# Reliability Monitoring Results

**Quarters:** Q1/2021 to Q4/2021
Based on structural similarity

| Supplier | User Part Number | |
|---|---|---|
| Nexperia B.V. | 74ALVC32BQ-Q100 | |
| **Part Description:** Quad 2-input OR gate<br><br>Function Family: ALVC<br>Process family: Sub micron<br>Package family: DHVQFN | | |

| JESD47 Test | Test Conditions | Duration | # Lots | # Quantity | # Rejects |
|---|---|---|---|---|---|
| # 1 | **TEST**<br>Pre- and Post-Stress Electrical Test | Tamb = 25 °C | N/A | see below | all parts | see below |
| # 2 | **PC**<br>Preconditioning | JESD22-A113<br>MSL 1 | N/A | 314 | 19231 | 0 |
| # 5a | **HTOL EFR**<br>High Temperature Operating Life Extrinsic | JESD22-A108<br>$T_j = 150°C$<br>$V_{CCMAX} \leq V \leq 1.2*V_{CCMAX}$ | 48 hours<br>or<br>168 hours | 122 | 29837 | 0 |
| # 5b | **HTOL IFR**<br>High Temperature Operating Life Intrinsic | JESD22-A108<br>$T_j = 150°C$<br>$V_{CCMAX} \leq V \leq 1.2*V_{CCMAX}$ | ≥500 hours | 70 | 5655 | 0 |
| # 7 | **TC**<br>Temperature Cycling | JESD22-A104<br>-65 °C to 150°C | ≥500 cycles | 178 | 10253 | 0 |
| # 9 | **uHAST / HAST**<br>unbiased or biased High Accelerated Stress Test | JESD22-A101<br>Tamb = 130 °C,<br>RH = 85%, V = $V_{CCMAX}$ | 96 hours | 156 | 8978 | 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) |
|---|---|---|---|---|---|---|
| ALVC | DHVQFN | 5655 | 0 | 31 | 0.6 | 1.68 E+09 |

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