## nexperia

## **Reliability Monitoring Results**

## Quarters: Q1/2021 to Q4/2021

Based on structural similarity

| Suppli   | er                                                                 | User Part Number                                                  |                 |           |            |              |
|----------|--------------------------------------------------------------------|-------------------------------------------------------------------|-----------------|-----------|------------|--------------|
| Nexperia | a B.V.                                                             | 74LVC1G17GV                                                       |                 |           |            |              |
| Part D   | escription: Single buffer So                                       | chmitt-trigger                                                    |                 |           |            |              |
| Pro      | action Family: LVC<br>cess family: Sub micron<br>kage family: TSOP |                                                                   |                 |           |            |              |
| JESD4    | 7 Test                                                             | Test Conditions                                                   | Duration        | # Lots    | # Quantity | #<br>Rejects |
|          | TEST                                                               | T 1 25 20                                                         |                 |           |            | see          |
| # 1      | Pre- and Post-Stress<br>Electrical Test                            | Tamb = 25 °C                                                      | N/A             | see below | all parts  | below        |
| # 2      | <b>PC</b><br>Preconditioning                                       | JESD22-A113<br>MSL 1                                              | N/A             | 135       | 11128      | 0            |
|          | HTOL EFR                                                           | JESD22-A108                                                       | 48 hours        |           |            |              |
| # 5a     | High Temperature<br>Operating Life Extrinsic                       | $Tj = 150^{\circ}C$<br>$V_{CCMAX} \le V \le 1.2^*V_{CCMAX}$       | or<br>168 hours | 356       | 51713      | 0            |
| # 5b     | HTOL IFR<br>High Temperature<br>Operating Life Intrinsic           | JESD22-A108<br>Tj = 150°C<br>$V_{CCMAX} \le V \le 1.2*V_{CCMAX}$  | ≥500 hours      | 134       | 9791       | 0            |
| # 7      | TC<br>Temperature Cycling                                          | JESD22-A104<br>-65 °C to 150°C                                    | ≥500 cycles     | 64        | 5124       | 0            |
| # 9      | uHAST / HAST<br>unbiased or biased High<br>Accelerated Stress Test | JESD22-A101<br>Tamb = 130 °C,<br>RH = 85%, V = V <sub>CCMAX</sub> | 96 hours        | 75        | 6004       | 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<br>Family | Package<br>Family | Quantity | Rejects | Extrinsic<br>Failure Rate (PPM) | Intrinsic<br>Failure Rate (FIT) | MTTF (hrs) |
|-------------------|-------------------|----------|---------|---------------------------------|---------------------------------|------------|
| LVC               | TSOP              | 9791     | 0       | 18                              | 0.5                             | 2.22 E+09  |

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