SHARP

No. RD-97X28

RELIABILITY TEST REPORT

Product Type :Boot Block Smart voltage 8Mbit Flash Memory

Model No. : LH28F800BGB

Package : 48Pin CSP (CSP048-P-0808)

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1. Quality Assurance And Reliability Test During New Product Development

New product development begins with establishing reliability targets during the planning stage. During this stage the end applications functions and requirements are also considered in addition to the reliability targets.
Quality and reliability are built into the product from the start by having design and reliability review sessions in the development and design stages.
This insures that quality and reliability levels are maintained at the preproduction and mass production stages.

2. Reliability Test Methods

Reliability tests should always have good reproducibility. Thus, reliability tests for IC devices are based upon standardized test methods. Such uniform testing standards include those established by JIS(Japanese Industrial Standard) MIL-STD(U.S.MILitary Standard), EIAJ(Electronic Industries Association of Japan) and IEC(International Electrotechnical Commission). Sharp has based its own testing methods on these standards.

3. Evaluation Results

The results attached show that Sharp has met the high quality and reliability targets which are required by the above standards.

Note ; This evaluation has been performed upon a representative product which is selected from a series of related products with the same basic design, all packaged in the same package type.
Therefore, these evaluation results are applicable for the following Sharp models:

LH28F800BGB

4. Other Considerations

Please confirm that the specifications of this product meet the requirements of the applications.

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1. ENDURANCE TEST

No.	Test	Conditions	Reference Standards	Number of Samples	Number of Failures /Test Time			LTPD
					240h	500h	1000h	
1	High Temperature Operation	Ta=125℃ Vcc/Vpp=6.5V 1000h	JIS C 7022:B-1 MIL-STD-883C 1005.6	153	0	0	0	1.5%
					240h	500h	1000h	
2	High Temperature Storage	Ta=140℃ 1000 h	JIS C 7022:B-3 MIL-STD-883C 1008.2	45	0	0	0	5%
					240h	500h	1000h	
3	Low Temperature Storage	Ta=-65℃ 1000h	JIS C 7022:B-4	11	0	0	0	20%
					240h	500h	1000h	
4	High Temp. High Humi. Storage	Ta=60℃,90%RH 1000h	JIS C 7022:B-5	22	0	0	0	10%
					240h	500h	1000h	
5	High Temp. High Humi. Bias	Ta=85℃,85%RH Vcc/Vpp=5.5V 1000h	JIS C 7022:B-5	76	0	0	0	3%
					100cyc.	200cyc.	300cyc.	
6	Temperature Cycling	Ta=-65℃(30min)~150℃(30min) 500cyc.	JIS C 7022:A-4 MIL-STD-883C 1010.7	76	0	0	0	3%
					100h	200h	300h	
7	PCT	Ta=121℃, 100%RH, No Bias 2×10 Pa{2atm} 100h	EIAJ IC-121:18	22	0	0	0	10%
8	[Series Test] Baking ↓ Moisture Absorption ↓ I.R Soldering	Ta=120℃ 3h; Ta=30℃,70% 96h; Highest Temp.=240℃ 230℃~240℃, 15s, 2times	EIAJ ED-4701: A-133	22	0			10%

CRITERIA

No.1 ~ 7 : To maintain electrical characteristics within the limits established in the specifications of each device.

No.8 : To maintain electrical characteristics within the limits established in the specifications of each device. There is no evidence of damage to the body material(i.e. Package cracking).

2. Erase/Write Cycling Test

No.	Test	Conditions	Number of Cycles	Number of Samples	Number Of Failures	Failure Rate	Note
1	Erase/ Write Cycling	Ta=0,70℃	10k	750	0	76 DPM/Block	Confidence Level=60%
			100k		0	306 DPM/Block	

CRITERIA

No.1 : To maintain electrical characteristics within the limits established in the specifications of each device.

3. MISCELLANEOUS

No.	Test	Conditions	Reference Standards	Number Of Samples	Conditions	ESD/Latch-up Strength			
						≧0.4kV	≧0.6kV	≧0.8kV	≧1.0kV
1	Electrostatic discharges	C=100pF R=1.5kΩ	MIL-STD 883C Method 3015	3(each)	GND+				○
					GND−				○
					VCC+				○
					VCC−				○
						≧40mA	≧60mA	≧80mA	≧100mA
2	Latch-up	Current application test tp=10ms, toff=500ms VccMAX	EIAJ ED-4701-1 C-113	3(each)	+				○
					−				○

"○" Pass, "×" NG, "−" No measurement

CRITERIA

No.1 : To maintain electrical characteristics within the limits established in the specifications of each device.

No.2 : No latch-up occurs.

Reliability, 8 Mbit Flash Memory, Boot Block, Non -Volatile, ETOX ,LH28F800BGB