



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

**PCN 20190625000**  
**Qualify New Assembly Material for Automotive PDIP devices**  
**Final Change Notification**

**Date:** July 01, 2019  
**To:** Newark/Farnell PCN

Dear Customer:

This is an announcement of change to a device that is currently offered by Texas Instruments. The details of this change are on the following pages.

Texas Instruments requires acknowledgement of receipt of this notification within **30** days of the date of this notice. Lack of acknowledgement of this notice within 30 days constitutes acceptance of the change. The proposed first ship date is indicated on page 3 of this notification, unless customer agreement has been reached on an earlier implementation of the change.

If samples or additional data are required, requests must be received within 30 days of acknowledgement as samples are not built ahead of the change. You may contact the PCN Manager or your local Field Sales Representative to acknowledge this PCN and request samples or additional data.

This notice does not change the end-of-life status of any product. Should product affected be on a previously issued product withdrawal/discontinuance notice, this notification does not extend the life of that product or change the life time buy offering/discontinuance plan.

For questions regarding this notice, contact your local Field Sales Representative or the PCN Team ([PCN\\_ww\\_admin\\_team@list.ti.com](mailto:PCN_ww_admin_team@list.ti.com)).

Sincerely,

PCN Team  
SC Business Services

**20190625000**  
**Final Change Notification**  
**Attachments**

**Products Affected:**

The devices listed on this page are a subset of the complete list of affected devices. According to our records, these are the devices that you have purchased within the past twenty-four (24) months. The corresponding customer part number is also listed, if available.

| <b>DEVICE</b> | <b>CUSTOMER PART NUMBER</b> |
|---------------|-----------------------------|
| SE555P        | null                        |
| TPIC6259N     | null                        |
| TPIC6273N     | null                        |
| TPIC6595N     | null                        |
| TPIC6A595NE   | null                        |
| TPIC6B259N    | null                        |
| TPIC6B595N    | null                        |
| TPIC6C595N    | null                        |
| TPIC6C596N    | null                        |
| TPIC6B273N    | null                        |

Technical details of this Product Change follow on the next page(s).

| <b>PCN Number:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20190625000                                               |                                       | <b>PCN Date:</b>                | July 1, 2019             |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------|---------------------------------|--------------------------|---------------------|----------|---------|--------------|-----------|---------------|------------------------|------|----|-----------|----------------|---------|---------|---------------|---------|---------|
| <b>Title:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Qualify New Assembly Material for Automotive PDIP devices |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <b>Customer Contact:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <a href="#">PCN Manager</a>                               |                                       | <b>Dept:</b>                    | Quality Services         |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <b>Proposed 1<sup>st</sup> Ship Date:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Jan. 1, 2020                                              | <b>Estimated Sample Availability:</b> | Date provided at sample request |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <b>Change Type:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Assembly Site                                             | <input type="checkbox"/>              | Design                          | <input type="checkbox"/> | Wafer Bump Site     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Assembly Process                                          | <input type="checkbox"/>              | Data Sheet                      | <input type="checkbox"/> | Wafer Bump Material |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Assembly Materials                                        | <input type="checkbox"/>              | Part number change              | <input type="checkbox"/> | Wafer Bump Process  |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Mechanical Specification                                  | <input type="checkbox"/>              | Test Site                       | <input type="checkbox"/> | Wafer Fab Site      |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Packing/Shipping/Labeling                                 | <input type="checkbox"/>              | Test Process                    | <input type="checkbox"/> | Wafer Fab Materials |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           | <input type="checkbox"/>              |                                 | <input type="checkbox"/> | Wafer Fab Process   |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <b>PCN Details</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <b>Description of Change:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| Texas Instruments is pleased to announce the qualification of new assembly material set for devices listed in "Product affected" section below. Devices will remain in current assembly facility and piece part changes as follows:                                                                                                                                                                                                                                                                                                 |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Material</th> <th style="width: 33%;">Current</th> <th style="width: 33%;">New Material</th> </tr> </thead> <tbody> <tr> <td>Leadframe</td> <td>Non-Roughened</td> <td>Single Sided Roughened</td> </tr> <tr> <td>Wire</td> <td>Au</td> <td>No change</td> </tr> <tr> <td>Mount compound</td> <td>4042500</td> <td>4147858</td> </tr> <tr> <td>Mold compound</td> <td>4042503</td> <td>4211880</td> </tr> </tbody> </table> |                                                           |                                       |                                 |                          |                     | Material | Current | New Material | Leadframe | Non-Roughened | Single Sided Roughened | Wire | Au | No change | Mount compound | 4042500 | 4147858 | Mold compound | 4042503 | 4211880 |
| Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Current                                                   | New Material                          |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| Leadframe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Non-Roughened                                             | Single Sided Roughened                |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| Wire                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Au                                                        | No change                             |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| Mount compound                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4042500                                                   | 4147858                               |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| Mold compound                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4042503                                                   | 4211880                               |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <b>Reason for Change:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| To align with universal BOM (UBOM) material strategy.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <b>Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| None.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <b>Changes to product identification resulting from this PCN:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| None.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| <b>Product Affected:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           |                                       |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| SE555P                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | TPIC6273N                                                 | TPIC6B273N                            |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| SN103442N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | TPIC6595N                                                 | TPIC6B595N                            |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| SN104599N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | TPIC6596N                                                 | TPIC6B596N                            |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| TLC2274MN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | TPIC6A259NE                                               | TPIC6C595N                            |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| TLC339MN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | TPIC6A595NE                                               | TPIC6C596N                            |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| TLC372MP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | TPIC6A596NE                                               | ULQ2003AN                             |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |
| TPIC6259N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | TPIC6B259N                                                | ULQ2004AN                             |                                 |                          |                     |          |         |              |           |               |                        |      |    |           |                |         |         |               |         |         |

