

Kahlua II MPC8245 Rev. D 29Å Gate Oxide MOS-13 HiP4DP Qualification Report

MPC8245 29Å Product Information:

Device No./Rev.: MPC8245, Rev. D		Report Rev.: O
Description: MC Qualification of MPC8245 ("Kahlua II") Rev. D with 29Å Gate Oxide		Revision date: 9/8/03
Technology: MOS13 HiP4DP	Package: 352TBGA	Page 1 of 5

Package	MPC8245: 352 TBGA (ZU), 35 x 35 mm
Device	MPC8245
Mask Set	4K78P
Die Area	49.2 mm ²
Die Coating	Hitachi S200 Polyimide
Name/Location of Die Fab Facility	MOS-13 / Austin TX
Process Technology	0.25µm HiP4DP
Poly / Metal layers	1P / 5M
Assembly Location	Motorola, KLM
Mold Compound	Dexter FP4451 dam, Nagase T693/R1001 glob filler
Die Attach Material	CRM-1525
Wire Material / Diameter	Au / 0.98 mil
Solder Ball Material / Diameter	62% Pb, 36% Sn, 2% Ag / 0.75 mm
Moisture Sensitivity Level / Reflow Temp	MSL3 / 220°C
Substrate Supplier	Compass / Hitachi

MPC8245 29Å Product Reliability Data Summary:

HTOL – 29Å Data					
Product / Mask Set / Lot HTOL Conditions	24 Hours	168 Hours	504 Hours	584 Hours*	1008 Hours
8245 W74K78P D62361 2.6V / 125°C				0/79 19 FIT's	
755B Z58K76D D41394.91N 2.5v/90°C		0 / 77			
755B Z58K76D D42901.92C 2.5v/90°C		0 / 77			
755B Z58K76D D40862.94Y 2.5v/90°C		0 / 77			
7400 K62D 2.35v / 90°C	1 / 2434	2 / 2335	0 / 1127		0 / 1127
Totals	1 / 2665	2 / 2335	0 / 1127	0 / 79	0 / 1127
Failure Summary:	24 hrs: ABIST, single bit: mechanical damage/particle at metal 1 (r000721)				
	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.				

* Note – 584 hour readout is equivalent to 10 years of product life and utilized for Industrial Tier qual decision.

HTOL / 2.6V, 125°C – 35Å Data					
Lot / Mask Set	144 Hours	168 Hours	196 Hours		
D5296696 / 4K78P	0 / 80	0 / 80	0 / 80		
D576721000 / 4K78P	0 / 77				
D586441000 / 4K78P	0 / 77				

ESD / Latch-up					
Lot	HBM / 2KV	MM / 200V	CDM / 500V – No Skt	Latch-up / 200mA	
0K78P	0 / 3	0 / 3		0 / 3	
1K78P	0 / 6	0 / 6	0 / 6	0 / 9	
D5296696 / 4K78P	0 / 3	0 / 3	0 / 3	0 / 3	

MPC8245 29Å Package Reliability Data (Test Vehicle: 480 TBGA with XPC8260 Product):

Moisture Sensitivity Level Characterization				
Lot / Mask Set	MSL4	MSL3		
KLM / Substrate Supplier A - 3 lots / HiP3 Product	0 / 45	0 / 45		
KLM / Substrate Supplier B - 3 lots / HiP3 Product	0 / 45	0 / 45		
ASAT - 3 lots / HiP3 Product	0 / 45	0 / 45 (2 lots)		
Totals	0 / 135	0 / 135		
Failure Comments				

