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This document specifies SPANSION<sup>™</sup> memory products that are now offered by both Advanced Micro Devices and Fujitsu. Although the document is marked with the name of the company that originally developed the specification, these products will be offered to customers of both AMD and Fujitsu.

### **Continuity of Specifications**

There is no change to this datasheet as a result of offering the device as a SPANSION<sup>™</sup> product. Future routine revisions will occur when appropriate, and changes will be noted in a revision summary.

### **Continuity of Ordering Part Numbers**

AMD and Fujitsu continue to support existing part numbers beginning with "Am" and "MBM". To order these products, please use only the Ordering Part Numbers listed in this document.

### **For More Information**

Please contact your local AMD or Fujitsu sales office for additional information about SPANSION<sup>™</sup> memory solutions.





### Stacked MCP (Multi-Chip Package) FLASH MEMORY & SRAM cmos

# 64M (×8/×16) FLASH MEMORY & 8M (×8/×16) STATIC RAM

# MB84VD23280FA-70

### FEATURES

- Power supply voltage of 2.7 V to 3.1 V
- High performance 70 ns maximum access time (Flash) 70 ns maximum access time (SRAM)
- Operating Temperature -40 °C to +85 °C
- Package 65-ball FBGA

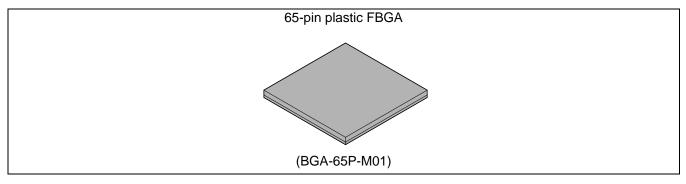
### ■ PRODUCT LINEUP

(Continued)

|                              | Flash Memory                         | SRAM  |
|------------------------------|--------------------------------------|---|
| Supply Voltage (V)           | $V_{cc}r^* = 3.0 V_{-0.3 V}^{+0.1V}$ | $V_{\rm CC}s^* = 3.0 \ V_{-0.3 \ V}^{+0.1 \ V}$ |
| Max Address Access Time (ns) | 70                                   | 70  |
| Max CE Access Time (ns)      | 70                                   | 70  |
| Max OE Access Time (ns)      | 30                                   | 35  |

\*: Both Vccf and Vccs must be in recommended operation range when either part is being accessed.

### PACKAGE





#### (Continued)

- -FLASH MEMORY
- + 0.16  $\mu m$  Process Technology
- Simultaneous Read/Write operations (Dual Bank)
- FlexBank<sup>™\*1</sup>

Bank A : 8 Mbit (8 KB  $\times$  8 and 64 KB  $\times$  15)

Bank B : 24 Mbit (64 KB  $\times$  48)

Bank C : 24 Mbit (64 KB  $\times$  48)

Bank D : 8 Mbit (8 KB  $\times$  8 and 64 KB  $\times$  15)

Two virtual Banks are chosen from the combination of four physical banks

Host system can program or erase in one bank, and then read immediately and simultaneously from the other bank with zero latency between read and write operations.

Read-while-erase

Read-while-program

- Single 3.0 V read, program, and erase Minimized system level power requirements
- Minimum 100,000 program/erase cycles
- Sector erase architecture

Sixteen 4 Kword and one hundred twenty-six 32 Kword sectors in word.

Any combination of sectors can be concurrently erased. It also supports full chip erase.

HiddenROM region

256 byte of HiddenROM, accessible through a new "HiddenROM Enable" command sequence Factory serialized and protected to provide a secure electronic serial number (ESN)

• WP/ACC input pin

At VL, allows protection of "outermost"  $2 \times 8$  Kbytes on both ends of boot sectors, regardless of sector protection/unprotection status

At VIH, allows removal of boot sector protection

At VACC, increases program performance

- Embedded Erase<sup>™\*2</sup> Algorithms Automatically preprograms and erases the chip or any sector
- Embedded Program<sup>™\*2</sup> Algorithms Automatically writes and verifies data at specified address
- Data Polling and Toggle Bit feature for detection of program or erase cycle completion
- Ready/Busy output (RY/BY)

