

## Quarterly Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2023

Based on structural similarity

Supplier	User Part Number					
Nexperia B.V.	TL431AIDBZR-Q					
Name of Laboratory	Part Description					
Assembly reliability labs	Nexperia DHAM Bipolar Analog Power SMD package					
Based on AEC-Q100 Test		Test Conditions	Duration	# Lots	# Quantity	# Rejects
# E1	<b>TEST</b> Pre- and Post-Stress Electrical Test	Tamb = 25 °C	N/A	see below	all parts	see below
# A1	<b>PC</b> Preconditioning	JESD22-A113 Bake Tamb = 125 °C Soak Tamb = 85 °C, RH = 85% Reflow soldering	24 hours 168 hours 3 cycles	149	4320	0
# A2	<b>THB</b> Temperature Humidity Bias	JESD22-A101 Tamb = 85 °C, RH = 85%, Vref = 0 V, VKA = 36 V	1000 hours	24	1080	0
# A3	<b>UHST</b> Unbiased HAST <b>or</b>	JESD22-A118 Tamb = 130 °C, RH = 85 %	96 hours	24	1080	0
	<b>AC</b> Autoclave	JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)				
# A4	<b>TC</b> Temperature Cycling	JESD22-A104 -65 °C to +150 °C	1000 cycles	24	1080	0
# A5	<b>IOL</b> Intermittent Operating Life	MIL-STD-750 Method 1037 ton = toff = 2 minutes, Ptot = 250 mW to insure ΔTj = 100 °C for 15000 cycles	1000 hours	24	1080	0
# B1	<b>HTOL</b> High Temperature Operating Life	Tamb = 150 °C, Vref = 0 V, VKA = 36 V	1000 hours	48	2160	0
# C3	<b>RSH</b> Resistance to Solder Heat	JESD22-A111 / JESD22-B106 260 °C ± 5 °C	10 s	29	870	0
	<b>SD</b> Solderability	JESD22-B102 245 °C ± 5 °C		436	13080	0

### Calculation of FIT and MTTF

Test considered for FIT calculation: High Temperature Operating Life (HTOL, 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	Bipolar Analog Power	2160	0	1,97	5,09E+08

© 2024 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)