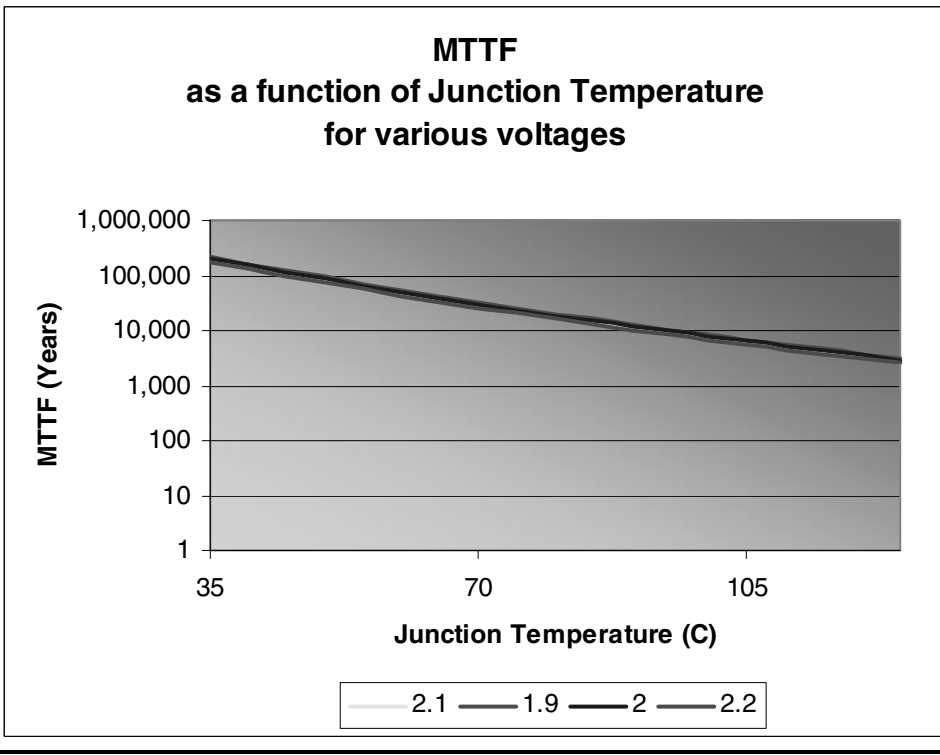
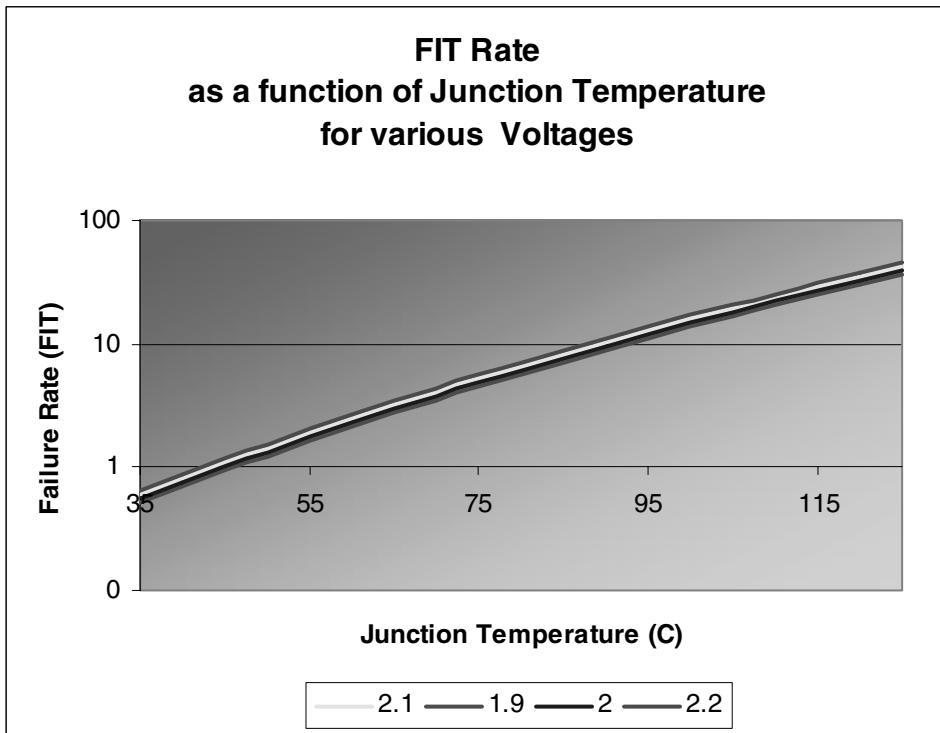
Autoclave / 121°C, 100% RH, 15 PSIG with Preconditioning @ MSL4 / 220°C VPR*				
Lot / Mask Set	48 Hours	144 Hours		
KLM / Substrate Supplier A - 3 lots / HiP3 Product	0 / 231	0 / 231		
KLM / Substrate Supplier B - 3 lots / HiP3 Product	0 / 231	0 / 231		
ASAT - 3 lots / HiP3 Product	0 / 230	0 / 230		
Totals	0 / 692	0 / 692		
Failure Comments				

Temperature Cycle / -65°C ↔ 150°C Air to Air with Preconditioning @ MSL4 / 220°C VPR*				
Lot / Mask Set	100 Cycles	500 Cycles		
KLM / Substrate Supplier A - 3 lots / HiP3 Product	0 / 231	0 / 231		
KLM / Substrate Supplier B - 3 lots / HiP3 Product	0 / 231	0 / 231		
ASAT - 3 lots / HiP3 Product	0 / 230	0 / 230		
Totals	0 / 693	0 / 693		
Failure Comments				

Temperature Humidity Bias / 85°C, 85%R.H., Nominal Bias with Preconditioning @ MSL4 / 220°C VPR*				
Lot / Mask Set	504 Hours	1008 Hours		
KLM / Substrate Supplier A - 3 lots / HiP3 Product	0 / 231			
ASAT - 3 lots / HiP3 Product, * w/ MSL5 PC	0 / 231	0 / 231		
Totals	0 / 462	0 / 231		
Failure Comments				

MPC8245 29Å Product FIT Rate and MTBF Derated Curves:

Device No./Rev.: MPC8245, Rev. D		Report Rev.: O
Description: MC Qualification of MPC8245 ("Kahlua II") Rev. D with 29Å Gate Oxide		Revision date: 9/8/03
Technology: MOS13 HiP4DP	Package: 352TBGA	Page 3 of 5



Revision History:

Device No./Rev.: MPC8245, Rev. D	Report Rev.: O
Description: MC Qualification of MPC8245 ("Kahlua II") Rev. D with 29Å Gate Oxide	Revision date: 9/8/03
Technology: MOS13 HiP4DP	Package: 352TBGA
	Page 4 of 5

Revision History			
Revision	Date*	Comment	Author
Original	9/8/03	Original Qualification Report	Aaron Chapa