nexperia

Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

	Ipplier User Part Number						
Nexper		74HCT74D-Q100	aitiva adaa tuiga				
Part L	Description: Dual D-type flip	o-flop with set and reset; po	sitive-eage trigg	er; IIL enabled			
Fur	nction Family: HC(T)						
	ocess family: Super micron						
Pac	ckage family: SO						
						#	
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					50.011	
# 2	PC	JESD22-A113	N/A	378	26431	0	
	Preconditioning	MSL 1					
# F -		JESD22-A108	48 hours	120	20474	0	
# 5a	High Temperature	$T_j = 150^{\circ}C$	or 168 hours	128	38474	0	
	Operating Life Extrinsic HTOL IFR	$V_{CCMAX} \le V \le 1.2^*V_{CCMAX}$ JESD22-A108	100 110015				
# 5b	High Temperature	$T_i = 150^{\circ}C$	≥500 hours	76	5079	0	
# JD	Operating Life Intrinsic	$V_{CCMAX} \leq V \leq 1.2^* V_{CCMAX}$	2000 110013	70	5075	0	
# 7	TC	JESD22-A104					
	Temperature Cycling	-65 °C to 150°C	≥500 cycles	49	15770	4	
	uHAST / HAST	JESD22-A101					
# 9	unbiased or biased High	Tamb = 130 °C,	96 hours	187	10661	0	
	Accelerated Stress Test	$RH = 85\%, V = V_{CCMAX}$					

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)	SO	5079	0	24	0.7	1.57 E+09

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