Hardware method for detection of program or erase cycle completion

- Automatic sleep mode When addresses remain stable, the device automatically switches itself to low power mode.
- Low Vccf write inhibit  $\leq$  2.5 V
- **Program Suspend/Resume** Suspends the program operation to allow a read in another byte
- Erase Suspend/Resume Suspends the erase operation to allow a read data and/or program in another sector within the same device
- Please refer to "MBM29DL64DF" data sheet in detailed function

#### (Continued)

- —SRAM
- Power dissipation
   Operating: 50 mA Max
   Standby: 15 μA Max
- Power down features using CE1s and CE2s
- Data retention supply voltage: 1.5 V to 3.1 V
- CE1s and CE2s Chip Select
- Byte data control: LB (DQ7 to DQ0), UB (DQ15 to DQ8)

\*1 : FlexBank<sup>™</sup> is a trademark of Fujitsu Limited, Japan.

\*2 : Embedded Erase<sup>™</sup> and Embedded Program<sup>™</sup> are trademarks of Advanced Micro Devices, Inc.

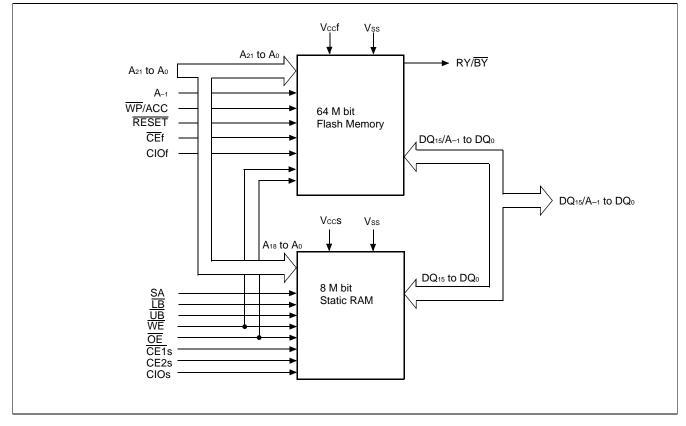
### ■ PIN ASSIGNMENT

| (A10 )<br>N.C.<br>(A9 )<br>N.C.  |  |  |  |   |  |  |  |  | 1775                              |
|----------------------------------|--|--|--|---|--|--|--|--|-----------------------------------|
|                                  | A11<br>(B7)<br>(B6)<br>(B6)<br>(B5)<br>(WP/ACC | (C9)<br>A15<br>(C8)<br>A12<br>(C7)<br>A19<br>(C6)<br>(C5)<br>(C5)<br>RESET | (D9)<br>A21<br>(D8)<br>A13<br>(D7)<br>A9<br>(D6)<br>A20<br>(D5)<br>RY/BY | E9<br>N.C.<br>(E8<br>A14<br>(E7)<br>A10 | (F9)<br>A16<br>(F8)<br>SA<br>(F7)<br>DQ6 | (G9)<br>CIOf<br>(G8)<br>DQ15/A-1<br>(G7)<br>DQ13<br>(G6)<br>DQ4<br>(G5)<br>DQ3 | H9<br>Vss<br>H8<br>DQ7<br>H7<br>DQ12<br>H6<br>Vccs<br>H5<br>Vccf | DQ14<br>J7<br>J6<br>CIOs<br>J5<br>DQ11 | ( K10 )<br>N.C.<br>( K9 )<br>N.C. |
| ( A2 )<br>N.C.<br>( A1 )<br>N.C. | (B4)<br>(B3)<br>(B3)<br>(B1)<br>(N.C.          | C4<br>UB<br>C3<br>A6<br>C2<br>A3   | ( D4 )<br>A18<br>( D3 )<br>A5<br>( D2 )<br>A2                            | (E4)<br>A17<br>(E3)<br>A4<br>(E2)<br>A1 | (F4)<br>DQ1<br>(F3)<br>Vss<br>(F2)<br>A0 | G4<br>DQ9<br>G3<br>OE<br>G2<br>CEf   | H4<br>DQ10<br>H3<br>DQ0<br>H2<br>CE1s                            | (J4)<br>DQ2<br>(J3)<br>DQ8             | ( K2 )<br>N.C.<br>( K1 )<br>N.C.  |
| N.C.                             | N.C.   |  |  | (BGA-6                                  | 5P-M01)                                  |  |  |  | N.C.                              |

