

Quarterly Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2023

Based on structural similarity

Supplier Nexperia B.V.		User Part Number						
		BC856BQC						
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		
		JESD22-A113						
		Bake Tamb = 125 °C	24 hours					
	PC	Soak Tamb = 85 °C, RH = 85%	168 hours					
# 2	Preconditioning	Reflow soldering	3 cycles	464	20960	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		
		150000 4404						
	TC Temperature Cycling	JESD22-A104 -65 °C to Tjmax, not to exceed 150°C	F00 I		F2.40			
# 7	remperature Cycling	-65 °C to Tjillax, flot to exceed 150 °C	500 cycles	116	5240	0		
	UHAST	JESD22-A118						
# 8 o r	Unbiased HAST	Tamb = 130 °C, RH = 85 %	— 96 hours	116	5240	0		
o c .	onsided into i	JESD22-A102						
	AC	Tamb = 121 °C, RH = 100 %						
# 8a	Autoclave	Pressure = 205 kPa (29.7 psia)						
# Ou								
	НЗТRВ	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	_30000/3		0	-		
	IOL	ton = toff, devices powered to insure ΔT_j =						
# 10	Intermittent Operating Life		333 hours	116	5240	0		
						-		
	RSH	JESD22-A111						
# 20	Resistance to Solder Heat	260 °C ± 5 °C	10 s	n.a.	n.a.	n.a.		
	SD							
# 21	Solderability	J-STD-002		86	2580	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	Small Signal Bipolar				
DHAM	Transistor	18680	0	0,23	4,40E+09

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