Quarterly Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2023

Based on structural similarity

Supplier		**User Part Number**				
Nexperia B.V.		TLVH431NACDBZR				
Name of Laboratory		**Part Description**				
		Nexperia DHAM	Bipolar Analog Power			
Assembly reliability labs		SMD package				
Based on AEC-Q100 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	149	4320	0
# A2	**THB** Temperature Humidity Bias	JESD22-A101 Tamb = 85 °C, RH = 85%, Vref = 0 V, VKA = 36 V	1000 hours	24	1080	0
# A3	**UHST** Unbiased HAST **or**	JESD22-A118 Tamb = 130 °C, RH = 85 %	96 hours	24	1080	0
	AC Autoclave	JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)				
# A4	**TC** Temperature Cycling	JESD22-A104 -65 °C to +150 °C	1000 cycles	24	1080	0
# A5	**IOL** 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	**HTOL** High Temperature Operating Life	Tamb = 150 °C, Vref = 0 V, VKA = 36 V	1000 hours	48	2160	0
	RSH Resistance to Solder Heat	JESD22-A111 / JESD22-B106 260 °C ± 5 °C	10 s	29	870	0
# C3	**SD** 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