



# QRMM0010

## QUALIFICATION REPORT

### M36DR864CB/DB: 64 Mbit (x16, Burst) Flash Memory and 8 Mbit (x16) SRAM, 1.8V Multiple Memory Product

#### INTRODUCTION

The M36DR864CB/DB is a Multiple Memory Product which combines two memory technologies: a 64 Mbit 1.8V supply Flash memory and an 8 Mbit 1.8V supply Asynchronous SRAM. The Flash and SRAM components have separate power supplies and grounds and are distinguished by three chip enable inputs.

The Flash memory component is the ST's M58CR064C/D that features a Dual Bank, Burst architecture. It is manufactured with the ST advanced CMOS 0.15 micron process which has been specially developed for Flash memory products. The memory features a fast access time, low power consumption in all operations and an endurance of 100,000 Program/Erase cycles per block.

The SRAM component features a fully static operation and a low power standby. It is manufactured by CYPRESS with a 0.16 micron process technology.

#### Qualification Report History

- May 2003 - Stacked LFBGA66 12x8mm package, ANAM assy line.

ST recognizes that the quality of a product must be built-in during the design, material procurement, manufacturing and testing. Also that the reliability must be demonstrated before the product is released for full mass production. The qualification of new products and the certification of new processes is a rigorous task undertaken by Quality and Reliability professionals, to ensure stable products and processes capable of fully meeting customer requirements.

A key step of this activity is the Design Review where ST assures that,

- adequate and realistic product specifications have been developed;
- design and layout rules, as documented in the Design Rules Manual, have been respected;
- critical performance parameters and process variables have been identified;
- previously untested design techniques or manufacturing processes are recognized;
- manufacturability concerns are identified;
- comprehensive and efficient qualification programs are defined.

Product Qualification is made on all new products and new packages. Qualification is also remade on existing products when there are major changes to the design or manufacturing. The tests performed are tailored to the parameters affected by the major change or the combination of new die or new package to be evaluated.

The results of the tests for this Flash memory are on the attached pages of this qualification report.

Manager of  
Flash Memory  
Quality Control & Reliability  
Flavia REDAELLI

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**Table 1. Stacked LFBGA66 (12 x 8mm) - Package Related Tests, Amkor Assembly Line**

Sub-group	Test Procedure	MIL-STD-883 Procedure	Test Conditions	Results			Note
				Lots	Samp.	Fail	
1	Physical Dimensions	2016		1	5	0	
	Coplanarity LFBGA Package			1	5	0	
2	Bond Strength	2011		1	5	0	
3	Die Attach Strength	2019 or 2027		1	5	0	
4	Radiography	2012		1	15	0	
5	Internal Visual and Mechanical	2014		1	5	0	
6	Resistance to Surface Mounting LFBGA Package	(Note 1)	MSL 3	1	15	0	

Note: 1. Preconditioning specification: JEDEC 020B. Test performed using 260°C peak reflow.

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**Table 2. Stacked LFBGA66 (12 x 8mm) - Die/Package Related Tests (Amkor)**

Sub-group	Test Procedure	MIL-STD-883 Procedure	Test Conditions	Results			Note
				Lots	Samp.	Fail	
1	Operating Life Test	1005	125°C, V <sub>CC</sub> = 2.6V, – 168 hrs – 500 hrs	1 1	75 75	0 0	1
2	Retention Bake	1008	150°C – 168 hrs – 500 hrs – 1000 hrs	1 1 1	60 60 60	0 0 0	
3	Temperature, Humidity, Bias	CECC 90,000	85°C, RH = 85%, V <sub>CC</sub> = 2.2V – 168 hrs – 500 hrs – 1000 hrs	1 1 1	60 60 60	0 0 0	1
4	Temperature Cycling	1010C	–40 to 150°C, – 100 cycles – 500 cycles – 1000 cycles	1 1 1	60 60 60	0 0 0	1
5	Pressure Pot		121°C, 2 Atm, RH = 100% – 96 hrs – 168 hrs – 240 hrs	1 1 1	60 60 60	0 0 0	1

Note: 1. Samples previously submitted to preconditioning flow MSL3 for surface Mounting devices according to JEDEC 020B. Test performed using 260°C peak reflow.

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If you have any questions or suggestion concerning the matters raised in this document please send them to the following electronic mail address:

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(for general enquiries)

Please remember to include your name, company, location, telephone number and fax number.

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