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Quarterly Reliability Monitoring Results

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

Supplier Nexperia B.V. Name of Laboratory Assembly reliability labs Based on AEC-Q101 Test		User Part Number BAS70-07S-Q Part Description Nexperia DHAM Schottky 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	.,		p							
		Bake Tamb = $125 ^{\circ}\text{C}$	24 hours											
	PC	Soak Tamb = 85 °C, RH = 85%	168 hours											
# A1	Preconditioning	Reflow soldering	3 cycles	1514	64430	0								
		MIL-STD-750-1	,			-								
	HTRB	M1038 Method A												
		Tj = Tjmax, Vr = 100% of max. datasheet												
# B1	Bias	reverse voltage ^[1]	1000 hours	206	9320	0								
	Bids	Tevelse voltage	1000 110013	200	5520	0								
	тс	JESD22-A104												
# A4	Temperature Cycling	-65 °C to Timax, not to exceed 150°C	1000 cycles	311	14080	0								
	· · · · · · · · · · · · · · · · · · ·		1000 cycles	511	11000	0								
	UHAST	JESD22-A118												
# A3 or	Unbiased HAST	Tamb = 130 °C, RH = 85 %												
	01010000177001	JESD22-A102	— 96 hours	311	14080	0								
	AC	Tamb = $121 ^{\circ}$ C, RH = $100 ^{\circ}$												
# A3 alt	Autoclave	Pressure = $205 \text{ kPa} (29.7 \text{ psia})$												
# AS dit	Autoclave													
	H3TRB	JESD22-A101												
	High Humidity High	Tamb = $85 ^{\circ}$ C, RH = 85% , VR = 80% of												
4 A D alt	Temperature Reverse Bias		1000 hours	311	14000	0								
# A2 alt	Temperature Reverse blas		1000 nours	511	14080	0								
	101	MIL-STD-750 Method 1037												
# AF	IOL	ton = toff, devices powered to insure ΔT_j =	1000 h	212	14120	0								
# A5	Intermittent Operating Life	100 °C 101 15000 Cycles	1000 hours	312	14120	0								
	RCH	155522 4111												
# CO	RSH Desistance to Colder Uset	JESD22-A111	10 -	260	0070	0								
# C8	Resistance to Solder Heat	260 °C ± 5 °C	10 s	269	8070	0								
	SD Calderrahiliter	1 CTD 000		222										
# C10	Solderability	J-STD-002		222	6660	0								

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

confidence level of <i>n</i> , defated to 55°C, activation energy 0.7 eV, test time 100 to 1000 hours	nce level 60%, derated to 55 °C, activation energy 0.7 eV, t	test time 168 to 1000 nours
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Wafer Fab	Technology	Quantity	Rejects	Failure Rate (FIT)	MTTF (hrs)
Nexperia					
DHAM	Schottky	9320	0	0,46	2,19E+09

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