

## Quarterly Reliability Monitoring Results

Quarters: Q1/2020 to Q4/2020

Based on structural similarity

Supplier		User Part Number				
Nexperia B.V.		PEMB18				
Name of Laboratory		Part Description				
Assembly reliability labs		Nexperia DHAM Small Signal Bipolar Transistor SMD package				
AEC-Q101 Test	Test Conditions	Duration	# Lots	# Quantity	# Rejects	
# 1	<b>TEST</b> Pre- and Post-Stress Electrical Test Tamb = 25 °C	N/A	see below	all parts	see below	
# 2	<b>PC</b> Preconditioning JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	24 hours 168 hours 3 cycles	679	48870	0	
# 5	<b>HTRB</b> High Temperature Reverse Bias MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet reverse voltage	1000 hours	156	12480	0	
# 7	<b>TC</b> Temperature Cycling JESD22-A104 -65 °C to Tjmax, not to exceed 150°C	1000 cycles	144	11520	0	
# 8	<b>AC</b> Autoclave JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)	96 hours	144	11520	0	
# 9	<b>H3TRB</b> High Humidity High Temperature Reverse Bias JESD22-A101 Tamb = 85 °C, RH = 85%, VR > 80 % of rated reverse voltage	1000 hours	140	11200	0	
# 10	<b>IOL</b> Intermittent Operating Life MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = 100 °C for 15000 cycles	1000 hours	142	11360	0	
# 20	<b>RSH</b> Resistance to Solder Heat JESD22-A111 260 °C ± 5 °C	10 s	109	3270	0	
# 21	<b>SD</b> Solderability J-STD-002 Test method B and D		264	2640	0	

### Calculation of FIT and MTTF

Test considered for FIT calculation: High Temperature Reverse Bias (HTRB, AEC-Q101 Test # 5)

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	12480	0	0,34	2,94E+09

© 2021 Nexperia B.V.

All information hereunder is per Nexperia's best knowledge. This document does not provide for any representation or warranty express or implied by Nexperia. In case Nexperia has tested the product, this documentation reflects the outcome of the analysis of the actually tested parts only.

[nexperia.com](http://nexperia.com)