nexperia

Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2022

Based on structural similarity

| Suppli | ier | User Part Number | | | | | | | |
|---------|--|--|-----------------------------|-----------|------------|--------------|--|--|--|
| Nexperi | ia B.V. | 74HCT1G14GV-Q100 | 74HCT1G14GV-Q100 | | | | | | |
| Part D | Description: Single inverter | Schmitt-trigger; TTL enable | ed | | | | | | |
| Pro | nction Family: HC(T) ocess family: Super micron ckage family: TSOP | | | | | | | | |
| 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 | 156 | 12481 | 0 | | | |
| # 5a | HTOL EFR High Temperature Operating Life Extrinsic | JESD22-A108 Tj = 150°C V _{CCMAX} \leq V \leq 1.2*V _{CCMAX} | 48 hours or 168 hours | 63 | 23993 | 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 | 59 | 3272 | 0 | | | |
| # 7 | TC Temperature Cycling | JESD22-A104 -65 °C to 150°C | ≥500 cycles | 73 | 5846 | 0 | | | |
| # 9 | uHAST / HAST unbiased or biased High Accelerated Stress Test | JESD22-A101 Tamb = 130 °C, RH = 85%, V = V _{CCMAX} | 96 hours | 83 | 6635 | 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) | TSOP | 3272 | 0 | 39 | 1.2 | 8.84 E+08 |

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