## nexperia

## **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		BZT52H-B47-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						
# B1	Bias	Tj = Tjmax, VR = 80 % of rated reverse	1000 hours	250	11400	0		
# DI	DIdS	voltage	1000 hours	250	11400	U		
		MIL-STD-750-1						
	SSOP	M1038 Method B Tj = Tjmax, Iz = 100% of max. datasheet						
# B1b	Steady State Operational	reverse current	1000 hours	44	1920	0		
# 010	oteday otate operational		1000 110013		1920	0		
	тс	JESD22-A104						
# A4	Temperature Cycling	-65 °C to Timax, not to exceed 150°C	1000 cycles	311	14080	0		
		······································	1000 07000	011	11000	0		
	UHAST	JESD22-A118						
# A3 <b>or</b>	Unbiased HAST	Tamb = 130 °C, RH = 85 %	0.01	311	14080	0		
		JESD22-A102	— 96 hours					
	AC	Tamb = $121 ^{\circ}C$ , RH = $100 ^{\circ}M$						
# 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]</sup>	1000 hours	311	14080	0		
		MIL-STD-750 Method 1037						
	IOL	ton = toff, devices powered to insure $\Delta Tj$ =						
# 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	1 075 000						
# 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
DHAM	Zener	11400	0	0,37	2,00

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