nexperia

Quarterly Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

Supplier		User Part Number					
Nexperia B.V.		PMBD6050					
Name of Laboratory Assembly reliability labs Based on AEC-Q101 Test		Part Description					
		Nexperia DHAM Small Signal Bipolar Diode					
		SMD package					
		Test Conditions	Duration	# Lots	# Quantity	# Rejects	
	TEST						
	Pre- and Post-Stress						
# E1	Electrical Test	Tamb = 25 °C	N/A	see below	all parts	see below	
		JESD22-A113	241				
	PC	Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85%	24 hours 168 hours				
# A1	Preconditioning	Reflow soldering	3 cycles	810	58300	0	
# A1	· · · · · · · · · · · · · · · · · · ·	MIL-STD-750-1	5 5,5.55	010	30300	U	
	HTRB	MIL-STD-750-1 M1038 Method A					
		$T_j = T_j max$, $Vr = 100\%$ of max. datasheet					
# B1	Bias	reverse voltage	1000 hours	67	5360	0	
	тс	JESD22-A104					
# A4	Temperature Cycling	-65 °C to Tjmax, not to exceed 150°C	1000 cycles	170	13600	0	
		JESD22-A102					
	AC	Tamb = 121 °C, RH = 100 %					
# A3 alt	Autoclave	Pressure = 205 kPa (29.7 psia)	96 hours	170	13600	0	
	H3TRB	JESD22-A101					
	High Humidity High	Tamb = 85 °C, RH = 85%, VR = 80 % of					
# A2 alt	Temperature Reverse Bias	-	1000 hours	170	13600	0	
	101	MIL-STD-750 Method 1037					
# A F	IOL Intermittent Operating Life	ton = toff, devices powered to insure ΔTj =	1000 have	170	12600	0	
# A5	Intermittent Operating Life		1000 hours	170	13600	0	
	RSH	JESD22-A111					
# C8	Resistance to Solder Heat		10 s	130	3900	0	
# 0	SD	200 0 - 5 0	10.2	130	2900	U	
# C10	Solderability	J-STD-002		363	3630	0	
		d by test chamber set up and does not exceed		202	2020	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 #B1) Confidence level 60%, derated to 55 °C, activation energy 0.7 eV, test time 168 to 1000 hours

Wafer Fab Technol	ogy Quantity	Rejects	Failure Rate (FIT) MTTF (hrs)
Nexperia DHAM Small Sig	nal Bipolar Diode 5360	0	0.79	1.26E+09

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