

Quarterly Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2023

Based on structural similarity

Supplier Nexperia B.V.		User Part Number						
		BC857AQC						
Name of Laboratory Assembly reliability labs		Part Description						
		Nexperia DHAM Small Signal Bipolar Transistor						
		MCD package						
Test		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		
1		JESD22-A113						
	PC	Bake Tamb = 125 °C	24 hours 168 hours					
# 2	Preconditioning	Soak Tamb = 85 °C, RH = 85% Reflow soldering	3 cycles	464	20960	0		
# 2	rreconditioning	<u> </u>	3 cycles	404	20900	U		
	HTRB	MIL-STD-750-1 M1039 Method A						
		Tj = Tjmax, Vr = 100% of max. datasheet						
# 5	Bias	reverse voltage	1000 hours	415	18680	0		
3			1000 110010	.120	20000			
	тс	JESD22-A104						
# 7	Temperature Cycling	-65 °C to Tjmax, not to exceed 150°C	500 cycles	116	5240	0		
			,					
	UHAST	JESD22-A118						
# 8 or	Unbiased HAST	Tamb = 130 °C, RH = 85 %	— 96 hours	116	5240	0		
		JESD22-A102						
	AC	Tamb = 121 °C, RH = 100 %						
# 8a	Autoclave	Pressure = 205 kPa (29.7 psia)						
	H3TRB	JESD22-A101						
	High Humidity High	Tamb = 85 °C, RH = 85%, VR = 80 % of						
# 9	Temperature Reverse Bias	rated reverse voltage ^[1]	1000 hours	116	5240	0		
		MIL-STD-750 Method 1037						
	IOL	ton = toff, devices powered to insure ΔTj =						
# 10	Intermittent Operating Life	100 -C	333 hours	116	5240	0		
	RSH	JECD22 A111						
# 20	RSH Resistance to Solder Heat	JESD22-A111 260 °C + 5 °C	10.0					
# 20	SD	200 0 = 3 0	10 s	n.a.	n.a.	n.a.		
# 21	Solderability	J-STD-002		86	2580	0		
# 21	Solderability	J J1D 002		90	2300	U		

^[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	Small Signal Bipolar				
DHAM	Transistor	18680	0	0,23	4,40E+09

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