

## Quarterly Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2023

Based on structural similarity

| Supplier  | User Part Number   |  |
|---|--|--|
| Nexperia B.V.   | BAS21W-Q   |  |
| Name of Laboratory  | Part Description   |  |
| Assembly reliability labs   | Nexperia DHAM Small Signal Bipolar Diode<br>SMD package  |  |
| Based on AEC-Q101 Test  | Test Conditions  | Duration # Lots # Quantity # Rejects           |
| <b>TEST</b>   |  |  |
| # E1 Pre- and Post-Stress Electrical Test                         | Tamb = 25 °C   | N/A see below all parts see below              |
| # A1 <b>PC</b> Preconditioning                                    | JESD22-A113<br>Bake Tamb = 125 °C<br>Soak Tamb = 85 °C, RH = 85%<br>Reflow soldering           | 24 hours<br>168 hours<br>3 cycles 1514 64430 0 |
| # B1 <b>HTRB</b> High Temperature Reverse Bias                    | MIL-STD-750-1<br>M1038 Method A<br>Tj = Tjmax, Vr = 100% of max. datasheet reverse voltage     | 1000 hours 110 4920 0                          |
| # A4 <b>TC</b> Temperature Cycling                                | JESD22-A104<br>-65 °C to Tjmax, not to exceed 150°C  | 1000 cycles 311 14080 0                        |
| # A3 or <b>UHAST</b> Unbiased HAST                                | JESD22-A118<br>Tamb = 130 °C, RH = 85 %  | 96 hours 311 14080 0                           |
| # A3 alt <b>AC</b> Autoclave                                      | JESD22-A102<br>Tamb = 121 °C, RH = 100 %<br>Pressure = 205 kPa (29.7 psia)                     |  |
| # A2 alt <b>H3TRB</b> High Humidity High Temperature Reverse Bias | JESD22-A101<br>Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage <sup>[1]</sup>       | 1000 hours 311 14080 0                         |
| # A5 <b>IOL</b> Intermittent Operating Life                       | MIL-STD-750 Method 1037<br>ton = toff, devices powered to insure ΔTj = 100 °C for 15000 cycles | 1000 hours 312 14120 0                         |
| # C8 <b>RSH</b> Resistance to Solder Heat                         | JESD22-A111<br>260 °C ± 5 °C   | 10 s 269 8070 0                                |
| # C10 <b>SD</b> Solderability                                     | J-STD-002  | 222 6660 0                                     |

[1] The maximum applied voltage is limited by test chamber set up and does not exceed 115V.

### Calculation of FIT and MTTF

Test considered for FIT calculation: High Temperature Reverse Bias (HTRB, Test #B1)

Confidence level 60%, derated to 55 °C, activation energy 0.7 eV, test time 168 to 1000 hours

| Wafer Fab     | Technology                 | Quantity | Rejects | Failure Rate (FIT) | MTTF (hrs) |
|---------------|----------------------------|----------|---------|--------------------|------------|
| Nexperia DHAM | Small Signal Bipolar Diode | 4920     | 0       | 0,86               | 1,16E+09   |

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