nexperia

Quarterly Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2023 Based on structural similarity

	User Part Number						
	BAT854AW-Q						
boratory	Part Description						
	Nexperia DHAM	Schottky					
liability labs							
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-							
Pre- and Post-Stress							
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					
Preconditioning	Reflow soldering	3 cycles	1514	64430	0		
	MIL-STD-750-1						
HTRB	M1038 Method A						
High Temperature Rever	Tj = Tjmax, Vr = 100% of max. datasheet						
Bias	reverse voltage ^[1]	1000 hours	206	9320	0		
	JESD22-A104						
Temperature Cycling	-65 °C to Tjmax, not to exceed 150°C	1000 cycles	311	14080	0		
Undiased HAST		- 96 hours	311	14080	0		
Autoclave	Pressure = 205 kPa (29.7 psia)						
	JESD22-4101						
		1000 hauna	211	14000	0		
# A2 alt Temperature Reverse Bias		1000 nours	511	14080	0		
101							
		1000 hours	212	14120	0		
Internittent Operating Life		1000 nours	512	14120	0		
RSH	JESD22-A111						
Resistance to Solder Heat	260 °C ± 5 °C	10 s	269	8070	0		
SD					-		
Solderability	J-STD-002		222	6660	0		
	iboratory iiability labs EC-Q101 Test TEST Pre- and Post-Stress Electrical Test PC Preconditioning HTRB High Temperature Reverse Bias TC Temperature Cycling UHAST Unbiased HAST AC Autoclave H3TRB High Humidity High Temperature Reverse Bias IOL Intermittent Operating Life RSH Resistance to Solder Heat SD	BAT854AW-QIboratoryPart Description Nexperia DHAMliability labsSMD packageEC-Q101 TestTest ConditionsTEST Pre- and Post-Stress Electrical TestTamb = 25 °CPCSoak Tamb = 125 °CPCSoak Tamb = 85 °C, RH = 85% PreconditioningPFe-reconditioningReflow solderingMIL-STD-750-1 HTRBMIL-STD-750-1 MI038 Method A Tj = Tjmax, Vr = 100% of max. datasheet BiasTCJESD22-A104 -65 °C to Tjmax, not to exceed 150°CUHAST Unbiased HASTJESD22-A104 -65 °C to Tjmax, not to exceed 150°CAC AutoclaveTamb = 121 °C, RH = 85 % JESD22-A102 Tamb = 121 °C, RH = 100 % AutoclaveH3TRB High Humidity High Temperature Reverse BiasJESD22-A102 Tamb = 121 °C, RH = 80 % of rated reverse voltage ^{[1], [2]} H3TRB High Humidity High Temperature Reverse BiasJESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^{[1], [2]} MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = 100 °C for 15000 cyclesRSH Resistance to Solder Heat SDJESD22-A111 260 °C ± 5 °CSD	$\begin{tabular}{ c c c c } \hline BAT854AW-Q \\ \hline Part Description \\ Nexperia DHAM \\ Nexperia DHAM \\ Nexperia DHAM \\ Nexperia DHAM \\ Schottky \\ \hline SMD package \\ \hline EC-Q101 Test \\ TEST \\ Pre- and Post-Stress \\ Electrical Test \\ Tamb = 25 °C \\ N/A \\ \hline JESD22-A113 \\ Bake Tamb = 125 °C \\ Soak Tamb = 125 °C \\ Soak Tamb = 85 °C, RH = 85\% \\ PC \\ Soak Tamb = 85 °C, RH = 85\% \\ Preconditioning \\ Reflow soldering \\ Tj = Tjmax, Vr = 100\% of max. datasheet \\ Bias \\ reverse voltage^{[1]} \\ 1000 hours \\ \hline TC \\ Temperature Reverse \\ Bias \\ IDESD22-A104 \\ Temperature Cycling \\ AC \\ Autoclave \\ Pressure = 205 kPa (29.7 psia) \\ \hline HAST \\ Unbiased HAST \\ Tamb = 130 °C, RH = 85 \% \\ JESD22-A102 \\ AC \\ Tamb = 121 °C, RH = 100 \% \\ Autoclave \\ Pressure = 205 kPa (29.7 psia) \\ \hline H3TRB \\ High Humidity High \\ Tamb = 85 °C, RH = 85\%, VR = 80 \% of \\ Temperature Reverse Bias \\ IESD22-A101 \\ Tamb = 85 °C, RH = 85\%, VR = 80 \% of \\ Temperature Reverse Bias \\ rated reverse voltage^{[1], [2]} \\ IO00 hours \\ \hline IO00 hours \\ \hline RSH \\ Resistance to Solder Heat \\ JESD22-A111 \\ 260 °C \pm 5 °C \\ 10 s \\ \hline SD \\ \hline \end{tabular}$	BAT854AW-Q bboratory Part Description Nexperia DHAM Schottky liability labs SMD package	BAT854AW-QBAT854AW-QBAT854AW-QBAT854AW-QPart Description Nexperia DHAM SMD packageSCHOTTESTEC-Q101 TestTest ConditionsDuration# Lots# QuantityTEST Pre- and Post-Stress 		

The physical limitations of Schottky diodes have to be considered (thermal runaway).
 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	9320	0	0,46	2,19E+09

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