

Quarterly Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2023

Based on structural similarity

Supplier		User Part Number				
Nexperia B.V.		PESD5V5V1BCSF				
Name of Laboratory		Part Description				
Assembly reliability labs		Nexperia DHAM Protection Std Bipolar BD package				
Test	Test Conditions	Duration	# Lots	# Quantity	# Rejects	
# 1	TEST Pre- and Post-Stress Electrical Test	Tamb = 25 °C	N/A	see below	all parts	see below
# 5	HTRB High Temperature Reverse Bias	MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet reverse voltage	1000 hours	17	760	0
# 7	TC Temperature Cycling	JESD22-A104 -40 °C to 125°C	1000 cycles	157	6880	0
# 8 or	UHAST Unbiased HAST	JESD22-A118 Tamb = 130 °C, RH = 85 %	96 hours	n.a.	n.a.	n.a.
# 8a	AC Autoclave	JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)				
# 9	HAST Highly Accelerated Stress Test	JESD22-A110 Tamb = 130 °C, RH = 85%, VR = 80 % of rated reverse voltage ^[1]	1000 hours	156	6840	0
# 10	IOL Intermittent Operating Life	MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = 100 °C for 15000 cycles	1000 hours	n.a.	n.a.	n.a.
# 20	RSH Resistance to Solder Heat	JESD22-A111 260 °C ± 5 °C	10 s	n.a.	n.a.	n.a.
# 21	SD Solderability	J-STD-002		8	240	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 # 5)
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	Protection Std Bipolar	760	0	5,59	1,79E+08

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