

## **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						
		PMEG040V050EPE-Q						
		Part Description						
		Nexperia DHAM	Schottky					
		SMD package						
		Test Conditions	Duration	# Lots	# Quantity	# Rejects		
	TEST							
	Pre- and Post-Stress							
# E1	Electrical Test	Tamb = 25 °C	N/A	see below	all parts	see below		
		JESD22-A113						
		Bake Tamb = 125 °C	24 hours					
	PC	Soak Tamb = 85 °C, RH = 85%	168 hours					
# A1	Preconditioning	Reflow soldering	3 cycles	1514	64430	0		
		MIL-STD-750-1						
	HTRB	M1038 Method A						
	High Temperature Reverse							
# B1	Bias	reverse voltage <sup>[1]</sup>	1000 hours	206	9320	0		
	TC	JESD22-A104						
# A4	Temperature Cycling	-65 °C to Tjmax, not to exceed 150°C	1000 cycles	311	14080	0		
	UHAST	JESD22-A118						
# A3 <b>or</b>	Unbiased HAST	Tamb = 130 °C, RH = 85 %		311	14080	0		
# A3 01	Olibiaseu HAST	· · · · · · · · · · · · · · · · · · ·	- 96 hours					
	46	JESD22-A102 Tamb = 121 °C, RH = 100 %						
# A2 - It	<b>AC</b> Autoclave	Pressure = 205 kPa (29.7 psia)						
# A3 alt	Autociave	Pressure = 205 kPa (29.7 psia)						
	H3TRB	JESD22-A101						
	High Humidity High	Tamb = 85 °C, RH = 85%, VR = 80 % of						
# A2 alt		rated reverse voltage <sup>[1], [2]</sup>	1000 hours	311	14080	0		
# MZ dit	. cpc. aca. c Neverse Blus	MIL-STD-750 Method 1037	1000 110015	J11	14000	0		
	IOL	ton = toff, devices powered to insure $\Delta T_i$ =						
# A5	Intermittent Operating Life		1000 hours	312	14120	0		
# 43	Thermittent Operating Life	100 C for 15000 cycles	1000 110015	J12	14120	U		
	RSH	JESD22-A111						
# C8	Resistance to Solder Heat		10 s	269	8070	0		
50	SD		200	203	2070	-		
# C10		J-STD-002		222	6660	0		
# C10	Solderability	J-STD-002		222	6660	0		

<sup>[1]</sup> The physical limitations of Schottky diodes have to be considered (thermal runaway).

## **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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<sup>[2]</sup> The maximum applied voltage is limited by test chamber set up and does not exceed 115V.