nexperia

Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

| Suppli | ier | User Part Number | | | | | | | |
|---------------|--|---|-----------------------------|-----------|------------|--------------|--|--|--|
| Nexperia B.V. | | 74HCT280D | 74HCT280D | | | | | | |
| Part D | Description: 9-bit odd/even | parity generator/checker; T | TL enabled | | | | | | |
| Pro | nction Family: HC(T) ocess family: Super micron okage family: SO | | | | | # | | | |
| 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 | 58 | 23674 | 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 | 55 | 2997 | 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 | 2997 | 0 | 39 | 1.3 | 8.12 E+08 |

All information hereunder is per Nexperia's best knowledge. This document does not provide for any representation or warranty express or implied by Nexperia. In case Nexperia has tested the product, this documentation reflects the outcome of the analysis of the actually tested parts only.