

## Reliability Monitoring Results

**Quarters:** Q1/2024 to Q4/2024

Based on structural similarity

| Supplier   |   | User Part Number                                      |                             |           |            |           |
|--|---|---|-----------------------------|-----------|------------|-----------|
| Nexperia B.V.  |   | HEF40175BT  |                             |           |            |           |
| <b>Part Description:</b> Quad D-type flip-flop with reset; positive-edge trigger |   |   |                             |           |            |           |
| Function Family: HEF4000B<br>Process family: Super micron<br>Package family: SO  |   |   |                             |           |            |           |
| JESD47 Test  |   | Test Conditions                                       | Duration                    | # Lots    | # Quantity | # Rejects |
| # 1  | <b>TEST</b><br>Pre- and Post-Stress<br>Electrical Test                    | Tamb = 25 °C  | N/A                         | see below | all parts  | see below |
| # 2  | <b>PC</b><br>Preconditioning  | JESD22-A113<br>MSL 1                                  | N/A                         | 479       | 30634      | 0         |
| # 5a   | <b>HTOL EFR</b><br>High Temperature<br>Operating Life Extrinsic           | JESD22-A108<br>Tj = 150°C<br>VCCMAX ≤ V ≤ 1.2*VCCMAX  | 48 hours<br>or<br>168 hours | 70        | 14662      | 0         |
| # 5b   | <b>HTOL IFR</b><br>High Temperature<br>Operating Life Intrinsic           | JESD22-A108<br>Tj = 150°C<br>VCCMAX ≤ V ≤ 1.2*VCCMAX  | ≥500 hours                  | 70        | 3592       | 0         |
| # 7  | <b>TC</b><br>Temperature Cycling  | JESD22-A104<br>-65 °C to 150°C                        | ≥500 cycles                 | 78        | 18207      | 4         |
| # 9  | <b>uHAST / HAST</b><br>unbiased or biased High<br>Accelerated Stress Test | JESD22-A101<br>Tamb = 130 °C,<br>RH = 85%, V = VCCMAX | 96 hours                    | 212       | 12427      | 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) |
|----------------|----------------|----------|---------|------------------------------|------------------------------|------------|
| HEF4000B       | SO             | 3592     | 0       | 63                           | 1                            | 1.04 E+09  |