Quarterly Reliability Monitoring Results

Quarters: Q3/2021 to Q4/2022

Based on structural similarity

Supplier		**User Part Number**				
Nexperia B.V.		BCP53-16H				
Name of Laboratory		**Part Description**				
		Nexperia DHAM	Small Signal Bipolar Transistor			
Assembly reliability labs		SMD package				
Based on AEC-Q101 Test		**Test Conditions**	**Duration**	**# Lots**	**# Quantity**	**# Rejects**
# E1	**TEST** Pre- and Post-Stress Electrical Test	Tamb = 25 °C	N/A	see below	all parts	see below
# A1	**PC** Preconditioning	JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	24 hours 168 hours 3 cycles	1265	69890	0
# B1	**HTRB** High Temperature Reverse Bias	MIL-STD-750-1 M1039 Method A Tj = Tjmax, Vr = 100% of max. datasheet reverse voltage	1000 hours	316	18920	0
# A4	**TC** Temperature Cycling	JESD22-A104 -65 °C to Tjmax, not to exceed 150°C	1000 cycles	260	15680	0
# A3 **or**	**UHAST** Unbiased HAST	JESD22-A118 Tamb = 130 °C, RH = 85 %	96 hours	270	16360	0
# A3 alt	**AC** Autoclave	JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)				
# A2 alt	**H3TRB** High Humidity High Temperature Reverse Bias	JESD22-A101 Tamb = 85 °C, RH = 85%, VR = 80 % of rated reverse voltage[1]	1000 hours	262	15760	0
# A5	**IOL** Intermittent Operating Life	MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = 100 °C for 15000 cycles	1000 hours	262	15760	0
# C8	**RSH** Resistance to Solder Heat	JESD22-A111 260 °C ± 5 °C	10 s	211	6330	0
# C10	**SD** Solderability	J-STD-002		468	4680	0

[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	18920	0	0,22	4,46E+09

© 2023 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