## nexperia

## **Quarterly Reliability Monitoring Results**

Quarters: Q1/2022 to Q4/2023

Based on structural similarity

Supplier		User Part Number						
Nexperia B.V.		BCV71						
Name of Laboratory Assembly reliability labs Test		Part Description						
		Nexperia DHAM Small Signal Bipolar Transistor						
		SMD package						
		Test Conditions	Duration	# Lots	# Quantity	# Rejects		
	TEST							
	Pre- and Post-Stress							
# 1	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					
# 2	Preconditioning	Reflow soldering	3 cycles	1674	70490	0		
		MIL-STD-750-1						
	HTRB	M1039 Method A Tj = Tjmax, Vr = 100% of max. datasheet						
# 5	Bias	reverse voltage	1000 hours	415	18680	0		
" 5			1000 110015	115	10000	0		
	тс	JESD22-A104						
# 7	Temperature Cycling	-65 °C to Tjmax, not to exceed 150°C	500 cycles	343	15360	0		
# 8 <b>or</b>	UHAST Unbiased HAST	JESD22-A118 Tamb = 130 °C, RH = 85 %	— 96 hours	362	15920	0		
	ofibiased fixs i	,						
	AC	JESD22-A102 Tamb = 121 °C, RH = 100 %						
# 8a	Autoclave	Pressure = $205 \text{ kPa} (29.7 \text{ psia})$						
<i>"</i> ou								
	H3TRB	JESD22-A101						
	High Humidity High	Tamb = 85 °C, RH = 85%, VR = 80 % of						
# 9	Temperature Reverse Bias	rated reverse voltage <sup>[1]</sup>	1000 hours	343	15360	0		
	101	MIL-STD-750 Method 1037						
# 10	IOL Intermittent Operating Life	ton = toff, devices powered to insure $\Delta T_j = 100 \text{ °C}$	333 hours	343	15360	0		
# 10	Internitient Operating Life	100 C	333 HOURS	545	10000	0		
	RSH	JESD22-A111						
# 20	Resistance to Solder Heat		10 s	283	8490	0		
	SD							
# 21	Solderability	J-STD-002		214	6420	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	Small Signal Bipolar Transistor	18680	0	0,23	4,40E+09

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