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Quarterly Reliability Monitoring Results

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

Supplier Nexperia B.V.		User Part Number PMEG40T30ER-Q										
								Name of Laboratory Assembly reliability labs Based on AEC-Q101 Test		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										
		Bake Tamb = 125 °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										
	High Temperature Reverse	Tj = Tjmax, Vr = 100% of max. datasheet										
# B1	Bias	reverse voltage ^[1]	1000 hours	206	9320	0						
	тс	JESD22-A104										
# A4	Temperature Cycling	-65 °C to Tjmax, not to exceed 150°C	1000 cycles	311	14080	0						
	UHAST	JESD22-A118										
# A3 or	Unbiased HAST	Tamb = 130 °C, RH = 85 %	– 96 hours	311	14080	0						
		JESD22-A102				-						
	AC	Tamb = 121 °C, RH = 100 %										
# A3 alt	Autoclave	Pressure = 205 kPa (29.7 psia)										
	H3TRB	JESD22-A101										
	High Humidity High	Tamb = 85 °C, RH = 85%, VR = 80 % of										
# A2 alt	Temperature Reverse Bias		1000 hours	311	14080	0						
		MIL-STD-750 Method 1037										
	IOL	ton = toff, devices powered to insure $\Delta T j$ =										
# A5	Intermittent Operating Life	100 °C for 15000 cycles	1000 hours	312	14120	0						
	BGU	150000 4111										
# C0	RSH Basistansa ta Saldar Haat	JESD22-A111	10 -	260	8070	0						
# C8	Resistance to Solder Heat	260 °C ± 5 °C	10 s	269	8070	0						
	SD Caldarahilitu	1 STD 002		222		0						
# 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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