## nexperia

## **Reliability Monitoring Results**

## Quarters: Q1/2021 to Q4/2021

Based on structural similarity

Suppli		User Part Number					
Nexperia B.V. 74LVC163BQ   Part Description: Presettable synchronous 4-bit binary counter; synchronous reset							
Part D	<b>Pescription:</b> Presettable syn	chronous 4-bit binary count	er; synchronous	reset			
	nction Family: LVC ocess family: Sub micron						
	ckage family: DHVQFN						
JESD4	17 Test	Test Conditions	Duration	# Lots	# Quantity	# Rejects	
	TEST				<b>,</b>	-	
# 1	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	
	HTOL EFR	JESD22-A108	48 hours				
# 5a	High Temperature Operating Life Extrinsic	$Tj = 150^{\circ}C$ $V_{CCMAX} \le V \le 1.2^*V_{CCMAX}$	or 168 hours	356	51713	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	134	9791	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)
LVC	DHVQFN	9791	0	18	0.5	2.22 E+09

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