## nexperia

## **Quarterly Reliability Monitoring Results**

Quarters: Q1/2022 to Q4/2023 Based on structural similarity

Supplier Nexperia B.V. Name of Laboratory Assembly reliability labs Based on AEC-Q101 Test		User Part Number PMEG3010EP-Q Part Description										
								Nexperia DHAM Schottky				
								SMD package				
		Test Conditions	Duration	# Lots	# Rejects							
		TEST					# Quantity					
			Pre- and Post-Stress									
# E1	Electrical Test	Tamb = 25 °C	N/A	see below	all parts	see below						
" []		JESD22-A113	,		unpurco	500 5000						
		Bake Tamb = $125 ^{\circ}\text{C}$	24 hours									
	PC	Soak Tamb = 85 °C, RH = 85%	168 hours									
# A1	Preconditioning	Reflow soldering	3 cycles	1514	64430	0						
# 11	Treconditioning	MIL-STD-750-1	5 cycles	1514	04450	0						
	HTRB	M1038 Method A										
		Tj = Tjmax, Vr = 100% of max. datasheet										
# B1	Bias	reverse voltage <sup>[1]</sup>	1000 hours	206	9320	0						
* D1	Dias	Teverse voltage	1000 110015	200	9320	U						
	тс	JESD22-A104										
# A4	Temperature Cycling	-65 °C to Timax, not to exceed 150°C	1000 cycles	311	14080	0						
# A4	Temperature Cycling		1000 Cycles	511	14060	0						
	UHAST	155522 4119										
# A3 <b>or</b>	Unbiased HAST	JESD22-A118 Tamb = 130 °C, RH = 85 %										
F A3 <b>UI</b>	UIDIASEU HAST		- 96 hours	311	14080	0						
		JESD22-A102										
	AC	Tamb = 121 °C, RH = 100 %										
# A3 alt	Autoclave	Pressure = 205 kPa (29.7 psia)										
	H3TRB	JESD22-A101										
	High Humidity High	Tamb = 85 °C, RH = 85%, VR = 80 % of										
# A2 alt	Temperature Reverse Bias	rated reverse voltage <sup>[1], [2]</sup>	1000 hours	311	14080	0						
		MIL-STD-750 Method 1037										
	IOL	ton = toff, devices powered to insure $\Delta T j$ =										
# A5	Intermittent Operating Life	100 °C for 15000 cycles	1000 hours	312	14120	0						
	RSH	JESD22-A111										
# C8	Resistance to Solder Heat	260 °C ± 5 °C	10 s	269	8070	0						
	SD											
# C10	Solderability	J-STD-002		222	6660	0						

The physical limitations of Schottky diodes have to be considered (thermal runaway).
 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	Schottky	9320	0	0.46	2 19E+09

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