nexperia

Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

| Suppli | er | User Part Number | | | | | | | |
|---------------|---|---|-----------------------------|-----------|------------|--------------|--|--|--|
| Nexperia B.V. | | 74HC86D-Q100 | 74HC86D-Q100 | | | | | | |
| Fun Proc | escription: Quad 2-input E ction Family: HC(T) cess family: Super micron kage family: SO | XCLUSIVE-OR gate | | | | | | | |
| JESD4 | 7 Test | Test Conditions | Duration | # Lots | # Quantity | # Rejects | | | |
| # 1 | TEST Pre- and Post-Stress Electrical Test | Tamb = 25 °C | N/A | see below | all parts | see below | | | |
| # 2 | PC Preconditioning | JESD22-A113 MSL 1 | N/A | 378 | 26431 | 0 | | | |
| # 5a | HTOL EFR High Temperature Operating Life Extrinsic | JESD22-A108 Tj = 150°C $V_{CCMAX} \le V \le 1.2*V_{CCMAX}$ | 48 hours or 168 hours | 128 | 38474 | 0 | | | |
| # 5b | HTOL IFR High Temperature Operating Life Intrinsic | JESD22-A108 Tj = 150°C $V_{CCMAX} \le V \le 1.2^*V_{CCMAX}$ | ≥500 hours | 76 | 5079 | 0 | | | |
| # 7 | TC Temperature Cycling | JESD22-A104 -65 °C to 150°C | ≥500 cycles | 49 | 15770 | 4 | | | |
| # 9 | uHAST / HAST unbiased or biased High Accelerated Stress Test | JESD22-A101 Tamb = 130 °C, RH = 85%, V = V _{CCMAX} | 96 hours | 187 | 10661 | 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) |
|-------------------|-------------------|----------|---------|---------------------------------|---------------------------------|------------|
| HC(T) | SO | 5079 | 0 | 24 | 0.7 | 1.57 E+09 |

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