nexperia

Quarterly Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on st	tructural	similarity
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	User Part Number						
	PMEG100V060ELPD						
boratory	Part Description						
	Nexperia DHAM	Schottky					
liability labs	SMD package						
EC-Q101 Test	Test Conditions	Duration	# Lots	# Quantity	# Rejects		
TEST							
Electrical Test	Tamb = 25 °C	N/A	see below	all parts	see below		
	JESD22-A113						
Preconditioning		3 cycles	810	58300	0		
5 1							
Bias	reverse voltage	1000 hours	116	9280	0		
тс	1FSD22-A104						
Temperature Cycling	-65 °C to Tjmax, not to exceed 150°C	1000 cvcles	170	13600	0		
	JESD22-A102	,					
AC	Tamb = 121 °C, RH = 100 %						
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						
Temperature Reverse Bias	rated reverse voltage ^{[1], [2]}	1000 hours	170	13600	0		
	MIL-STD-750 Method 1037						
IOL	ton = toff, devices powered to insure ΔT_j =						
Intermittent Operating Life		1000 hours	170	13600	0		
RSH	JESD22-A111						
Resistance to Solder Heat		10 s	130	3900	0		
SD							
Solderability	J-STD-002		363	3630	0		
li	iability labs EC-Q101 Test TEST Pre- and Post-Stress Electrical Test PC Preconditioning HTRB High Temperature Reverse Bias TC Temperature Cycling AC Autoclave H3TRB High Humidity High Temperature Reverse Bias IOL Intermittent Operating Life RSH Resistance to Solder Heat SD	PMEG100V060ELPD boratory Part Description Nexperia DHAM iability labs SMD package EC-Q101 Test Test Conditions TEST Pre- and Post-Stress Electrical Test Tamb = 25 °C PC Soak Tamb = 125 °C PC Soak Tamb = 85 °C, RH = 85% Preconditioning Reflow soldering HTRB M1038 Method A High Temperature Reverse Ti = Tjmax, Vr = 100% of max. datasheet reverse voltage ^[1] TC JESD22-A104 Temperature Cycling -65 °C to Tjmax, not to exceed 150°C JESD22-A102 Tamb = 121 °C, RH = 100 % Autoclave H3TRB JESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^{[11], [2]} MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = 100 °C for 15000 cycles RSH Resistance to Solder Heat JESD22-A111 260 °C ± 5 °C	PMEG100V060ELPD boratory Part Description Nexperia DHAM Schottky iability labs SMD package Duration EC-Q101 Test Test Conditions Duration TEST Pre- and Post-Stress Tamb = 25 °C N/A Electrical Test Tamb = 25 °C N/A JESD22-A113 Bake Tamb = 125 °C 24 hours PC Soak Tamb = 85 °C, RH = 85% 168 hours Preconditioning Reflow soldering 3 cycles MIL-STD-750-1 M1038 Method A 1000 hours TC JESD22-A104 1000 hours TC JESD22-A104 1000 cycles JESD22-A102 Tamb = 121 °C, RH = 100 % 1000 cycles AC Tamb = 121 °C, RH = 100 % 1000 cycles JESD22-A102 Tamb = 25 °C C To Timax, not to exceed 150°C 1000 cycles H3TRB JESD22-A101 1000 % 1000 hours H3TRB JESD22-A101 1000 hours 1000 hours TOL Tamb = 120 °C, RH = 85%, VR = 80 % of 1000 hours 1000 hours RSH JESD22-A101	PMEG100V060ELPD boratory Part Description Nexperia DHAM Schottky iability labs SMD package Duration # Lots EC-Q101 Test Test Conditions Duration # Lots TEST Pre- and Post-Stress Tamb = 25 °C N/A see below JESD22-A113 Bake Tamb = 125 °C 24 hours Bake Tamb = 125 °C 24 hours 168 hours PC Soak Tamb = 85 °C, RH = 85% 168 hours Preconditioning Reflow soldering 3 cycles 810 HTRB MI038 Method A Tj = Tjmax, Vr = 100% of max. datasheet reverse voltage ^[11] 1000 hours 116 TC JESD22-A104 1000 hours 116 TC JESD22-A102 1000 hours 170 AC Tamb = 121 °C, RH = 100 % Autoclave Pressure = 205 kPa (29.7 psia) 96 hours 170 H3TRB JESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of Temperature Reverse Bias 170 170 H3TRB JESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of Temperature Reverse Bias 170 170 KSH JESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of Temperature Reverse Bias 170 170 KSH JESD22-A111 Resistance to Solder Heat 260 °C ± 5 °C 10 s 130	PMEG100V060ELPDboratoryPart Description Nexperia DHAMSchuttkyiability labsSMD packageTEST Pre- and Post-StressTast ConditionsDuration# Lots# QuantityPCSoak Tamb = 25 °CN/Asee belowall partsJESD22-A113 Bake Tamb = 125 °C24 hours 168 hoursS810S8300PCSoak Tamb = 85 °C, RH = 85% Soak Tamb = 85 °C, RH = 85% High Temperature Reverse168 hours T = Timax, Vr = 100% of max. datasheet reverse voltage ^[1] 1000 hours1169280TCJESD22-A104 -65 °C to Tjmax, not to exceed 150°C Temperature CyclingJESD22-A104 -65 °C to Tjmax, not to exceed 150°C Tamb = 121 °C, RH = 100 % Autoclave1000 hours1169280H3TRB High Humidity High Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^{[1], [2]} Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^{[1], [2]} Tom = 55 °C, RH = 85%, VR = 80 % of rated reverse voltage ^{[1], [2]} Tom = 55 °C, RH = 85%, VR = 80 % of rated reverse voltage ^{[1], [2]} Tom = 55 °C, RH = 85%, VR = 80 % of rated reverse voltage ^{[1], [2]} Tom = 100 °C for 15000 cycles17013600RSH Resistance to Solder HeatJESD22-A101 Tamb = 55 °C, RH = 85%, VR = 80 % of rated reverse voltage ^{[1], [2]} Tom = 55 °C, SH = 85%, VR = 80 % of rated reverse voltage ^{[1], [2]} Tom = 100 °C for 15000 cycles17013600RSH Resistance to Solder HeatJESD22-A111 Z60 °C ± 5 °C100 s1303900		

[1] The physical limitations of Schottky diodes have to be considered (thermal runaway).

[2] 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	Schottky	9280	0	0.46	2.19E+09
	Beneticity	200	5		21152.05

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