nexperia

Quarterly Reliability Monitoring Results

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

PMEG4005EPK-Q Part Description Nexperia DHAM MCD package Test Conditions SS Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering MIL-STD-750-1 M1038 Method A Reverse Tj = Tjmax, Vr = 100% of max. datash reverse voltage ^[1] JESD22-A104 -65 °C to Tjmax, not to exceed 150°C	1000 hours	# Lots see below 208 206	# Quantity all parts 9760 9320	# Rejects see below 0
Nexperia DHAM MCD package Test Conditions SS Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering MIL-STD-750-1 M1038 Method A Reverse Tj = Tjmax, Vr = 100% of max. datash reverse voltage ^[1] JESD22-A104	Duration N/A 24 hours 168 hours 3 cycles heet 1000 hours	see below	all parts 9760	see below
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Reflow soldering MIL-STD-750-1 M1038 Method A Reverse Tj = Tjmax, Vr = 100% of max. datash reverse voltage ^[1] JESD22-A104	3 cycles neet 1000 hours			
MIL-STD-750-1 M1038 Method A Reverse Tj = Tjmax, Vr = 100% of max. datash reverse voltage ^[1] JESD22-A104	neet 1000 hours	206	9320	0
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ing -05 °C to rjinax, not to exceed 150°C	1000 cycles	53	2400	0
JESD22-A118				
Tamb = 130 °C, RH = 85 %	0.5.1	53	2400	0
JESD22-A102	96 hours			
Tamb = 121 °C, RH = 100 %				
Pressure = 205 kPa (29.7 psia)				
· · · ·				
JESD22-A101				
	of			
rse Bias rated reverse voltage ^{[1], [2]}	1000 hours	53	2400	0
MIL-STD-750 Method 1037				
	Tj =			
ating Life 100 °C for 15000 cycles	1000 hours	49	2560	0
· · · · · · · · · · · · · · · · · · ·				
JESD22-A111				
er Heat 260 °C ± 5 °C	10 s	n.a.	n.a.	n.a.
1 675 442		37	1110	0
1	JESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % rse Bias rated reverse voltage ^{[1], [2]} MIL-STD-750 Method 1037 ton = toff, devices powered to insure Δ ting Life 100 °C for 15000 cycles JESD22-A111	$JESD22-A101$ Tamb = 85 °C, RH = 85%, VR = 80 % of rse Bias rated reverse voltage ^{[1], [2]} 1000 hours MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = titing Life 100 °C for 15000 cycles 1000 hours JESD22-A111 er Heat 260 °C ± 5 °C 10 s	JESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rse Bias rated reverse voltage ^{[1], [2]} 1000 hours 53 MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔT j = titing Life 100 °C for 15000 cycles 1000 hours 49 JESD22-A111 260 °C \pm 5 °C 10 s n.a. J-STD-002 37	$JESD22-A101$ Tamb = 85 °C, RH = 85%, VR = 80% of rse Bias rated reverse voltage ^{[1], [2]} 1000 hours 53 2400 MIL-STD-750 Method 1037 ton = toff, devices powered to insure Δ Tj = titing Life 100 °C for 15000 cycles 1000 hours 49 2560 JESD22-A111 er Heat 260 °C ± 5 °C 10 s n.a. n.a.

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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