



# Final Product/Process Change Notification

Document #:FPCN20930ZF

Issue Date:30 Jun 2022

| <b>Title of Change:</b>                                                                                                                                                                                                                                                                                                                     | Qualification of Power Schottky Top Metal And Back Metal Change with Die Shrink for SMC Package.                                                                                                                                                                                                                                                                                                                                                                                                                   |            |      |    |                           |            |            |                            |          |          |                         |        |       |
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| <b>Proposed Changed Material First Ship Date:</b>                                                                                                                                                                                                                                                                                           | 15 Jun 2023 or earlier if approved by customer                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>Current Material Last Order Date:</b>                                                                                                                                                                                                                                                                                                    | 15 Mar 2023<br><i>Orders received after the Current Material Last Order Date expiration are to be considered as orders for new changed material as described in this PCN. Orders for current (unchanged) material after this date will be per mutual agreement and current material inventory availability.</i>                                                                                                                                                                                                    |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>Current Material Last Delivery Date:</b>                                                                                                                                                                                                                                                                                                 | 14 Jun 2023<br><i>The Current Material Last Delivery Date may be subject to change based on build and depletion of the current (unchanged) material inventory</i>                                                                                                                                                                                                                                                                                                                                                  |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>Product Category:</b>                                                                                                                                                                                                                                                                                                                    | Active components – Discrete components                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>Contact information:</b>                                                                                                                                                                                                                                                                                                                 | Contact your local onsemi Sales Office or <a href="mailto:Danh.Trinh@onsemi.com">Danh.Trinh@onsemi.com</a>                                                                                                                                                                                                                                                                                                                                                                                                         |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>PCN Samples Contact:</b>                                                                                                                                                                                                                                                                                                                 | Contact your local onsemi Sales Office to place sample order.<br>Sample requests are to be submitted no later than 45 days after publication of this change notification.<br>Samples delivery timing will be subject to request date, sample quantity and special customer packing/label requirements.                                                                                                                                                                                                             |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>Sample Availability Date:</b>                                                                                                                                                                                                                                                                                                            | 15 Dec 2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>PPAP Availability Date:</b>                                                                                                                                                                                                                                                                                                              | 15 Oct 2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>Additional Reliability Data:</b>                                                                                                                                                                                                                                                                                                         | Contact your local onsemi Sales Office or <a href="mailto:CheanChing.Sim@onsemi.com">CheanChing.Sim@onsemi.com</a>                                                                                                                                                                                                                                                                                                                                                                                                 |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>Type of Notification:</b>                                                                                                                                                                                                                                                                                                                | This is a Final Product/Process Change Notification (FPCN) sent to customers. The change will be implemented at 'Proposed Change Material First Ship Date' in compliance to J-STD-46 or ZVEI, or earlier upon customer approval, or per our signed agreements.<br>onsemi will consider this proposed change and it's conditions acceptable, unless an inquiry is made in writing within 45 days of delivery of this notice. To do so, contact <a href="mailto:PCN.Support@onsemi.com">PCN.Support@onsemi.com</a> . |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>Change Category</b>                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>Category</b>                                                                                                                                                                                                                                                                                                                             | <b>Type of Change</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| Design                                                                                                                                                                                                                                                                                                                                      | Die Shrink                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| Bare Die                                                                                                                                                                                                                                                                                                                                    | New / change of backside metallization,<br>New / change of frontside metallization                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <b>Description and Purpose:</b>                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| This is a Final Product Change Notification announcing to customer that onsemi has qualified Power Schottky top metal and back metal change with die shrink on selected automotive qualified Orderable Part Numbers (OPNs) listed in this FPCN.                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| <table border="1"><thead><tr><th>Item</th><th>From</th><th>To</th></tr></thead><tbody><tr><td>Die top metal composition</td><td>TiW/NiV/Au</td><td>TiW/NiV/Ag</td></tr><tr><td>Die back metal composition</td><td>Cr/Ni/Au</td><td>Ti/Ni/Ag</td></tr><tr><td>Die P Guard Ring shrink</td><td>4 mils</td><td>1 mil</td></tr></tbody></table> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Item       | From | To | Die top metal composition | TiW/NiV/Au | TiW/NiV/Ag | Die back metal composition | Cr/Ni/Au | Ti/Ni/Ag | Die P Guard Ring shrink | 4 mils | 1 mil |
| Item                                                                                                                                                                                                                                                                                                                                        | From                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | To         |      |    |                           |            |            |                            |          |          |                         |        |       |
| Die top metal composition                                                                                                                                                                                                                                                                                                                   | TiW/NiV/Au                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TiW/NiV/Ag |      |    |                           |            |            |                            |          |          |                         |        |       |
| Die back metal composition                                                                                                                                                                                                                                                                                                                  | Cr/Ni/Au                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Ti/Ni/Ag   |      |    |                           |            |            |                            |          |          |                         |        |       |
| Die P Guard Ring shrink                                                                                                                                                                                                                                                                                                                     | 4 mils                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1 mil      |      |    |                           |            |            |                            |          |          |                         |        |       |
| The change will affect to Schottky SMC Package at its assembly sites.                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| Products listed in this FPCN have successfully passed reliability testing as per automotive requirements.                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |      |    |                           |            |            |                            |          |          |                         |        |       |
| There is no product marking change as a result of this change.                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |      |    |                           |            |            |                            |          |          |                         |        |       |