**Automotive New Product Qualification Summary  
(As per AEC-Q100 and JEDEC Guidelines)**

**Approved 26-Mar-2019**

| Product Attributes<br>Attributes | Qual Device:<br>SE555P | Qual Device:<br>SN104571P | Qual Device:<br>TPIC6A596NE |
|----------------------------------|------------------------|---------------------------|-----------------------------|
| Automotive Grade Level           | Grade 1                | Grade 1                   | Grade 1                     |
| Operating Temp Range             | -55 to +125 C          | -40 to +125 C             | -40 to +125 C               |
| Product Function                 | Signal Chain           | Power Management          | Power Management            |
| Wafer Fab Supplier               | SFAB                   | SFAB                      | DFAB                        |
| Die Revision                     | B                      | E                         | A                           |
| Assembly Site                    | FMX                    | FMX                       | MLA                         |
| Package Type                     | PDIP                   | PDIP                      | PDIP                        |
| Package Designator               | P                      | P                         | NE                          |
| Ball/Lead Count                  | 8                      | 8                         | 20                          |

- Qual Devices SE555P, SN104571P and TPIC6A596NE are qualified at NC-P

**Qualification Results**

**Data Displayed as: Number of lots / Total sample size / Total failed**

| Type                                                        | #  | Test Spec                        | Min Lot Qty | SS/Lot | Test Name / Condition                               | Duration    | Qual Device:<br>SE555P | Qual Device:<br>SN104571P | Qual Device:<br>TPIC6A596NE |
|-------------------------------------------------------------|----|----------------------------------|-------------|--------|-----------------------------------------------------|-------------|------------------------|---------------------------|-----------------------------|
| <b>Test Group A – Accelerated Environment Stress Tests</b>  |    |                                  |             |        |                                                     |             |                        |                           |                             |
| HAST                                                        | A2 | JEDEC JESD22-A110                | 3           | 77     | Biased HAST, 130C/85%RH                             | 96 Hours    | -                      | -                         | 3/231/0                     |
| AC                                                          | A3 | JEDEC JESD22-A102                | 3           | 77     | Autoclave 121C                                      | 96 Hours    | 3/231/0                | 3/231/0                   | 3/231/0                     |
| TC                                                          | A4 | JEDEC JESD22-A104 and Appendix 3 | 3           | 77     | Temperature Cycle, -65/150C                         | 500 Cycles  | 3/231/0                | 3/231/0                   | 3/231/0                     |
| TC-BP                                                       | A4 | MIL-STD883 Method 2011           | 1           | 60     | Post TC Bond Pull                                   | Wires       | 3/90/0                 | 3/90/0                    | 3/90/0                      |
| PTC                                                         | A5 | JEDEC JESD22-A105                | 1           | 45     | Power Temperature Cycle                             | 1000 Cycles | N/A                    | N/A                       | N/A                         |
| HTSL                                                        | A6 | JEDEC JESD22-A103                | 1           | 45     | High Temp Storage Bake 175C                         | 500 Hours   | 3/135/0                | 3/135/0                   | 3/135/0                     |
| <b>Test Group B – Accelerated Lifetime Simulation Tests</b> |    |                                  |             |        |                                                     |             |                        |                           |                             |
| HTOL                                                        | B1 | JEDEC JESD22-A108                | 3           | 77     | Life Test, 125C                                     | 1000 Hours  | -                      | -                         | 3/231/0                     |
| EDR                                                         | B3 | AEC Q100-005                     | 3           | 77     | NVM Endurance, Data Retention, and Operational Life | -           | N/A                    | N/A                       | N/A                         |
| <b>Test Group C – Package Assembly Integrity Tests</b>      |    |                                  |             |        |                                                     |             |                        |                           |                             |

