# Quarterly Reliability Monitoring Results

Quarters: 04/2018 to 03/2019  
Based on structural similarity

<table>
<thead>
<tr>
<th>Name of Laboratory</th>
<th>Part Description</th>
<th>Supplier</th>
<th>User Part Number</th>
<th>Quantity</th>
<th>Rejects</th>
<th>Failure Rate (FIT)</th>
<th>MTTF (hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wafer Fab</td>
<td>Technology</td>
<td>Nexperia</td>
<td>PHPT60603NY</td>
<td>12320</td>
<td>0</td>
<td>0,34</td>
<td>2,90E+09</td>
</tr>
<tr>
<td>Assembly reliability labs</td>
<td>Nexperia DHAM SMD package</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AEC-Q101 Test</th>
<th>Test Conditions</th>
<th>Duration</th>
<th># Lots</th>
<th># Quantity</th>
<th># Rejects</th>
</tr>
</thead>
<tbody>
<tr>
<td># 1 TEST Pre- and Post-Stress Electrical Test</td>
<td>Tamb = 25 °C</td>
<td>N/A</td>
<td>see below</td>
<td>all parts</td>
<td>see below</td>
</tr>
</tbody>
</table>
| # 2 PC Preconditioning | JESD22-A113 Bake Tamb = 125 °C  
Soak Tamb = 85 °C, RH = 85%  
Reflow soldering | 24 hours  
168 hours | 663 | 47550 | 0 |
| # 3 HTRB High Temperature Reverse Bias | MIL-STD-750-1  
M1038 Method A  
Tj = Tjmax, Vr = 100% of max. datasheet reverse voltage | 1000 hours | 154 | 12320 | 0 |
| # 4 TC Temperature Cycling | JESD22-A104 -55 °C to Tjmax, not to exceed 150°C | 1000 cycles | 139 | 11125 | 0 |
| # 5 AC Autoclave | JESD22-A102 Tamb = 121 °C, RH = 100 %  
Pressure = 205 kPa (29.7 psia) | 96 hours | 136 | 10880 | 0 |
| # 6 H3TRB High Humidity High Temperature Reverse Bias | JESD22-A101 Tamb = 85 °C, RH = 85%, VR > 80 % of rated reverse voltage | 1000 hours | 139 | 11125 | 0 |
| # 7 IOL Intermittent Operating Life | MIL-STD-750 Method 1037  
Ton = toff, devices powered to insure ΔTj = 100 °C for 15000 cycles | 1000 hours | 139 | 11120 | 0 |
| # 8 RSH Resistance to Solder Heat | JESD22-A111  
260 °C ± 5 °C | 10 s | 110 | 3300 | 0 |
| # 9 SD Solderability | J-STD-002  
Test method B and D | 264 | 2640 | 0 |

**Calculation of FIT and MTTF**  
Test considered for FIT calculation: High Temperature Reverse Bias (HTRB, AEC-Q101 Test # 5)  
Confidence level 60%, derated to 55 °C, activation energy 0.7 eV, test time 168 to 1000 hours

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