## nexperia

## **Reliability Monitoring Results**

## Quarters: Q1/2021 to Q4/2021

Based on structural similarity

| Suppli        | er   | User Part Number   |                 |           |            |              |  |  |  |
|---------------|--|--|-----------------|-----------|------------|--------------|--|--|--|
| Nexperia B.V. |  | 74AUP1GU04GW   | 74AUP1GU04GW    |           |            |              |  |  |  |
| Part D        | escription: Single inverter;                                       | unbuffered   |                 |           |            |              |  |  |  |
| Pro           | action Family: AUP<br>cess family: C075<br>kage family: TSSOP      |  |                 |           |            |              |  |  |  |
| JESD4         | 7 Test   | Test Conditions  | Duration        | # Lots    | # Quantity | #<br>Rejects |  |  |  |
|               | TEST   | T  | <b>NI / A</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            |  |  |  |
|               | HTOL EFR   | JESD22-A108  | 48 hours        |           |            |              |  |  |  |
| # 5a          | High Temperature<br>Operating Life Extrinsic                       | $Tj = 150^{\circ}C$ $V_{CCMAX} \le V \le 1.2^{*}V_{CCMAX}$                             | or<br>168 hours | 219       | 38230      | 0            |  |  |  |
| # 5b          | HTOL IFR<br>High Temperature<br>Operating Life Intrinsic           | JESD22-A108<br>Tj = 150°C<br>V <sub>CCMAX</sub> $\leq$ V $\leq$ 1.2*V <sub>CCMAX</sub> | ≥500 hours      | 84        | 6277       | 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) |
|-------------------|-------------------|----------|---------|---------------------------------|---------------------------------|------------|
| AUP               | TSSOP             | 6277     | 0       | 24                              | 0.7                             | 1.5 E+09   |

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