

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 HPZR-C39-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										
		Tj = Tjmax, VR = 80 % of rated reverse				_						
# B1	Bias	voltage	1000 hours	250	11400	0						
		MIL-STD-750-1										
		M1038 Method B										
" 541	SSOP	Tj = Tjmax, Iz = 100% of max. datasheet	10001		1000							
# 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 eveles	211	14000	0						
# A4	remperature Cycling	-03 C to Tjillax, flot to exceed 130 C	1000 cycles	311	14080	0						
	UHAST	JESD22-A118										
# A3 or	Unbiased HAST	Tamb = 130 °C, RH = 85 %										
, ,,,, ,,,	0.15.4564 1.7.61	JESD22-A102	- 96 hours	311	14080	0						
	AC	Tamb = 121 °C, RH = 100 %										
# A3 alt	Autoclave	Pressure = 205 kPa (29.7 psia)										
7 715 tile												
	НЗТRВ	JESD22-A101										
	High Humidity High	Tamb = 85 °C, RH = 85%, VR = 80 % of										
# A2 alt		rated reverse voltage ^[1]	1000 hours	311	14080	0						
		MIL-STD-750 Method 1037				-						
	IOL	ton = toff, devices powered to insure ΔT_j =										
# A5	Intermittent Operating Life		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		19	6660	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	Zener	11400	0	0,37	2,68E+09

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