

# Preliminary

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

Renesas LSIs

## M6MGB/T331S4BKT

**33,554,432-BIT (2,097,152 - WORD BY 16-BIT/4,194,304-WORD BY 8-BIT) CMOS  
3.3V-ONLY FLASH MEMORY &  
4,194,304-BIT (262,144-WORD BY 16-BIT/524,288-WORD BY 8-BIT) CMOS SRAM  
Stacked -  $\mu$  MCP (micro Multi Chip Package)**

### Description

The M6MGB/T331S4BKT is a Stacked micro Multi Chip Package (S- $\mu$ MCP) that contains 32M-bit Flash memory and 4M-bit Static RAM in a 52-pin TSOP for lead free use.

32M-bit Flash memory is a 4,194,304 bytes / 2,097,152 words, 3.3V-only, 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.

4M-bit SRAM is a 524,288 bytes / 262,144 words asynchronous SRAM fabricated by silicon-gate CMOS technology.

M6MGB/T331S4BKT is suitable for the application of the mobile-communication-system to reduce both the mount space and weight.

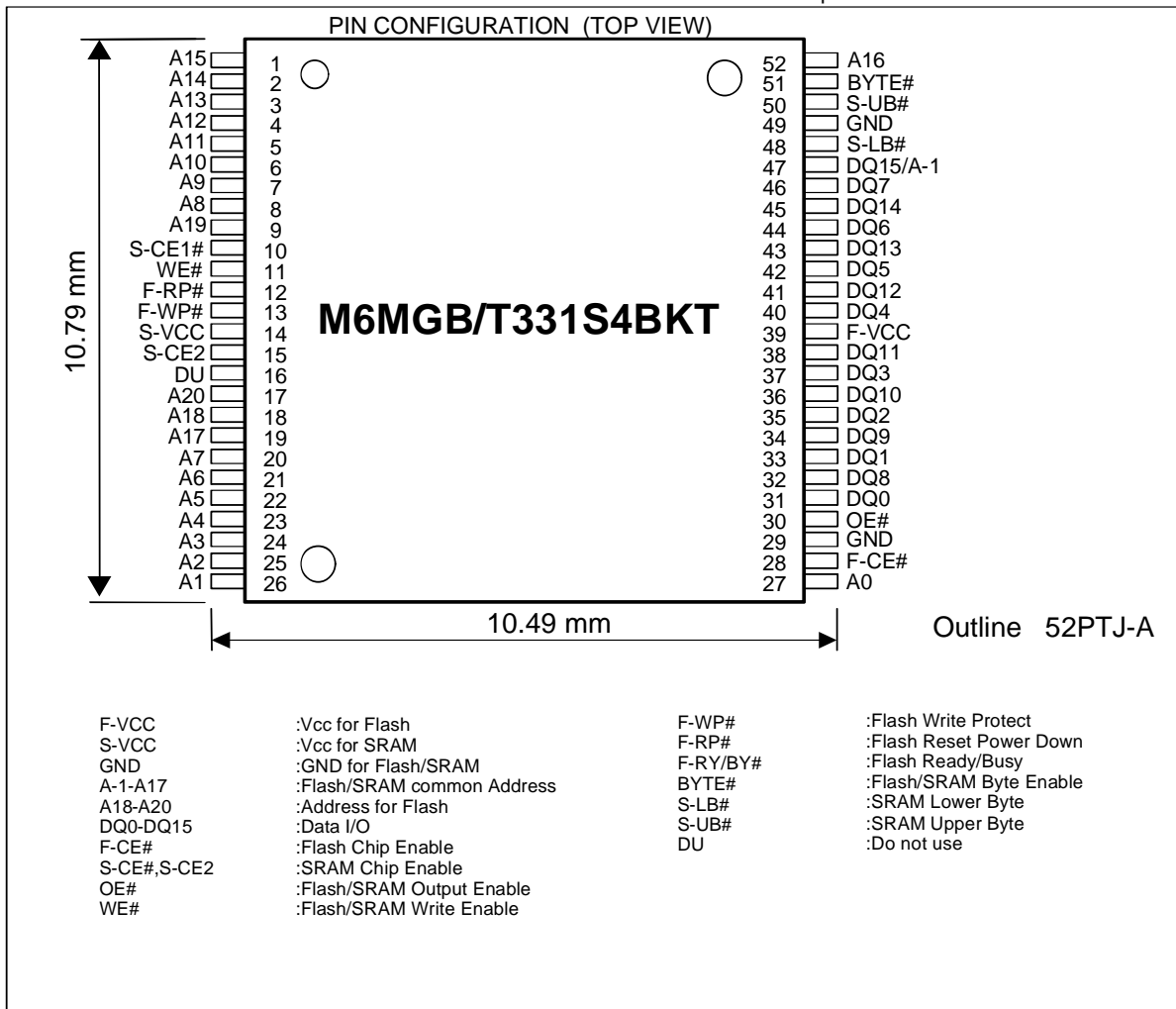
M6MGB/T331S4BKT provides for Software Lock Release function. Usually, all memory blocks are locked and can not be programmed or erased, when F-WP# is low. Using Software Lock Release function, program or erase operation can be executed.