| Type                                                    | #  | Test Spec                  | Min Lot Qty | SS/Lot | Test Name / Condition                 | Duration                          | Qual Device:<br><u>SE555P</u>                 | Qual Device:<br><u>SN104571P</u>              | Qual Device:<br><u>TPIC6A596NE</u>            |
|---------------------------------------------------------|----|----------------------------|-------------|--------|---------------------------------------|-----------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| WBS                                                     | C1 | AEC Q100-001               | 1           | 30     | Wire Bond Shear (Cpk>1.67)            | Wires                             | 3/90/0                                        | 3/90/0                                        | 3/90/0                                        |
| WBP                                                     | C2 | MIL-STD883 Method 2011     | 1           | 30     | Wire Bond Pull (Cpk>1.67)             | Wires                             | 3/90/0                                        | 3/90/0                                        | 3/90/0                                        |
| SD                                                      | C3 | JEDEC JESD22-B102          | 1           | 15     | Solderability                         | Pb Free Solder                    | 3/45/0                                        | 3/45/0                                        | 3/45/0                                        |
| SD                                                      | C3 | JEDEC JESD22-B102          | 1           | 15     | Solderability                         | Pb Solder                         | 3/45/0                                        | 3/45/0                                        | 3/45/0                                        |
| PD                                                      | C4 | JEDEC JESD22-B100 and B108 | 3           | 10     | Physical Dimensions (Cpk>1.67)        | -                                 | 3/30/0                                        | 3/30/0                                        | 3/30/0                                        |
| LI                                                      | C6 | JEDEC JESD22-B105          | 1           | 50     | Lead Integrity                        | Leads                             | 1/50/0                                        | 1/50/0                                        | 1/50/0                                        |
| <b>Test Group D – Die Fabrication Reliability Tests</b> |    |                            |             |        |                                       |                                   |                                               |                                               |                                               |
| EM                                                      | D1 | JESD61                     | -           | -      | Electromigration                      | -                                 | Completed Per Process Technology Requirements | Completed Per Process Technology Requirements | Completed Per Process Technology Requirements |
| TDDDB                                                   | D2 | JESD35                     | -           | -      | Time Dependant Dielectric Breakdown   | -                                 | Completed Per Process Technology Requirements | Completed Per Process Technology Requirements | Completed Per Process Technology Requirements |
| HCI                                                     | D3 | JESD60 & 28                | -           | -      | Hot Injection Carrier                 | -                                 | Completed Per Process Technology Requirements | Completed Per Process Technology Requirements | Completed Per Process Technology Requirements |
| NBTI                                                    | D4 | -                          | -           | -      | Negative Bias Temperature Instability | -                                 | Completed Per Process Technology Requirements | Completed Per Process Technology Requirements | Completed Per Process Technology Requirements |
| SM                                                      | D5 | -                          | -           | -      | Stress Migration                      | -                                 | Completed Per Process Technology Requirements | Completed Per Process Technology Requirements | Completed Per Process Technology Requirements |
| <b>Test Group E – Electrical Verification Tests</b>     |    |                            |             |        |                                       |                                   |                                               |                                               |                                               |
| ED                                                      | E5 | AEC Q100-009               | 3           | 30     | Auto Electrical Distributions         | Cpk>1.67 Room, hot, and cold test | Pass                                          | -                                             | Pass                                          |

**Ambient Operating Temperature by Automotive Grade Level:**

Grade 0 (or E): -40°C to +150°C  
Grade 1 (or Q): -40°C to +125°C  
Grade 2 (or T): -40°C to +105°C  
Grade 3 (or I) : -40°C to +85°C

**E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):**

Room/Hot/Cold : HTOL, ED

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

**Green/Pb-free Status:**

Qualified Pb-Free(Through-hole) and Green

For questions regarding this notice, e-mails can be sent to the contacts shown below or your local Field Sales Representative.

| <b>Location</b> | <b>E-Mail</b>                                                                      |
|-----------------|------------------------------------------------------------------------------------|
| USA             | <a href="mailto:PCNAmericasContact@list.ti.com">PCNAmericasContact@list.ti.com</a> |
| Europe          | <a href="mailto:PCNEuropeContact@list.ti.com">PCNEuropeContact@list.ti.com</a>     |
| Asia Pacific    | <a href="mailto:PCNAsiaContact@list.ti.com">PCNAsiaContact@list.ti.com</a>         |
| WW PCN Team     | <a href="mailto:PCN_ww_admin_team@list.ti.com">PCN_ww_admin_team@list.ti.com</a>   |