nexperia

Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021

Based on structural similarity

Suppl		User Part Number				
Nexper		74HC125D-Q100				
Part L	Description: Quad buffer/lin	e driver (3-state)				
	nction Family: HC(T)					
	ocess family: Super micron ckage family: SO					
Tu	ckage failing. 50					
1ESD4	17 Test	Test Conditions	Duration	# Lots	# Quantity	# Rejects
JESD	TEST		Duration	# LU(3	# Quantity	-
# 1	Pre- and Post-Stress	Tamb = 25 °C	N/A	see below	all parts	see below
	Electrical Test					below
# 2	PC	JESD22-A113	N/A	378	26431	0
	Preconditioning	MSL 1	10 h a			
<i>ж</i> Га	HTOL EFR	JESD22-A108	48 hours	100	20474	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	100 110013			
	High Temperature	$T_i = 150^{\circ}C$	≥500 hours	76	5079	0
	Operating Life Intrinsic	$V_{CCMAX} \le V \le 1.2^* V_{CCMAX}$				
# 7	тс	JESD22-A104	≥500 cycles	49	15770	4
	Temperature Cycling	-65 °C to 150°C	200 Cycles	75	13770	т
	uHAST / HAST	JESD22-A101				
# 9	unbiased or biased High Accelerated Stress Test	Tamb = 130 °C, RH = 85%, V = V _{CCMAX}	96 hours	187	10661	0
	Accelerated Stress Test	$\mathbf{N}\mathbf{I} = \mathbf{O}\mathbf{J}0, \mathbf{V} = \mathbf{V}\mathbf{C}\mathbf{M}\mathbf{A}\mathbf{X}$				

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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