nexperia

Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

Suppl		User Part Number								
	Nexperia B.V. 74AHC74PW Part Description: Dual D-type flip-flop with set and reset; positive-edge trigger									
Part	Description: Dual D-type hip	o-flop with set and reset; po	sitive-eage trigg	er						
Fu	nction Family: AHC(T)									
	ocess family: Sub micron									
Pa	ckage family: TSSOP									
						#				
JESD4	17 Test	Test Conditions	Duration	# Lots	# Quantity	Rejects				
	TEST					see				
# 1	Pre- and Post-Stress	Tamb = 25 °C	N/A	see below	all parts	below				
	Electrical Test PC	JESD22-A113								
# 2	Preconditioning	MSL 1	N/A	863	73980	0				
	HTOL EFR	JESD22-A108	48 hours							
# 5a	High Temperature	$T_i = 150^{\circ}C$	or	356	51713	0				
	Operating Life Extrinsic	$V_{CCMAX} \le V \le 1.2^* V_{CCMAX}$	168 hours			-				
	HTOL IFR	JESD22-A108								
# 5b	High Temperature	Tj = 150°C	≥500 hours	134	9791	0				
	Operating Life Intrinsic	$V_{CCMAX} \le V \le 1.2^* V_{CCMAX}$								
# 7	тс	JESD22-A104	≥500 cycles	478	37734	0				
	Temperature Cycling	-65 °C to 150°C		170	57751	U				
<i>#</i> 0	uHAST / HAST	JESD22-A101		462	26246	0				
# 9	unbiased or biased High Accelerated Stress Test	Tamb = 130 °C, RH = 85%, V = V _{CCMAX}	96 hours	462	36246	0				
		$\mathbf{X} = 0 0 0 0 0 0 0 0$								

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)
AHC(T)	TSSOP	9791	0	18	0.5	2.22 E+09

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