

Qualification Description:

Qualify new model.

Model:	TMP122AIDBV	Assembly Site:	Carsem (M)
RA:	9459	Package Type:	SOT23/ DBV
PA:	4259	Lead Count:	6
Date:	05/22/2003	Mold Compound:	MP8000C
Die Name:	ICC03290	Die Attach:	84-ILMISR4
Die Size:	32 x 52 mils	Bond Wire Material:	Au
Mask Revision:	B	Bond Wire Diameter:	1
Wafer Fab Site:	TSMC- Fab 2B	Lead Frame Material:	SSC
Process:	0.5um DPTM	Lead Frame Finish:	Solder Plate
Technology:	CMOS	Transistor Count:	12000
Metal 1:	Ti(0.4kÅ)/TiN(1kÅ)/AlSiCu (4kÅ)/TiN (1.2 kÅ)	θ_{JA}	150°C /W
Metal 2:	Ti(1kÅ)/AlSiCu(4kÅ)/TiN (1.25kÅ)	θ_{JC}	N/A
Metal 3:	Ti(1kÅ)/AlSiCu(8kÅ)/TiN (0.25kÅ)	MSL	Level 1 @ 235°C
Passivation:	SiO2 (2kÅ)/Si3N4 (7kÅ)		

HTOL assem/wafer/lot :	N/A	Latch Up assem/wafer/lot	N/A
HAST assem/wafer/lot :	N/A	ESD assem/wafer/lot	3008212
Autoclave assem/wafer/lot :	N/A	X-Ray assem/wafer/lot	3008212
Temp Cycle assem/wafer/lot :	N/A	MSL assem/wafer/lot	N/A

Test Results:

Test	Conditions	Readpoints	Sample Size	Defects	QBS Ref. Num.	QBS Results (SS/Rej)
Life Test	150°C	1008 Hrs.	0	0	4Qtr02	2873/0
HAST	85% RH, 33.5 psia	100 Hrs.	0	0	4Qtr02	963/0
Autoclave	121°C, 15 psia, 100% RH	240 Hrs.	0	0	4Qtr02	1867/0
Temp Cycle	-65 °C to +150°C	1000 cycles	0	0	4Qtr02	2333/0
ESD	HBM	500 volts	3	0		
	HBM	1000 volts	3	0		
	HBM	2000 volts	3	0		
	HBM	3000 volts	3	0		
	HBM	4000 volts	3	1		
	CDM	100 volts	3	0		
	CDM	200 volts	3	0		
	CDM	500 volts	3	0		
Latch Up			6	0		
Elec. Charac. over Temp	PDS		50	0		
X-Ray			125	0		

Reliability Calculations:

FITs (derated to 55°C)	MTTF (Hours)	MTTF (Years)	Test Temp	Activation Energy	Confidence Level
3.89E+00	2.57E+08	29322.6	150°C	0.7eV	90%

(Signed)

 Mark Yampolsky, QRA Tucson

Reliability Calculations

MODEL	TMP122IDBV (4Qtr02)	ACTIVATION ENERGY (eV)
OVEN TEMP C°	150	0.7
TEST DEVICES	2873	(90% Confidence level)
PROCESS	C2	

READ POINTS (HOURS)	TOTAL FAILURES	PASS	DEVICE HOURS
Total Failures	0		2271244

TEMP.	FAILRATE (FITS)	MTTF (HOURS)	MTTF (YEARS)
25	3.22E-01	3.11E+09	354834.6
30	5.04E-01	1.98E+09	226289.9
35	7.80E-01	1.28E+09	146435.8
40	1.19E+00	8.42E+08	96087.8
45	1.79E+00	5.60E+08	63891.5
50	2.65E+00	3.77E+08	43023.5
55	3.89E+00	2.57E+08	29322.6
60	5.65E+00	1.77E+08	20216.3
65	8.10E+00	1.23E+08	14092.1
70	1.15E+01	8.70E+07	9927.1
75	1.62E+01	6.19E+07	7063.8
80	2.25E+01	4.45E+07	5075.1
85	3.10E+01	3.22E+07	3680.1
90	4.24E+01	2.36E+07	2692.3
95	5.75E+01	1.74E+07	1986.4
100	7.73E+01	1.29E+07	1477.6
105	1.03E+02	9.70E+06	1107.8
110	1.36E+02	7.33E+06	836.8
115	1.79E+02	5.58E+06	636.6
120	2.34E+02	4.27E+06	487.8
125	3.03E+02	3.30E+06	376.2

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