### ■ PIN DESCRIPTION

| Pin name                          | Input/<br>Output | Description   |
|-----------------------------------|------------------|---|
| A <sub>18</sub> to A <sub>0</sub> | I                | Address Inputs (Common)   |
| A21 to A19, A-1                   | I                | Address Inputs (Flash)  |
| SA                                | I                | Address Input (SRAM)  |
| DQ15 to DQ0                       | I/O              | Data Inputs/Outputs (Common)  |
| CEf                               | I                | Chip Enable (Flash)   |
| CE1s                              | I                | Chip Enable (SRAM)  |
| CE2s                              | I                | Chip Enable (SRAM)  |
| OE                                | I                | Output Enable (Common)  |
| WE                                | I                | Write Enable (Common)   |
| RY/BY                             | 0                | Ready/Busy Output (Flash) Open Drain Output   |
| UB                                | I                | Upper Byte Control (SRAM)   |
| LB                                | I                | Lower Byte Control (SRAM)   |
| CIOf                              | Ι                | I/O Configuration (Flash)<br>CIOf = Vccf is Word mode (x16), CIOf = Vss is Byte mode (x8) |
| CIOs                              | I                | I/O Configuration (SRAM)<br>CIOs = Vccs is Word mode (x16), CIOs = Vss is Byte mode (x8)  |
| RESET                             | I                | Hardware Reset Pin/Sector Protection Unlock (Flash)                                       |
| WP/ACC                            | I                | Write Protect / Acceleration (Flash)  |
| N.C.                              | —                | No Internal Connection  |
| Vss                               | Power            | Device Ground (Common)  |
| Vccf                              | Power            | Device Power Supply (Flash)   |
| Vccs                              | Power            | Device Power Supply (SRAM)  |

### BLOCK DIAGRAM



### ■ DEVICE BUS OPERATIONS

| User Bus Operations (Flash = Word mode; CIOf = Vccf, SRAM = Word mode; CIOs = Vccs) |     |      |      |     |     |    |    |    |            |             |       |                  |
|---|-----|------|------|-----|-----|----|----|----|------------|-------------|-------|------------------|
| Operation *1,*3   | CEf | CE1s | CE2s | OE  | WE  | SA | LB | UB | DQ7 to DQ0 | DQ15 to DQ8 | RESET | WP/<br>ACC<br>*5 |
| Full Standby  | Н   | Н    | Х    | х   | х   | х  | х  | х  | High-Z     | High-Z      | н     | х                |
|   |     | Х    | L    |     | ~   | ~  | ~  | ~  |            |             |       |                  |
|   | н   | L    | н    | Н   | Н   | Х  | Х  | Х  | High-Z     | High-Z      |       |                  |
| Output Disable  |     |      |      | Х   | Х   | Х  | Н  | H  | High-Z     | High-Z      | H     | х                |
| Output Disable  | L   | Н    | Х    | н   | н   | х  | х  | х  | High-Z     | High-Z      |       |                  |
|   | L   | Х    | L    |     |     | ~  | ^  | ~  | r lign-z   | r ligit-z   |       |                  |
| Read from Flash *2  | L   | Н    | Х    | -   | L Н | х  | х  | Х  | Dout       | Dout        | Н     | х                |
|   |     | Х    | L    | L   |     | ~  | ~  | ~  | Door       | DOOT        |       |                  |
| Write to Flash  | L   | Н    | Х    | Н   | L   | х  | х  | Х  | Din        | DIN         | Н     | х                |
|   | L   | Х    | L    | • • | Ŀ   | ~  | ~  | ~  | Din        | Din         |       |                  |
|   | н   |      |      |     |     |    | L  | L  | Dout       | Dout        |       |                  |
| Read from SRAM  |     | L    | Н    | L   | н   | Х  | Н  | L  | High-Z     | Dout        | н     | Х                |
|   |     |      |      |     |     |    | L  | Т  | Dout       | High-Z      |       |                  |
|   |     |      |      |     |     |    | L  | L  | DIN        | Din         |       |                  |
| Write to SRAM   | Н   | L    | Н    | Х   | L   | Х  | Н  | L  | High-Z     | Din         | н     | Х                |
|   |     |      |      |     |     |    | L  | Н  | DIN        | High-Z      |       |                  |
| Temporary Sector<br>Group Unprotec-<br>tion *4                                      | х   | х    | х    | х   | х   | х  | х  | х  | х          | х           | Vid   | х                |
| Flash Hardware  | х   | Н    | Х    | Х   | Y   | Y  | х  | х  | High-Z     | High-Z      |       | х                |
| Reset   | ^   | Х    |      | ^   | X X |    | ^  | ^  | ⊓ig⊓-∠     | nigh-z      | L     | ^                |
| Boot Block Sector<br>Write Protection   | Х   | х    | х    | Х   | х   | х  | х  | Х  | х          | х           | х     | L                |

Legend:  $L = V_{IL}$ ,  $H = V_{IH}$ ,  $X = V_{IL}$  or  $V_{IH}$ . See DC Characteristics for voltage levels.

