

## Quarterly Reliability Monitoring Results

Quarters: Q3/2021 to Q4/2022

Based on structural similarity

Supplier		User Part Number				
Nexperia B.V.		PZU15B1A-Q				
Name of Laboratory		Part Description				
Assembly reliability labs		Nexperia DHAM Zener				
SMD package						
Based on AEC-Q101 Test		Test Conditions	Duration	# Lots	# Quantity	# Rejects
<b>TEST</b>						
# E1	Pre- and Post-Stress Electrical Test	Tamb = 25 °C	N/A	see below	all parts	see below
# A1	<b>PC</b> Preconditioning	JESD22-A113				
		Bake Tamb = 125 °C	24 hours			
		Soak Tamb = 85 °C, RH = 85%	168 hours			
# B1	<b>HTRB</b> High Temperature Reverse Bias	Reflow soldering	3 cycles	1168	66640	0
		MIL-STD-750-1				
		M1038 Method A				
# B1b	<b>SSOP</b> Steady State Operational	Tj = Tjmax, VR = 80 % of rated reverse voltage	1000 hours	198	11960	0
		MIL-STD-750-1				
		M1038 Method B				
# A4	<b>TC</b> Temperature Cycling	Tj = Tjmax, Iz = 100% of max. datasheet reverse current	1000 hours	24	1760	0
		JESD22-A104				
		-65 °C to Tjmax, not to exceed 150°C	1000 cycles	240	14800	0
# A3 or	<b>UHAST</b> Unbiased HAST	JESD22-A118				
		Tamb = 130 °C, RH = 85 %	96 hours	240	14800	0
		JESD22-A102				
# A3 alt	<b>AC</b> Autoclave	Tamb = 121 °C, RH = 100 %				
		Pressure = 205 kPa (29.7 psia)				
		JESD22-A101				
# A2 alt	<b>H3TRB</b> High Humidity High Temperature Reverse Bias	Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage <sup>[1]</sup>	1000 hours	240	14800	0
		MIL-STD-750 Method 1037				
		ton = toff, devices powered to insure ΔTj = 100 °C for 15000 cycles	1000 hours	264	16720	0
# A5	<b>IOL</b> Intermittent Operating Life					
		JESD22-A111				
		260 °C ± 5 °C	10 s	184	5520	0
# C8	<b>RSB</b> Resistance to Solder Heat					
		JESD22-A111				
		260 °C ± 5 °C	10 s	184	5520	0
# C10	<b>SD</b> Solderability					
		J-STD-002				
				501	5010	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	Zener	11960	0	0,36	2,82E+09
DHAM					

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