

Preliminary

Notice: This is not a final specification.
Some parametric limits are subject to change.

Renesas LSIs

M6MGB/T33BS8BWG-P

**33,554,432-BIT (2,097,152-WORD BY 16-BIT) CMOS FLASH MEMORY &
8,388,608-BIT (524,288-WORD BY 16-BIT) CMOS SRAM**
Stacked-CSP (Chip Scale Package)

Description

The M6MGB/T33BS8BWG-P is a Stacked Chip Scale Package (S-CSP) that contains 32M-bit Flash memory and 8M-bit SRAM in a 66-pin Stacked CSP with leaded solder ball.

32M-bit Flash memory is a 2,097,152 words, single power supply and high performance non-volatile memory fabricated by CMOS technology for the peripheral circuit and DINOR (Divided bit-line NOR) architecture for the memory cell. All memory blocks are locked and can not be programmed or erased, when F-WP# is Low. Using Software Lock Release function, program or erase operation can be executed.

8M-bit SRAM is a 524,288 words asynchronous SRAM fabricated by CMOS technology.

The M6MGB/T33BS8BWG-P is suitable for a high performance cellular phone and a mobile PC that are required to be small mounting area, weight and small power dissipation.

Features

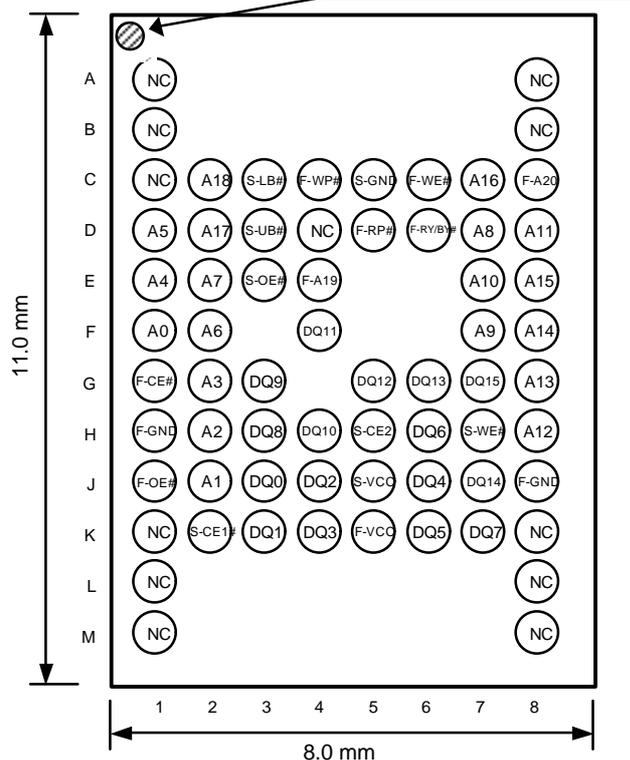
Access Time	Flash	70ns (Max.)
	SRAM	85ns (Max.)
Supply Voltage		F-VCC = VCC = 2.7 ~ 3.0V
Ambient Temperature		Ta = -40 ~ 85 °C
Package		66 pin S-CSP Ball pitch 0.80mm Outer-ball: Sn - Pb

Application

Mobile communication products

PIN CONFIGURATION (TOP VIEW)

INDEX(Laser Marking)



NC: Non Connection

F-VCC	: VCC for Flash Memory	F-OE#	: Output enable for Flash
S-VCC	: VCC for SRAM	S-OE#	: Output enable for SRAM
F-GND	: GND for Flash Memory	F-WE#	: Write enable for Flash
S-GND	: GND for SRAM	S-WE#	: Write enable for SRAM
A0-A18	: Common address for Flash/SRAM	F-WP#	: Write protect for Flash
F-A19-F-A20	: Address for Flash	F-RP#	: Reset power down for Flash
DQ0-DQ15	: Data I/O	F-RY/BY#	: Flash Ready/Busy
F-CE#	: Flash chip enable	S-LB#	: Lower byte control for SRAM
S-CE1#	: SRAM chip enable1	S-UB#	: Upper byte control for SRAM
S-CE2	: SRAM chip enable2		

