## nexperia

## **Reliability Monitoring Results**

## Quarters: Q1/2021 to Q4/2021

Based on structural similarity

| Suppli   | er   | User Part Number  |                             |           |            |              |  |  |  |
|----------|--|---|-----------------------------|-----------|------------|--------------|--|--|--|
| Nexperia | a B.V.   | 74AHC1G86GW   | 74AHC1G86GW                 |           |            |              |  |  |  |
| Part D   | escription: 2-input EXCLUS   | SIVE-OR gate  |                             |           |            |              |  |  |  |
| Pro      | action Family: AHC(T)<br>cess family: Super micron<br>kage family: TSSOP |   |                             |           |            | 4            |  |  |  |
| JESD4    | 7 Test   | Test Conditions   | Duration                    | # Lots    | # Quantity | #<br>Rejects |  |  |  |
|          | TEST   |   |                             |           | <b>,</b>   | see          |  |  |  |
| # 1      | Pre- and Post-Stress<br>Electrical Test                                  | Tamb = 25 °C  | N/A                         | see below | all parts  | below        |  |  |  |
| # 2      | <b>PC</b><br>Preconditioning   | JESD22-A113<br>MSL 1  | N/A                         | 863       | 73980      | 0            |  |  |  |
| # 5a     | HTOL EFR<br>High Temperature<br>Operating Life Extrinsic                 | JESD22-A108<br>Tj = 150°C<br>$V_{CCMAX} \le V \le 1.2*V_{CCMAX}$  | 48 hours<br>or<br>168 hours | 128       | 38474      | 0            |  |  |  |
| # 5b     | HTOL IFR<br>High Temperature<br>Operating Life Intrinsic                 | JESD22-A108<br>Tj = 150°C<br>$V_{CCMAX} \le V \le 1.2*V_{CCMAX}$  | ≥500 hours                  | 76        | 5079       | 0            |  |  |  |
| # 7      | TC<br>Temperature Cycling  | JESD22-A104<br>-65 °C to 150°C                                    | ≥500 cycles                 | 478       | 37734      | 0            |  |  |  |
| # 9      | uHAST / HAST<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                    | 462       | 36246      | 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<br>Family | Package<br>Family | Quantity | Rejects | Extrinsic<br>Failure Rate (PPM) | Intrinsic<br>Failure Rate (FIT) | MTTF (hrs) |
|-------------------|-------------------|----------|---------|---------------------------------|---------------------------------|------------|
| AHC(T)            | TSSOP             | 5079     | 0       | 24                              | 0.7                             | 1.57 E+09  |

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