\*1 : Other operations except for indicated this column are inhibited.

\*2 :  $\overline{WE}$  can be  $V_{IL}$  if  $\overline{OE}$  is  $V_{IL}$ ,  $\overline{OE}$  at  $V_{IH}$  initiates the write operations.

\*3 : Do not apply  $\overline{CE}f = V_{IL}$ ,  $\overline{CE1}s = V_{IL}$  and  $CE2s = V_{IH}$  at a time.

\*4 : Also used for the extended sector group protections.

\*5 : Protects of "outermost" 2 x 4 Kwords on both ends of each boot block sector.

| User Bus Operations (Flash = Word mode; CIOf = Vccf, SRAM = Byte mode; CIOs = Vss) |     |      |      |    |     |    |    |    |            |             |       |                  |
|--|-----|------|------|----|-----|----|----|----|------------|-------------|-------|------------------|
| Operation *1,*3  | CEf | CE1s | CE2s | ŌĒ | WE  | SA | LB | UB | DQ7 to DQ0 | DQ15 to DQ8 | RESET | WP/<br>ACC<br>*5 |
| Full Standby   | Н   | Н    | Х    | х  | х   | х  | х  | х  | High-Z     | High-Z      | Н     | Х                |
|  |     | Х    | L    |    |     |    |    |    |            |             |       |                  |
|  | н   | L    | Н    | Η  | Н   | Х  | Х  | Х  | High-Z     | High-Z      |       |                  |
| Output Disable   |     | L    |      | Х  | Х   | Х  | н  | н  | High-Z     | High-Z      | Н     | Х                |
| Output Disable   | L   | Н    | Х    | н  | н   | х  | х  | х  | High-Z     | High-Z      |       | ~                |
|  | L   | Х    | L    | •• | ••• | ~  | ~  | Λ  | riigir Z   | riigit Z    |       |                  |
| Read from Flash*2  | L   | Н    | Х    | L  | Н   | х  | х  | х  | Dout       | Dout        | Н     | Х                |
|  | -   | Х    | L    | -  | ••  | Λ  | ~  |    | DOOT       | DOOT        |       | Λ                |
| Write to Flash   | L   | Н    | Х    | Н  | L   | х  | х  | х  | Din        | Din         | Н     | Х                |
|  |     | Х    | L    |    |     | ~  | ~  | ^  | DIN        | Din         |       | ~                |
| Read from SRAM   | Н   | L    | Н    | L  | Н   | SA | Х  | Х  | Dout       | High-Z      | Н     | Х                |
| Write to SRAM  | Н   | L    | Н    | Х  | L   | SA | Х  | Х  | Din        | High-Z      | Н     | Х                |
| Temporary Sector<br>Group Unprotec-<br>tion*4                                      | х   | х    | х    | х  | х   | х  | х  | х  | х          | х           | Vid   | х                |
| Flash Hardware   | х   | Н    | Х    | х  | v   | х  | х  | х  | High 7     | High-Z      | L     | Х                |
| Reset  | ^   | Х    | L    | ~  | Х   | ^  | ^  |    | High-Z     | r iigir-z   |       | ~                |
| Boot Block Sector<br>Write Protection  | Х   | Х    | х    | Х  | Х   | Х  | Х  | х  | Х          | Х           | Х     | L                |

#### User Bus Operations (Flash = Word mode; CIOf = Vccf, SRAM = Byte mode; CIOs = Vss)

Legend:  $L = V_{IL}$ ,  $H = V_{IH}$ ,  $X = V_{IL}$  or  $V_{IH}$ . See DC Characteristics for voltage levels.

\*1 : Other operations except for indicated this column are inhibited.

