## nexperia

## **Reliability Monitoring Results**

## Quarters: Q1/2021 to Q4/2021

Based on structural similarity

Suppli	er	User Part Number						
Nexperia	a B.V.	74ALVC02BQ	74ALVC02BQ					
Fun Proe	escription: Quad 2-input N action Family: ALVC cess family: Sub micron kage family: DHVQFN	OR gate						
JESD4	7 Test	Test Conditions	Duration	# Lots	# Quantity	# Rejects		
# 1	TEST Pre- and Post-Stress Electrical Test	Tamb = 25 °C	N/A	see below	all parts	see below		
# 2	<b>PC</b> Preconditioning	JESD22-A113 MSL 1	N/A	314	19231	0		
# 5a	HTOL EFR High Temperature Operating Life Extrinsic	JESD22-A108 Tj = 150°C V <sub>CCMAX</sub> $\leq$ V $\leq$ 1.2*V <sub>CCMAX</sub>	48 hours or 168 hours	122	29837	0		
# 5b	HTOL IFR High Temperature Operating Life Intrinsic	JESD22-A108 Tj = 150°C V <sub>CCMAX</sub> $\leq$ V $\leq$ 1.2*V <sub>CCMAX</sub>	≥500 hours	70	5655	0		
# 7	TC Temperature Cycling	JESD22-A104 -65 °C to 150°C	≥500 cycles	178	10253	0		
# 9	uHAST / HAST unbiased or biased High Accelerated Stress Test	JESD22-A101 Tamb = 130 °C, RH = 85%, V = V <sub>CCMAX</sub>	96 hours	156	8978	0		

## Calculation of PPM, FIT and MTTF

Test considered for PPM calculation: High Temperature Operating LifeTest Extrinsic (HTOL EFR, Test # 5a above) Test considered for FIT and MTTF calculations: High Temperature Operating LifeTest Intrinsic(HTOL IFR, Test # 5b above)

Confidence level 60%, derated to 55 °C, activation energy 0.7 eV, test time 168 to 1000 hours

Product Family	Package Family	Quantity	Rejects	Extrinsic Failure Rate (PPM)	Intrinsic Failure Rate (FIT)	MTTF (hrs)
ALVC	DHVQFN	5655	0	31	0.6	1.68 E+09

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