nexperia

Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

Suppl	ier	User Part Number					
Nexperia B.V. 74HC74BQ-Q100							
Part D	Description: Dual D-type flip	o-flop with set and reset; po	sitive-edge trigg	er			
Pro	nction Family: HC(T) ocess family: Super micron ckage family: DHVQFN						
JESD4	17 Test	Test Conditions	Duration	# Lots	# Quantity	# Rejects	
	TEST	T 25.00				see	
#1	Pre- and Post-Stress Electrical Test	Tamb = 25 °C	N/A	see below	all parts	below	
# 2	PC	JESD22-A113	N/A	314	19231	0	
	Preconditioning	MSL 1					
<u>#</u> Га		JESD22-A108	48 hours	128	38474	0	
# 5a	High Temperature Operating Life Extrinsic	$Tj = 150^{\circ}C$ $V_{CCMAX} \le V \le 1.2^*V_{CCMAX}$	or 168 hours	128	38474	0	
# 5b	HTOL IFR	JESD22-A108					
	High Temperature Operating Life Intrinsic	$Tj = 150^{\circ}C$ $V_{CCMAX} \le V \le 1.2^*V_{CCMAX}$	≥500 hours	76	5079	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 _{CCMAX}	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)
HC(T)	DHVQFN	5079	0	24	0.7	1.57 E+09

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