### Features

Access Time	Flash	70ns (Max.)
	SRAM	70ns (Max.)
Supply Voltage		VCC=2.7 ~ 3.0V
Ambient Temperature		Ta=-40 ~ 85 °C
Package		52pin TSOP(Type-II), Lead pitch 0.4mm Outer-lead finishing: Sn-Cu

### Application

Mobile communication products



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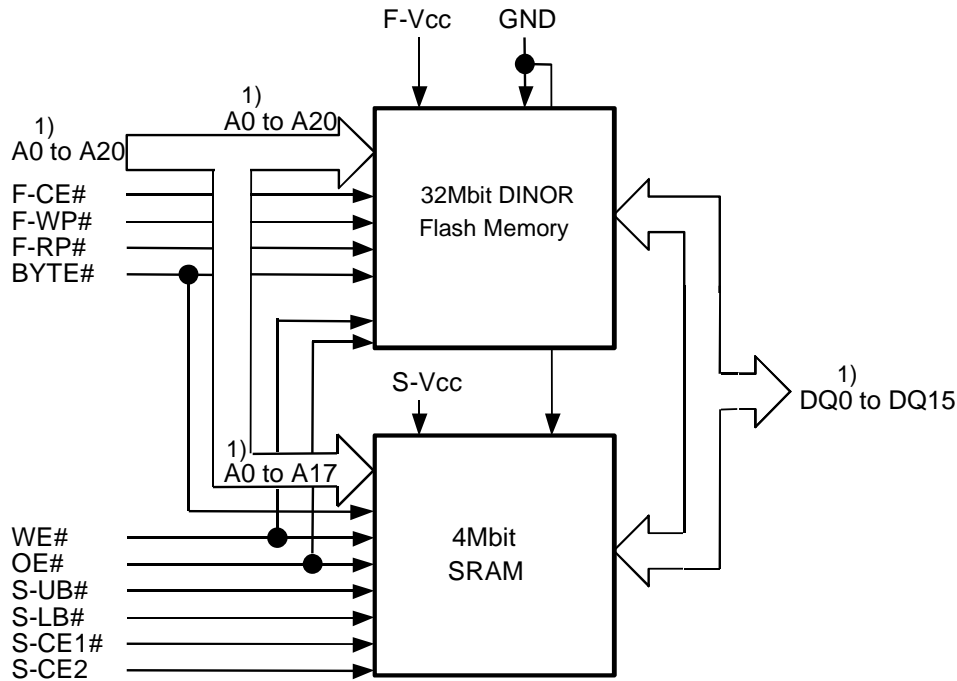
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### MCP Block Diagram



- Note 1): In case of x8 organization, A-1 is added, and only Lower Byte data(DQ0 to DQ7) are assigned to I/O and Upper Byte data(DQ8 to DQ15) are High-Z.  
 Note 2): In the flash memory part 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.  
 Note 3): "DU(Don't Use)" pin must be OPEN ,otherwise be inputted within 0V ~ Vcc.

### Capacitance

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

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