Preliminary

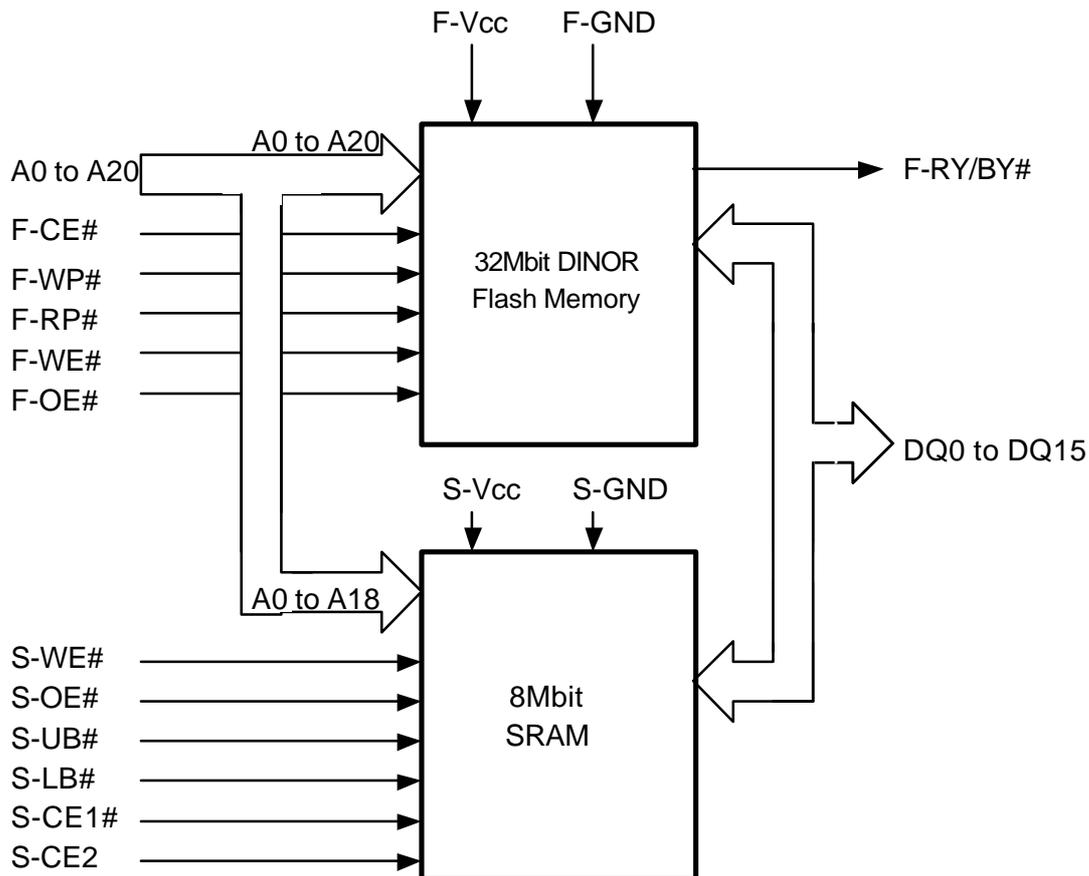
Notice: This is not a final specification.
Some parametric limits are subject to change.

Renesas LSIs

M6MGB/T33BS8BWG-P

33,554,432-BIT (2,097,152-WORD BY 16-BIT) CMOS FLASH MEMORY &
8,388,608-BIT (524,288-WORD BY 16-BIT) CMOS SRAM
Stacked-CSP (Chip Scale Package)

MCP Block Diagram



Note: In the data sheet there are "VCC"s which mean "F-VCC". In the SRAM part there are "UB#" and "LB#" which mean "S-UB#" and "S-LB#", respectively.

Capacitance

Symbol	Parameter		Conditions	Limits			Unit
				Min.	Typ.	Max.	
CIN	Input capacitance	A20-A0, F-OE#, S-OE#,F-WE#, S-WE#,F-CE#, F-WP#, F-RP#, S-CE1#, S-CE2, S-LB#, S-UB#	Ta=25°C, f=1MHz, Vin=Vout=0V			18	pF
COUT	Output Capacitance	DQ15-DQ0,F-RY/BY#				22	pF

Preliminary

Notice: This is not a final specification.
Some parametric limits are subject to change.

Renesas LSIs

M6MGB/T33BS8BWG-P

**33,554,432-BIT (2,097,152-WORD BY 16-BIT) CMOS FLASH MEMORY &
8,388,608-BIT (524,288-WORD BY 16-BIT) CMOS SRAM**
Stacked-CSP (Chip Scale Package)

Renesas Technology Corp.

Nippon Bldg.,6-2,Otemachi 2-chome,Chiyoda-ku,Tokyo,100-0004 Japan

Keep safety first in your circuit designs!

- Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

Notes regarding these materials

- These materials are intended as a reference to assist our customers in the selection of the Renesas Technology Corporation product best suited to the customer's application; they do not convey any license under any intellectual property rights, or any other rights, belonging to Renesas Technology Corporation or a third party.
- Renesas Technology Corporation assumes no responsibility for any damage, or infringement of any third-party's rights, originating in the use of any product data, diagrams, charts, programs, algorithms, or circuit application examples contained in these materials.
- All information contained in these materials, including product data, diagrams, charts, programs and algorithms represents information on products at the time of publication of these materials, and are subject to change by Renesas Technology Corporation without notice due to product improvements or other reasons. It is therefore recommended that customers contact Renesas Technology Corporation or an authorized Renesas Technology Corporation product distributor for the latest product information before purchasing a product listed herein.
- The information described here may contain technical inaccuracies or typographical errors. Renesas Technology Corporation assumes no responsibility for any damage, liability, or other loss rising from these inaccuracies or errors.
- Please also pay attention to information published by Renesas Technology Corporation by various means, including the Renesas Technology Corporation Semiconductor home page (<http://www.renesas.com>).
- When using any or all of the information contained in these materials, including product data, diagrams, charts, programs, and algorithms, please be sure to evaluate all information as a total system before making a final decision on the applicability of the information and products. Renesas Technology Corporation assumes no responsibility for any damage, liability or other loss resulting from the information contained herein.
- Renesas Technology Corporation semiconductors are not designed or manufactured for use in a device or system that is used under circumstances in which human life is potentially at stake. Please contact Renesas Technology Corporation or an authorized Renesas Technology Corporation product distributor when considering the use of a product contained herein for any specific purposes, such as apparatus or systems for transportation, vehicular, medical, aerospace, nuclear, or undersea repeater use.
- The prior written approval of Renesas Technology Corporation is necessary to reprint or reproduce in whole or in part these materials.
- If these products or technologies are subject to the Japanese export control restrictions, they must be exported under a license from the Japanese government and cannot be imported into a country other than the approved destination.
- Any diversion or reexport contrary to the export control laws and regulations of Japan and/or the country of destination is prohibited.
- Please contact Renesas Technology Corporation for further details on these materials or the products contained therein.

REJ03C0216
© 2003 Renesas Technology Corp.
New publication, effective April 2003.
Specifications subject to change without notice

RENESAS
Renesas Technology Corp.