PSRAM (Pseudo SRAM) for Mobile Applications
128M-bit Mobile FCRAM™
MB82DBS08164D

A new member of FUJITSU’s FCRAM family, a 128M-bit Mobile FCRAM offering burst mode and 1.8V operation with low power memory for mobile applications.

Introduction

Mobile applications such as cellular phones enrich our personal lives — allowing functions like video streaming, access to music and movies as well as the Internet. Furthermore, new possibilities are emerging — home network, security checking, networked camera systems, real-time traffic data and disaster up-dates — all of which increase convenience and safety.

These mobile applications, which are becoming essential in daily life, require memory with low power consumption and high-speed operation in order to process large amounts of data at high speed.

FUJITSU’s Mobile FCRAM is a pseudo SRAM*1 with low power consumption and high-speed operation features. Since FUJITSU first introduced the FCRAM as a 16M-bit pseudo SRAM in 2000, Mobile FCRAM has been used widely as working and back-up memories for mobile applications. PSRAM has the advantages that there is no need of refresh control from external sources (unlike SDRAM) and active and standby currents are very low, therefore it has been adopted in many battery-operated mobile applications such as cellular phones. FUJITSU has shipped more than about 100million FCRAM products every year since 2004, when the mass production of 128M-bit products began, and maintains a large market share in the field of low-density products, 16M-bit to 32M-bit range.

We have now developed “MB82DBS08164,” which is a next generation product of 128M-bit Mobile FCRAM “MB82DBS08164C” with burst mode. We have successively developed shrink-die versions of FCRAM products and released to the market. Now FUJITSU provides fourth-generation 128M-bit product following the 32M-bit and 64M-bit shrink-die products released last year.

Figure 1 presents the product history of Mobile FCRAM.

Photo 1 300mm Wafer of MB82DBS08164D
Product Features

This PSRAM offers power consumption lower than the previous generation product. While the active current and standby current of the previous generation MB82DBS08164C were 40mA and 300μA (max.), respectively, MB82DBS08164D achieves lower current values of 35mA and 200μA. This product is capable of synchronous operation with 83MHz maximum burst operating frequency in addition to the conventional asynchronous operation at the SRAM interface. Since feature-rich mobile applications such as cellular phones with video streaming function require high-speed RAMs, this PSRAM with burst mode is optimal. This product conforms to COSMORAM (Common Specifications for Mobile RAM) Revision 3, the common interface specifications for pseudo SRAM.

The main features of the MB82DBS08164D are as follows:
- Conforms to COSMORAM Rev.3 specifications
- Interface: SRAM I/F (synchronous mode/asynchronous mode)
- Configuration: 8M-word×16-bit
- Power supply voltage: 1.7V to 1.95V
- Operation temperature range: 0°C to +70°C (FBGA package)
- Burst mode function
- Low power consumption
- Sleep mode and partial power-down mode
- Supply forms: Wafer, chip, and 71-pin FBGA package

Table 1 shows the main electrical specifications and Figure 2 presents pin assignments.

Conclusion

Figure 3 shows the lineup of the FCRAM products. In this figure, low-power SDRAM-compatible Consumer FCRAM
products are also listed in addition to the Mobile FCRAM products introduced in this article.

FUJITSU first began providing 3V-operation asynchronous Mobile FCRAM products to replace large-density SRAMs. We then developed and provided FCRAM products offering lower power supply voltage (1.8V) and higher speed operation mode, page mode and burst mode according to market demand.

We will continue to enrich the lineup of FCRAM products mainly in the 32M-bit to 128M-bit product range and will maintain stable supply.

**NOTES**

*1: Pseudo SRAM is a memory with SRAM interface and DRAM cell array to achieve large density and reduction in bit cost.

* FCRAM is a trademark of FUJITSU Microelectronics Limited.