



XPC7400RX RELIABILITY DATA SUMMARY

XPC7400RX__E (Rev 2.2)

Fab: MOS13, Austin, TX
 Mask: J87W
 Process: HiP5 (0.18μ, 35Å gate oxide)
 Assy: BAT-1, Austin, TX
 Package: 360 pin CBGA
 MSL Lev: 1, no drypack required

XPC7400RX__K (Rev 2.9)

Fab: MOS13, Austin, TX
 Mask: J87W, K62D
 Process: HiP5P (0.18μ, 29Å gate oxide)
 Assy: BAT-1, Austin, TX
 Package: 360 pin CBGA
 MSL Lev: 1, no drypack required

XPC7400RX__L_ = 'L Spec' = 'embedded spec' = $1.8 \pm 0.1V$ @ 105°C Tj max

XPC7400RX__P_ = 'P Spec' = 'computing spec' = $2.05 \pm 0.05V$ @ 65°C Tj max

TECHNOLOGY: HiP5P, Data Summary

DYNAMIC LIFETEST (2.35V, 90°C ambient, 115°C - 130°C junction)

24 HRS	168 HRS	504 HRS	1008 HRS
1 / 341	0 / 322	0 / 322	0 / 322

Failure Summary:

24 hrs: ABIST, single bit: mechanical damage/particle at metal 1 (r000721)

TECHNOLOGY: HiP5, Data Summary

DYNAMIC LIFETEST (2.35V, 90°C ambient, 115°C - 130°C junction)

24 HRS	168 HRS	504 HRS	1008 HRS
0 / 2093	2 / 2013	0 / 805	0 / 805

Failure Summary:

168 hrs: 1) Sensitive to low voltage abist, passing at 2.0V at LT24; passes at 2.07V at 168.

2) Sensitive to low voltage scan,fails functional at 1.95V, unit passes at 2.10V.

ESD (HBM)

1KV	2KV
- / -	1 / 20

Failure: Open, not characteristic of ESD fail, in analysis

ESD (MM)

