nexperia

Reliability Monitoring Results

Quarters: Q1/2022 to Q4/2022

Based on structural similarity

Suppli		User Part Number				
Nexperi		74HCT04BZ				
Part D	Description: Hex inverter; T					
	nction Family: HC(T)					
	ocess family: Super micron					
Pac	ckage family: DHXQFN					
						# .
JESD4	17 Test	Test Conditions	Duration	# Lots	# Quantity	Rejects
# 1	TEST Pre- and Post-Stress	Tamb = 25 °C	N/A	see below	all parts	see
<i>#</i> 1	Electrical Test		N/A	See Delow	an parts	below
# 2	PC	JESD22-A113	N/A	386	23019	0
# Z	Preconditioning	MSL 1	N/A	200	23019	U
	HTOL EFR	JESD22-A108	48 hours			
# 5a	High Temperature	Tj = 150°C	or	136	39090	0
	Operating Life Extrinsic	$V_{CCMAX} \le V \le 1.2^* V_{CCMAX}$	168 hours			
# 5b	HTOL IFR	JESD22-A108				
	High Temperature	$T_j = 150^{\circ}C$	≥500 hours	84	5695	0
	Operating Life Intrinsic	$V_{CCMAX} \leq V \leq 1.2^* V_{CCMAX}$				
# 7	TC Temperature Cycling	JESD22-A104 -65 °C to 150°C	≥500 cycles	208	12655	0
	uHAST / HAST	JESD22-A101				
# 9	unbiased or biased High	Tamb = 130 °C,	96 hours	178	10364	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)	DHXQFN	5695	0	24	0.6	1.74 E+09

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