## nexperia

## **Reliability Monitoring Results**

## Quarters: Q1/2021 to Q4/2021

Based on structural similarity

| Suppl         | ier   | User Part Number  |                             |           |            |              |  |  |  |
|---------------|---|---|-----------------------------|-----------|------------|--------------|--|--|--|
| Nexperia B.V. |   | 74HC3G04DP  | 74HC3G04DP                  |           |            |              |  |  |  |
| Part D        | Description: Triple inverter  |   |                             |           |            |              |  |  |  |
| Pro           | nction Family: HC(T)<br>ocess family: Super micron<br>ckage family: TSSOP |   |                             |           |            |              |  |  |  |
| JESD4         | 17 Test   | Test Conditions   | Duration                    | # Lots    | # Quantity | #<br>Rejects |  |  |  |
|               | TEST  |   |                             |           |            | 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) |
|-------------------|-------------------|----------|---------|---------------------------------|---------------------------------|------------|
| HC(T)             | TSSOP             | 5079     | 0       | 24                              | 0.7                             | 1.57 E+09  |

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