nexperia

Quarterly Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

y labs 101 Test ST - and Post-Stress ctrical Test cconditioning RB	PESD15VL1BA Part Description Nexperia DHAM SMD package Test Conditions Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	Protection Duration N/A 24 hours 168 hours 3 cycles	# Lots see below	# Quantity all parts	# Rejects see below
y labs 101 Test ST and Post-Stress ctrical Test econditioning	Nexperia DHAM SMD package Test Conditions Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	Duration N/A 24 hours 168 hours			-
101 Test ST and Post-Stress ctrical Test	SMD package Test Conditions Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	Duration N/A 24 hours 168 hours			-
101 Test ST and Post-Stress ctrical Test	Test Conditions Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	N/A 24 hours 168 hours			-
ST and Post-Stress ctrical Test 	Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	N/A 24 hours 168 hours			-
e- and Post-Stress ctrical Test econditioning	JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	24 hours 168 hours	see below	all parts	see below
ctrical Test	JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	24 hours 168 hours	see below	all parts	see below
conditioning	JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	24 hours 168 hours	see below	all parts	see below
econditioning	Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	168 hours			
econditioning	Soak Tamb = 85 °C, RH = 85% Reflow soldering	168 hours			
econditioning	Reflow soldering				
	5		286	21480	0
DB		5 676165	200	21400	0
	MIL-STD-750-1 M1038 Method A				
	$T_j = T_j max$, $Vr = 100\%$ of max. datasheet				
IS	reverse voltage	1000 hours	117	9360	0
	JESD22-A104				
mperature Cycling	-65 °C to Tjmax, not to exceed 150°C	1000 cycles	86	6880	0
	JESD22-A102				
	Tamb = 121 °C, RH = 100 %				
toclave	Pressure = 205 kPa (29.7 psia)	96 hours	86	6880	0
TRB					
nperature Reverse Blas		1000 hours	86	6880	0
		1000 hours			
ermittent Operating Life	100 C 101 13000 Cycles	1000 nours	n.a.	n.a.	n.a.
н	1FSD22-4111				
		10 s	28	840	0
		10.3	20	010	0
	J-STD-002		36	360	0
to T ph E e	RB h Humidity High perature Reverse Bias rmittent Operating Life stance to Solder Heat	JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia) RB JESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^[1] MU -STD-750 Method 1037 ton = toff, devices powered to insure Δ Tj = 100 °C for 15000 cyclesIJESD22-A111 260 °C \pm 5 °C	JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)96 hoursRBJESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^[1] 1000 hoursMIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = 1000 hours1000 hoursItematical stance to Solder HeatJESD22-A111 260 °C ± 5 °C10 s	JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)96 hours86IRB h Humidity High perature Reverse BiasJESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^[1] 1000 hours86MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = rmittent Operating Life100 °C for 15000 cycles1000 hoursn.a.Image: stance to Solder HeatJESD22-A111 260 °C ± 5 °C10 s28	JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)96 hours866880RBJESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of hperature Reverse Bias1000 hours866880ML-STD-750 Method 1037 ton = toff, devices powered to insure $\Delta Tj =$ rmittent Operating Life100 °C for 15000 cycles1000 hoursn.a.n.a.IJESD22-A111 ton = toff, devices powered to insure $\Delta Tj =$ rmittent Operating LifeJESD22-A111 260 °C ± 5 °C10 s28840

[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	Technology	Quantity	Rejects	Failure Rate (FIT)	MTTF (hrs)
Nexperia DHAM	Protection	9360	0	0.45	2.20E+09

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