

Quarterly Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

ty labs 2101 Test EST e- and Post-Stress ectrical Test Ceconditioning TRB gh Temperature Reverse as	BAS40-04 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 MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet reverse voltage ^[1]	Schottky Duration N/A 24 hours 168 hours 3 cycles	# Lots see below 810	# Quantity all parts 58300	# Rejects see below 0
ty labs 2101 Test EST e- and Post-Stress ectrical Test C econditioning TRB gh Temperature Reverse	Nexperia DHAM SMD package Test Conditions Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet	N/A 24 hours 168 hours 3 cycles	see below	all parts	see below
1101 Test EST e- and Post-Stress ectrical Test C econditioning TRB gh Temperature Reverse	SMD package Test Conditions Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet	N/A 24 hours 168 hours 3 cycles	see below	all parts	see below
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c econditioning TRB gh Temperature Reverse	JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet	24 hours 168 hours 3 cycles	810	58300	0
C reconditioning TRB gh Temperature Reverse	JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet	24 hours 168 hours 3 cycles	810	58300	0
econditioning TRB gh Temperature Reverse	Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet	168 hours 3 cycles			
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econditioning TRB gh Temperature Reverse	Reflow soldering MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet	3 cycles			
TRB gh Temperature Reverse	MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet	,			
gh Temperature Reverse	M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet	1000 hours	116	9280	0
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•		1000 hours	116	9280	0
as	reverse voltage ^[1]	1000 hours	116	9280	0
-	JECD22 A104				
C emperature Cycling	JESD22-A104 -65 °C to Timax, not to exceed 150°C	1000	170	12500	•
emperature Cycling		1000 cycles	170	13600	0
_	JESD22-A102				
C	Tamb = 121 °C, RH = 100 %				
ıtoclave	Pressure = 205 kPa (29.7 psia)	96 hours	170	13600	0
	IESD22-A101				
		1000 hours	170	13600	0
peracure reverse blus		1000 Hours	1/0	13000	U
DL					
		1000 hours	170	12600	0
committee operating Life	100 C 101 15000 Cycles	TOOO HOURS	1/0	13000	U
SH	IESD22-A111				
esistance to Solder Heat	260 °C ± 5 °C	10 s	130	3900	0
D		200	130	2,00	
					0
s s	L ermittent Operating Life H sistance to Solder Heat	th Humidity High mperature Reverse Bias metal Reverse Bias metal Reverse Bias milk-STD-750 Method 1037 ton = toff, devices powered to insure $\Delta Tj = 100 ^{\circ}\text{C}$ for 15000 cycles metal Reverse to Solder Heat $260 ^{\circ}\text{C} \pm 5 ^{\circ}\text{C}$	Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage $^{[1], [2]}$ 1000 hours MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = ermittent Operating Life 100 °C for 15000 cycles 1000 hours H JESD22-A111 sistance to Solder Heat 260 °C \pm 5 °C 10 s	th Humidity High Tamb = 85 °C, RH = 85%, VR = 80 % of mereature Reverse Bias rated reverse voltage $^{[1],[2]}$ 1000 hours 170 MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = termittent Operating Life 100 °C for 15000 cycles 1000 hours 170 MH JESD22-A111 sistance to Solder Heat 260 °C \pm 5 °C 10 s 130	th Humidity High Tamb = 85 °C, RH = 85%, VR = 80 % of mean rated reverse voltage (x) , (x) and (x) are the following perature Reverse Bias rated reverse voltage (x) , (x) and (x) are the following rated reverse voltage (x) , (x) and (x) are the following rated reverse voltage (x) , (x) and (x) are the following rated reverse voltage (x) , and (x) are the following rated reverse voltage (x) , and (x) are the following rated reverse voltage (x) , and (x) are the following rated reverse voltage (x) , and (x) are the following rated rated reverse voltage (x) , and (x) are the following rated rated reverse voltage (x) , and (x) are the following rated ra

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

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

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^[2] The maximum applied voltage is limited by test chamber set up and does not exceed 115V.