100V	200V
0 / 11	1 / 8

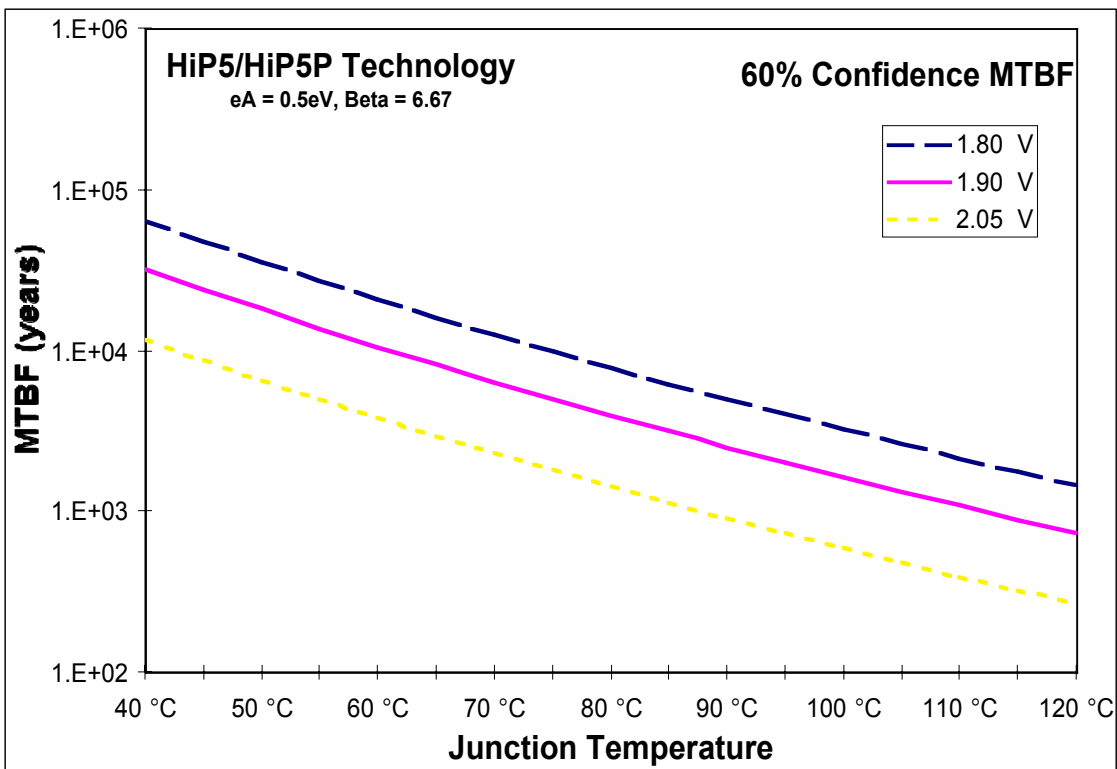
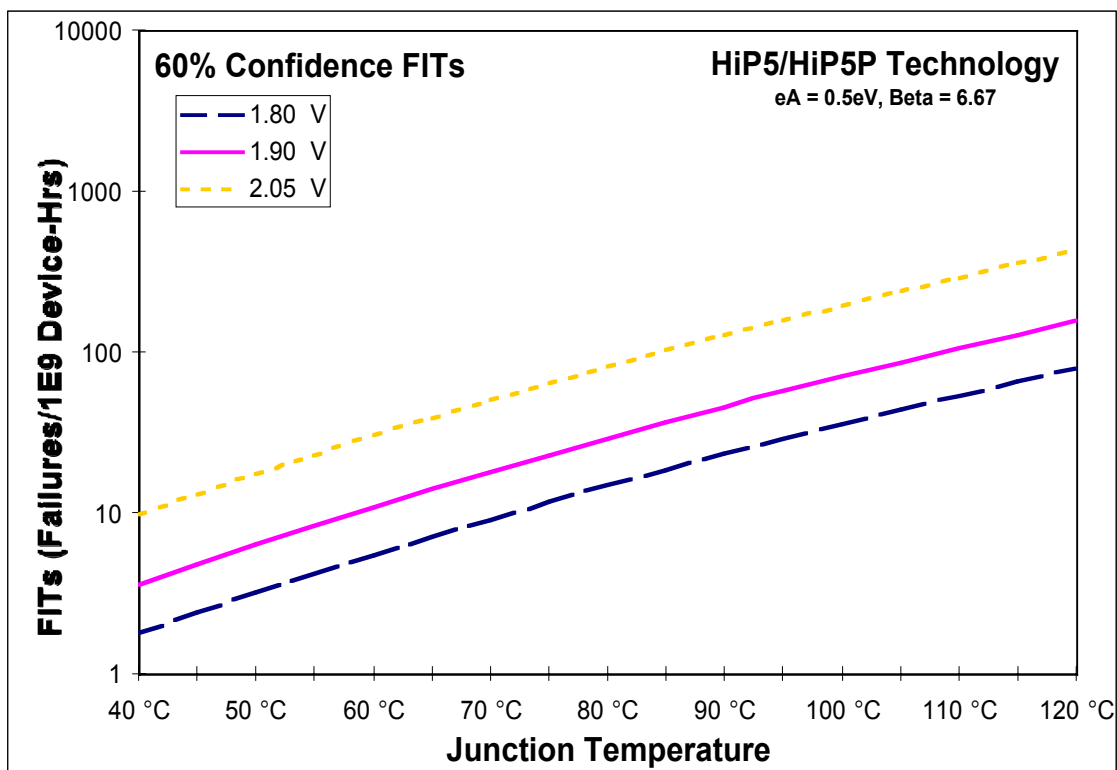
Failure in Rev 2.0 material only, not analyzed

ESD (CDM) - socketed

500V	1KV
0 / 8	0 / 3

LATCHUP

±150 mA	±200 mA
- / -	0 / 27

XPC7400RX RELIABILITY DATA SUMMARY**TECHNOLOGY FAILURE RATES - HiP5**



XPC7400RX RELIABILITY DATA SUMMARY

PACKAGE: 360 Pin 25 x 25mm CBGA Data Summary 2Q99 - 3Q99

MOISTURE CZ

PRECOND MSL1	PRECOND MSL3
1 / 863	0 / 130

Failure: Voiding observed in encapsulant. Corrective action implemented by BAT-1.

TEMPERATURE CYCLING (-55°C/+125°C)

PRECOND MSL1	100 CYC	500 CYC	1000 CYC
0 / 230	0 / 230	0 / 230	0 / 230

THERMAL SHOCK (-55°C/+125°C)

PRECOND MSL1	100 CYC	500 CYC	1000 CYC
0 / 229	0 / 229	2 / 229	1 / 227

Failures 500 cyc: Intermittent scan chain fails

Failure 1000 cyc: Voiding in encapsulant. Shorts between C4 bumps.

AUTOCLAVE (+121°C, 100% RH, 2 atm)

PRECOND MSL1	48 HRS	144 HRS	240 HRS
0 / 229	0 / 229	1 / 229	9 / 223

Failure 144hr: Scan chain. Defective local C2 clock.

Failures 240 hours for info only: 1 open, 2 shorts, 3 scan, 2 scan chain, and 1 Hiz leakage

THB (+85°C/85% RH/1.8V)

PRECOND MSL1	168 HRS	504 HRS	1008 HRS
0 / 228	0 / 228	1 / 228	0 / 227

Failure: Open via 1 at local C1 clock. Void at base of via. Corrective action implemented

BAKE (175°C)

168 HRS	504 HRS	1008 HRS
0 / 231	0 / 231	0 / 231