

Quarterly Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2023

Based on structural similarity

Supplier		User Part Number					
Nexperia B.V. Name of Laboratory Assembly reliability labs Based on AEC-Q101 Test		PDZ24B-Q Part Description					
		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	
l		MIL-STD-750-1					
	HTRB	M1038 Method A					
		Tj = Tjmax, VR = 80 % of rated reverse					
# B1	Bias	voltage	1000 hours	250	11400	0	
		MIL-STD-750-1					
		M1038 Method B					
	SSOP	Tj = Tjmax, Iz = 100% of max. datasheet				_	
# B1b	Steady State Operational	reverse current	1000 hours	44	1920	0	
		150000 4404					
	TC	JESD22-A104	1000	244	1 1000	•	
# A4	Temperature Cycling	-65 °C to Tjmax, not to exceed 150°C	1000 cycles	311	14080	0	
	HUACT	JECD22 A110					
# A3 or	UHAST Unbiased HAST	JESD22-A118 Tamb = 130 °C, RH = 85 %					
# A3 UI	Olibiased HAST	· · · · · · · · · · · · · · · · · · ·	- 96 hours	311	14080	0	
	46	JESD22-A102					
# A2 - It	AC Autoclave	Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)					
# A3 alt	Autociave	Plessure = 203 kPa (29.7 psia)					
	НЗТКВ	JESD22-A101					
	High Humidity High	Tamb = 85 °C, RH = 85%, VR = 80 % of					
# A2 alt		rated reverse voltage ^[1]	1000 hours	311	14080	0	
# AZ dIL	remperature Reverse Blas	<u> </u>	1000 Hours	211	14000	U	
	IOL	MIL-STD-750 Method 1037					
# A5	Intermittent Operating Life	ton = toff, devices powered to insure $\Delta T_j = 100 \text{eV}$ for 15000 cycles	1000 hours	312	14120	0	
+ A3	Intermittent Operating Life	100 C for 13000 cycles	1000 hours	312	14120	U	
	RSH	JESD22-A111					
# C8	Resistance to Solder Heat	260 °C ± 5 °C	10 s	269	8070	0	
+ CO	SD	200 0 = 3 0	10.2	209	0070	U	
# C10	Solderability	J-STD-002		19	6660	0	
+ CIU	Joine ability	J J1D 002	4451	13	0000	U	

^[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	Zener	11400	0	0,37	2,68E+09

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