

## Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2022

Based on structural similarity

| Supplier  |  | User Part Number            |           |            |           |  |
|---|--|-----------------------------|-----------|------------|-----------|--|
| Nexperia B.V.   |  | NBM7100BBQ                  |           |            |           |  |
| <b>Part Description:</b> 11V 200mA SPI bus interface battery booster with auto start function |  |                             |           |            |           |  |
| Function Family: NBM<br>Process family: XP018<br>Package family: DHVQFN                       |  |                             |           |            |           |  |
| JESD47 Test   | Test Conditions  | Duration                    | # Lots    | # Quantity | # Rejects |  |
| # 1<br><b>TEST</b><br>Pre- and Post-Stress<br>Electrical Test                                 | Tamb = 25 °C   | N/A                         | see below | all parts  | see below |  |
| # 2<br><b>PC</b><br>Preconditioning   | JESD22-A113<br>MSL 1   | N/A                         | 386       | 23019      | 0         |  |
| # 5a<br><b>HTOL EFR</b><br>High Temperature<br>Operating Life Extrinsic                       | JESD22-A108<br>Tj = 150°C<br>V <sub>CCMAX</sub> ≤ V ≤ 1.2*V <sub>CCMAX</sub> | 48 hours<br>or<br>168 hours | 5         | 1831       | 0         |  |
| # 5b<br><b>HTOL IFR</b><br>High Temperature<br>Operating Life Intrinsic                       | JESD22-A108<br>Tj = 150°C<br>V <sub>CCMAX</sub> ≤ V ≤ 1.2*V <sub>CCMAX</sub> | ≥500 hours                  | 3         | 231        | 0         |  |
| # 7<br><b>TC</b><br>Temperature Cycling   | JESD22-A104<br>-65 °C to 150°C   | ≥500 cycles                 | 208       | 12655      | 0         |  |
| # 9<br><b>uHAST / HAST</b><br>unbiased or biased High<br>Accelerated Stress Test              | JESD22-A101<br>Tamb = 130 °C,<br>RH = 85%, V = V <sub>CCMAX</sub>            | 96 hours                    | 178       | 10364      | 0         |  |

### Calculation of PPM, FIT and MTTF

Test considered for PPM calculation: High Temperature Operating LifeTest Extrinsic (HTOL EFR, Test # 5a above)  
Test considered for FIT and MTTF calculations: High Temperature Operating LifeTest Intrinsic (HTOL IFR, Test # 5b above)

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

| Product Family | Package Family | Quantity | Rejects | Extrinsic Failure Rate (PPM) | Intrinsic Failure Rate (FIT) | MTTF (hrs) |
|----------------|----------------|----------|---------|------------------------------|------------------------------|------------|
| NBM            | DHVQFN         | 231      | 0       | 501                          | 11.5                         | 8.71 E+07  |