Reliability Monitoring Results

Quarters: Q1/2021 to Q4/2021
Based on structural similarity

Supplier	**User Part Number**
Nexperia B.V.	74HC273D-Q100

Part Description: Octal D-type flip-flop with reset; positive-edge trigger

Function Family: HC(T)
Process family: Super micron
Package family: SO

JESD47 Test		**Test Conditions**	**Duration**	**# Lots**	**# Quantity**	**# Rejects**
# 1	**TEST** Pre- and Post-Stress Electrical Test	Tamb = 25 °C	N/A	see below	all parts	see below
# 2	**PC** Preconditioning	JESD22-A113 MSL 1	N/A	378	26431	0
# 5a	**HTOL EFR** High Temperature Operating Life Extrinsic	JESD22-A108 Tj = 150°C $V_{CCMAX} \leq V \leq 1.2*V_{CCMAX}$	48 hours or 168 hours	128	38474	0
# 5b	**HTOL IFR** High Temperature Operating Life Intrinsic	JESD22-A108 Tj = 150°C $V_{CCMAX} \leq V \leq 1.2*V_{CCMAX}$	≥500 hours	76	5079	0
# 7	**TC** Temperature Cycling	JESD22-A104 -65 °C to 150°C	≥500 cycles	49	15770	4
# 9	**uHAST / HAST** unbiased or biased High Accelerated Stress Test	JESD22-A101 Tamb = 130 °C, RH = 85%, V = V_{CCMAX}	96 hours	187	10661	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)	SO	5079	0	24	0.7	1.57 E+09