

## Quarterly Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

Supplier	User Part Number				
Nexperia B.V.	TL431AMFDT				
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	71	3840	0
# A2	<b>THB</b> Temperature Humidity Bias JESD22-A101 Tamb = 85 °C, RH = 85%, Vref = 0 V, VKA = 36 V	1000 hours	12	960	0
# A3	<b>AC</b> Autoclave JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)	96 hours	12	960	0
# A4	<b>TC</b> Temperature Cycling JESD22-A104 -65 °C to +150 °C	1000 cycles	12	960	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	12	960	0
# B1	<b>HTOL</b> High Temperature Operating Life Tamb = 150 °C, Vref = 0 V, VKA = 36 V	1000 hours	23	1840	0
# C3	<b>RSH</b> Resistance to Solder Heat JESD22-A111 / JESD22-B106 260 °C ± 5 °C <b>SD</b> Solderability JESD22-B102 245 °C ± 5 °C	10 s	12	360	0
			705	7050	0

### Calculation of FIT and MTF

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	1840	0	2.31	4.33E+08

© 2022 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.