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Quarterly Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021
Based on structural similarity

Supplier	User Part Number				
Nexperia B.V.	PTVS12VS1UR				
Name of Laboratory	**Part Description**				
Nexperia DHAM	Protection				
Assembly reliability labs	SMD package				
Based on AEC-Q101 Test	**Test Conditions**	**Duration**	**# Lots**	**# Quantity**	**# Rejects**
# E1	**TEST** Pre- and Post-Stress Electrical Test Tamb = 25 °C	N/A	see below	all parts	see below
# A1	**PC** Preconditioning JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	24 hours 168 hours 3 cycles	286	21480	0
# B1	**HTRB** High Temperature Reverse Bias MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet reverse voltage	1000 hours	117	9360	0
# A4	**TC** Temperature Cycling JESD22-A104 -65 °C to Tjmax, not to exceed 150°C	1000 cycles	86	6880	0
# A3 alt	**AC** Autoclave JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)	96 hours	86	6880	0
# A2 alt	**H3TRB** High Humidity High Temperature Reverse Bias JESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage[1]	1000 hours	86	6880	0
# A5	**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.
# C8	**RSH** Resistance to Solder Heat JESD22-A111 260 °C ± 5 °C	10 s	28	840	0
# C10	**SD** Solderability J-STD-002		36	360	0

[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 #B1)
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)
Nexperia DHAM	Protection	9360	0	0.45	2.20E+09

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