

Quarterly Reliability Monitoring Results

Quarters: Q1/2023 to Q4/2024

Based on structural similarity

| Supplier | | User Part Number | | | | |
|---------------------------|--|--|-----------|------------|-----------|--|
| Nexperia B.V. | | PESD1USB3S | | | | |
| Name of Laboratory | | Part Description | | | | |
| Assembly reliability labs | | NXP ICN8 Protection INDI WLCSP package | | | | |
| 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 | |
| # 5 | HTRB High Temperature Reverse Bias MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet reverse voltage | 1000 hours | 96 | 3840 | 0 | |
| # 7 | TC Temperature Cycling JESD22-A104 -40 °C to 125°C | 1000 cycles | 32 | 1280 | 0 | |
| # 8 or | UHAST Unbiased HAST JESD22-A118 Tamb = 130 °C, RH = 85 % | 96 hours | n.a. | n.a. | n.a. | |
| # 8a | AC Autoclave JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia) | | | | | |
| # 9 | HAST Highly Accelerated Stress Test JESD22-A110 Tamb = 130 °C, RH = 85%, VR = 80 % of rated reverse voltage ^[1] | 96 hours | 32 | 1280 | 0 | |
| # 10 | IOL Intermittent Operating Life MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = 100 °C for 15000 cycles | 1000 hours | n.a. | n.a. | n.a. | |
| # 20 | RSH Resistance to Solder Heat JESD22-A111 260 °C ± 5 °C | 10 s | n.a. | n.a. | n.a. | |
| # 21 | SD Solderability J-STD-002 | | n.a. | n.a. | n.a. | |

[1]The maximum applied voltage is limited by test chamber set up and does not exceed 115V.

Calculation of FIT and MTTF

Test considered for FIT calculation: High Temperature Reverse Bias (HTRB, Test # 5)
Confidence level 60%, derated to 55 °C, activation energy 0.7 eV, test time 168 to 1000 hours

| Wafer Fab | Technology | Quantity | Rejects | Failure Rate (FIT) | MTTF (hrs) |
|-----------|-----------------|----------|---------|--------------------|------------|
| NXP ICN8 | Protection INDI | 3840 | 0 | 1,1 | 9,04E+08 |