

## **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		BZX84-B12-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	
		MIL-STD-750-1					
	HTRB	M1038 Method A					
	High Temperature Reverse	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	
	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 %	96 hours	311	14080	0	
		JESD22-A102	50 1.00.0	511	1.000	· ·	
	AC	Tamb = 121 °C, RH = 100 %					
# 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	
	DCH	JECD22 A111					
<b>#</b> CO	RSH Resistance to Solder Heat	JESD22-A111	10 -	260	0070	0	
# C8		200 ·C ± 5 °C	10 s	269	8070	0	
# C10	<b>SD</b> Solderability	J-STD-002		10	6660	0	
# C10	Solderability	J-31D-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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