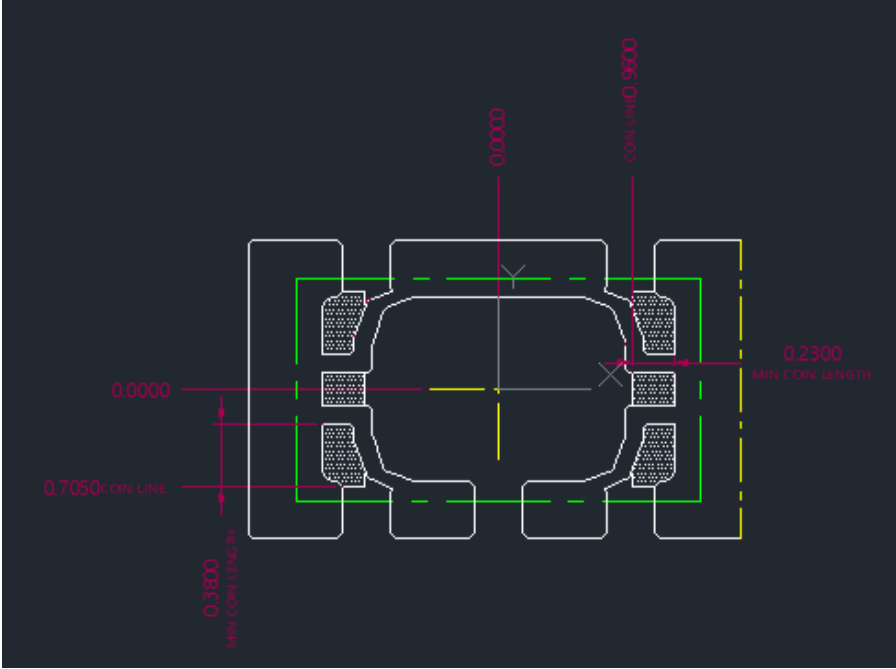
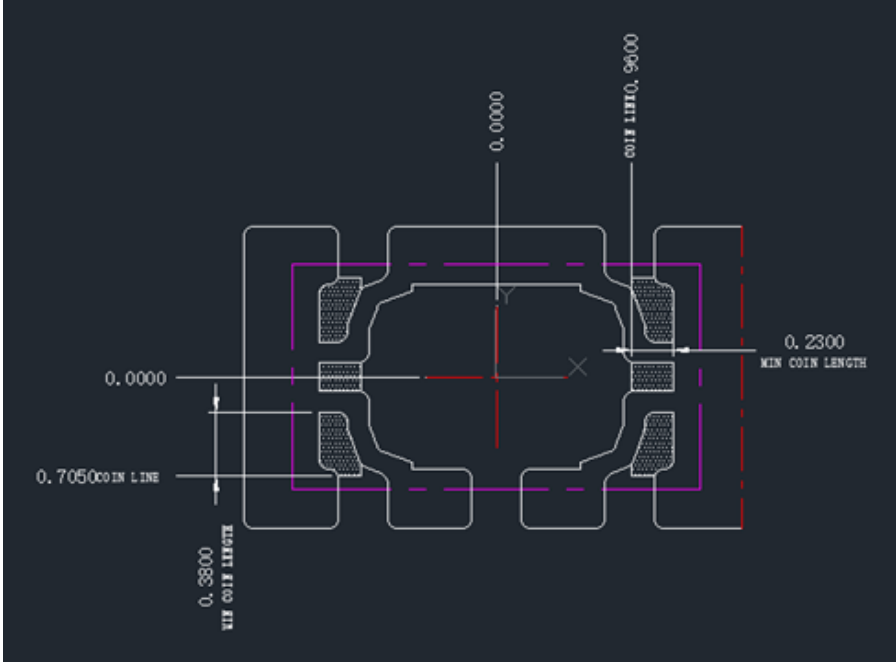
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# Lead Frame Design Comparison

| Pre Change                                                                          |                       | Post Change                                                                          |                         |
|-------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------|-------------------------|
|  |                       |  |                         |
| Lead Frame Material                                                                 | DAP Surface Prep      | Lead Frame Material                                                                  | DAP Surface Prep        |
| C194                                                                                | NiPdAu with Roughened | C194                                                                                 | NiPdAuAg with Roughened |