

## **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 PDZ5.1B-Q Part Description											
									Nexperia DHAM Zener				
									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											
" D4		Tj = Tjmax, VR = 80 % of rated reverse	10001	250	11100								
# B1	Bias	voltage	1000 hours	250	11400	0							
		MIL-STD-750-1											
	CCOR	M1038 Method B											
# D11	SSOP Steady State Operational	Tj = Tjmax, Iz = 100% of max. datasheet reverse current	1000	4.4	1020	0							
# B1b	Steady State Operational	reverse current	1000 hours	44	1920	0							
	тс	JESD22-A104											
# A4	Temperature Cycling	-65 °C to Timax, not to exceed 150°C	1000 cycles	311	14080	0							
# A <del>4</del>	remperature cycling	os e to rimax, not to exceed 150 e	1000 Cycles	311	14000	U							
İ	UHAST	JESD22-A118											
# A3 or	Unbiased HAST	Tamb = 130 °C, RH = 85 %											
# A3 01	Official Control	JESD22-A102	- 96 hours	311	14080	0							
	AC	Tamb = 121 °C, RH = 100 %											
# A3 alt	Autoclave	Pressure = 205 kPa (29.7 psia)											
, , (3 ait		200 11 4 (2517 polity)											
	НЗТRВ	JESD22-A101											
	High Humidity High	Tamb = 85 °C, RH = 85%, VR = 80 % of											
# A2 alt		rated reverse voltage <sup>[1]</sup>	1000 hours	311	14080	0							
		MIL-STD-750 Method 1037											
	IOL	ton = toff, devices powered to insure $\Delta Tj$ =											
# A5	Intermittent Operating Life		1000 hours	312	14120	0							
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	RSH	JESD22-A111											
# C8	Resistance to Solder Heat	260 °C ± 5 °C	10 s	269	8070	0							
	SD												
# C10	Solderability	J-STD-002		19	6660	0							

<sup>[1]</sup> 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	Zener	11400	0	0,37	2,68E+09

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