

Quarterly Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

ty labs 2101 Test EST re- and Post-Stress ectrical Test C reconditioning	PDTC115EU Part Description Nexperia DHAM SMD package Test Conditions Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85%	Small Signal E Duration N/A 24 hours	Bipolar Transist # Lots see below	or # Quantity all parts	# Rejects
ty labs 2101 Test EST re- and Post-Stress ectrical Test C	Nexperia DHAM SMD package Test Conditions Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85%	Duration N/A	# Lots	# Quantity	# Rejects
2101 Test EST re- and Post-Stress ectrical Test C	SMD package Test Conditions Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85%	Duration N/A	# Lots	# Quantity	# Rejects
2101 Test EST re- and Post-Stress ectrical Test C	Test Conditions Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85%	N/A		. ,	# Rejects
est e- and Post-Stress ectrical Test	Tamb = 25 °C JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85%	N/A		. ,	# Rejects
ectrical Test	JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85%		see below	all parts	
ectrical Test	JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85%		see below	all parts	
c	JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85%		see below	all parts	
	Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85%	24 hours		parto	see below
	Soak Tamb = 85 °C, RH = 85%				
		168 hours			
	Reflow soldering	3 cycles	849	61170	0
	MIL-STD-750-1	-,	015	511/0	~
TRB	M1039 Method A				
	$T_j = T_j max$, $Vr = 100\%$ of max. datasheet				
as	reverse voltage	1000 hours	202	16160	0
С	JESD22-A104				
emperature Cycling	-65 °C to Tjmax, not to exceed 150°C	1000 cycles	171	13680	0
	JESD22-A102				
с	Tamb = 121 °C, RH = 100 %				
utoclave	Pressure = 205 kPa (29.7 psia)	96 hours	173	13840	0
3TRB					
		1000	170	10010	•
emperature Reverse Blas		1000 hours	1/3	13840	0
DL					
		1000 hours	107	15760	0
Contraction Operating Life	100 0101 10000 090105	1000 Hours	191	13/00	U
SH	1FSD22-4111				
		10 s	135	4050	0
D		10.5	100	1050	v
olderability	J-STD-002		342	3420	0
ig ig ig ig ig ig ig	mperature Cycling toclave TRB Ih Humidity High mperature Reverse Bias L ermittent Operating Life H sistance to Solder Heat	mperature Cycling-65 °C to Tjmax, not to exceed 150°CJESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)TRB h Humidity High mperature Reverse BiasJESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^[1] MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = ermittent Operating LifeJESD22-A111 260 °C ± 5 °C	mperature Cycling-65 °C to Tjmax, not to exceed 150°C1000 cyclesJESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)96 hoursTRB h Humidity High mperature Reverse BiasJESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^[1] 1000 hoursLMIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = 1000 hours1000 hoursHJESD22-A111 260 °C ± 5 °C10 s	mperature Cycling-65 °C to Tjmax, not to exceed 150°C1000 cycles171JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)96 hours173TRBJESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^[1] 1000 hours173LMIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔT j = ermittent Operating Life100 °C for 15000 cycles1000 hours197HJESD22-A111 260 °C ± 5 °C10 s135	mperature Cycling -65 °C to Tjmax, not to exceed 150°C 1000 cycles 171 13680 JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia) 96 hours 173 13840 TRB JESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage ^[11] 1000 hours 173 13840 L MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = ermittent Operating Life 100 °C for 15000 cycles 1000 hours 197 15760 H JESD22-A111 260 °C ± 5 °C 10 s 135 4050

[1] 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	Small Signal Bipolar Transistor	16160	0	0.26	3.81E+09

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