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| <b>Reason / Motivation for Change:</b>                                                                                                                                                                                                                                                                                                                      | Process/Materials Change                                                                                                                                                                                                                                                                                                               |                                                       |                                      |               |
| <b>Anticipated impact on fit, form, function, reliability, product safety or manufacturability:</b>                                                                                                                                                                                                                                                         | <p>The device has been qualified and validated based on the same Product Specification. The device has successfully passed the qualification tests. Potential impacts can be identified, but due to testing performed by onsemi in relation to the PCN, associated risks are verified and excluded.</p> <p>No anticipated impacts.</p> |                                                       |                                      |               |
| <b>Sites Affected:</b>                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                        |                                                       |                                      |               |
| <b>onsemi Sites</b>                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                        |                                                       | <b>External Foundry/Subcon Sites</b> |               |
| onsemi, ISMF Malaysia                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                        |                                                       | None                                 |               |
| <b>Marking of Parts/ Traceability of Change:</b>                                                                                                                                                                                                                                                                                                            | Clean date code will be advised upon of request.                                                                                                                                                                                                                                                                                       |                                                       |                                      |               |
| <b>Reliability Data Summary:</b>                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                        |                                                       |                                      |               |
| <b>QV DEVICE NAME:</b> NRVBS360T3G (Schottky Rectifier)<br><b>RMS:</b> V79612<br><b>PACKAGE:</b> SMC                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                        |                                                       |                                      |               |
| <b>Test</b>                                                                                                                                                                                                                                                                                                                                                 | <b>Specification</b>                                                                                                                                                                                                                                                                                                                   | <b>Condition</b>                                      | <b>Interval</b>                      | <b>Result</b> |
| HTSL                                                                                                                                                                                                                                                                                                                                                        | JESD22-A103                                                                                                                                                                                                                                                                                                                            | Ta = 175 °C                                           | 1008 hrs                             | 0/231         |
| IOL                                                                                                                                                                                                                                                                                                                                                         | MIL-STD-750 (M1037)<br>AEC-Q101                                                                                                                                                                                                                                                                                                        | Ta = +25°C, deltaTj = 100°C max,<br>Ton = Toff = 2min | 15000 cyc                            | 0/231         |
| TC                                                                                                                                                                                                                                                                                                                                                          | JESD22-A104                                                                                                                                                                                                                                                                                                                            | Ta = -65°C to +150°C                                  | 1000 cyc                             | 0/231         |
| AC                                                                                                                                                                                                                                                                                                                                                          | JESD22-A102                                                                                                                                                                                                                                                                                                                            | 121°C, 100% RH, 15psig, unbiased                      | 96 hrs                               | 0/231         |
| H3TRB                                                                                                                                                                                                                                                                                                                                                       | JESD22-A101                                                                                                                                                                                                                                                                                                                            | Ta = 85°C, RH = 85%, bias = 80% of rated V            | 1008 hrs                             | 0/231         |
| HTRB                                                                                                                                                                                                                                                                                                                                                        | JESD22-A108                                                                                                                                                                                                                                                                                                                            | Ta = 90 °C, bias = 100% of rated V                    | 1008 hrs                             | 0/231         |
| PC                                                                                                                                                                                                                                                                                                                                                          | J-STD-020 JESD-A113                                                                                                                                                                                                                                                                                                                    | MSL 1 @ 260 °C                                        |                                      | 0/924         |
| RSH                                                                                                                                                                                                                                                                                                                                                         | JESD22- B106                                                                                                                                                                                                                                                                                                                           | Ta = 265°C, 10 sec                                    |                                      | 0/90          |
| SD                                                                                                                                                                                                                                                                                                                                                          | JSTD002                                                                                                                                                                                                                                                                                                                                | Ta = 245°C, 10 sec                                    |                                      | 0/45          |
| <b>Note : AEC-1pager is attached.</b><br><br><i>To view attachments:</i><br>1. Download pdf copy of the PCN to your computer<br>2. Open the downloaded pdf copy of the PCN<br>3. Click on the paper clip icon available on the menu provided in the left/bottom portion of the screen to reveal the Attachment field<br>4. Then click on the attached file. |                                                                                                                                                                                                                                                                                                                                        |                                                       |                                      |               |
| <b>Electrical Characteristics Summary:</b>                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                        |                                                       |                                      |               |
| Electrical characteristics are not impacted.                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                        |                                                       |                                      |               |
| <b>List of Affected Parts:</b>                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                        |                                                       |                                      |               |
| <b>Note:</b> Only the standard (off the shelf) part numbers are listed in the parts list. Any custom parts affected by this PCN are shown in the customer specific PCN addendum in the PCN email notification, or on the <b><u>PCN Customized Portal</u></b> .                                                                                              |                                                                                                                                                                                                                                                                                                                                        |                                                       |                                      |               |
| <b>Current Part Number</b>                                                                                                                                                                                                                                                                                                                                  | <b>New Part Number</b>                                                                                                                                                                                                                                                                                                                 |                                                       | <b>Qualification Vehicle</b>         |               |
| NRVBS360T3G                                                                                                                                                                                                                                                                                                                                                 | N/A                                                                                                                                                                                                                                                                                                                                    |                                                       | NRVBS360T3G                          |               |