## nexperia

## **Reliability Monitoring Results**

## Quarters: Q1/2022 to Q4/2022

Based on structural similarity

Suppli	ier	User Part Number							
Nexperia B.V.		74VHCT02D-Q100	74VHCT02D-Q100						
Part D	escription: Quad 2-input N	OR gate; TTL enabled							
Pro	nction Family: VHC(T) cess family: Super micron ckage family: SO					#			
JESD4	7 Test	Test Conditions	Duration	# Lots	# Quantity	Rejects			
# 1	<b>TEST</b> 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	460	29380	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	136	39090	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	84	5695	0			
# 7	TC Temperature Cycling	JESD22-A104 -65 °C to 150°C	≥500 cycles	69	17630	4			
# 9	uHAST / HAST unbiased or biased High Accelerated Stress Test	JESD22-A101 Tamb = 130 °C, RH = 85%, V = V <sub>CCMAX</sub>	96 hours	202	11750	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)
VHC(T)	SO	5695	0	24	0.6	1.74 E+09

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