\*2 :  $\overline{WE}$  can be V<sub>IL</sub> if  $\overline{OE}$  is V<sub>IL</sub>,  $\overline{OE}$  at V<sub>IH</sub> initiates the write operations.

\*3 : Do not apply  $\overline{CE}f = V_{IL}$ ,  $\overline{CE1}s = V_{IL}$  and  $CE2s = V_{IH}$  at a time.

\*4 : It is also used for the extended sector group protections.

\*5 : Protect of "outermost" 2 x 4 Kwords on both ends of each boot block sector.

| User bus Operations (Flash = Byte mode, CIOI = Vss, SRAW = Byte mode, CIOS = Vss) |     |      |      |                           |    |    |    |    |         |               |                |       |                  |
|---|-----|------|------|---------------------------|----|----|----|----|---------|---------------|----------------|-------|------------------|
| Operation *1,*3   | CEf | CE1s | CE2s | <b>DQ</b> 15 <b>/A</b> -1 | OE | WE | SA | LB | UB      | DQ⁊ to<br>DQ₀ | DQ14 to<br>DQ8 | RESET | WP/<br>ACC<br>*5 |
| Full Standby  | н   | Н    | Х    | х                         | х  | х  | x  | х  | х       | High-Z        | High-Z         | Н     | х                |
| Full Standby  |     | Х    | L    |                           | ^  | ^  | ^  | ^  | ^       | riigii-z      | riigi1-z       |       | ^                |
|   | н   | L    | н    | Х                         | Н  | Н  | Х  | Х  | Х       | High-Z        | High-Z         | н     |                  |
| Output Disable  |     | L    |      | Х                         | Х  | Х  | Х  | Н  | Н       | High-Z        | High-Z         |       | х                |
| Output Disable  | L   | Н    | Х    | A_1 H                     | н  | х  | х  | х  | Lligh 7 | Lligh 7       |                | ^     |                  |
|   | L   | Х    | L    | <b>A</b> -1               | п  |    | ^  | ^  | ^       | High-Z        | High-Z         |       |                  |
| Read from Flash*2   | L   | Н    | Х    | A_1                       | L  | н  | х  | х  | х       | Dout          | Х              | Н     | х                |
| Read ITOITI Flash -   | L   | Х    | L    | <b>A</b> -1               | L  |    | ^  | ^  | ^       | DOUT          | ~              |       | ^                |
| Write to Flash  | 1   | Н    | Х    | Δ.                        | н  | L  | х  | х  | х       | Din           | Х              | Н     | х                |
|   | L   | Х    | L    | L A_1                     | 11 |    | ^  | ^  | ^       | DIN           | ~              | н     | ^                |
| Read from SRAM  | Н   | L    | Н    | Х                         | L  | Н  | SA | Х  | Х       | Dout          | High-Z         | Н     | Х                |
| Write to SRAM   | Н   | L    | Н    | Х                         | Х  | L  | SA | Х  | Х       | Din           | High-Z         | Н     | Х                |
| Temporary Sector<br>Group<br>Unprotection *4                                      | х   | х    | х    | х                         | Х  | x  | x  | х  | х       | х             | х              | Vid   | Х                |
| Flash Hardware  | х   | Н    | Х    | ~                         | х  | х  | х  | v  | х       | Lligh 7       | Lligh 7        | L     | Х                |
| Reset   | ^   | Х    | L    | X                         | ^  | ^  | ^  | X  |         | High-Z        | High-Z         | L     | ^                |
| Boot Block Sector<br>Write Protection   | Х   | х    | Х    | X                         | Х  | х  | Х  | Х  | х       | Х             | Х              | Х     | L                |

#### User Bus Operations (Flash = Byte mode; CIOf = Vss, SRAM = Byte mode; CIOs = Vss)

Legend:  $L = V_{IL}$ ,  $H = V_{IH}$ ,  $X = V_{IL}$  or  $V_{IH}$ . See DC Characteristics for voltage levels.

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\*3 : Do not apply  $\overline{CE}f = V_{IL}$ ,  $\overline{CE1}s = V_{IL}$  and  $CE2s = V_{IH}$  at a time.

\*4 : It is also used for the extended sector group protections.

\*5 : Protect of "outermost" 2 x 8 Kbytes on both ends of each boot block sector.

### ■ FLEXIBLE SECTOR-ERASE ARCHITECTURE on FLASH MEMORY

- Sixteen 4K words, and one hundred twenty-six 32 K words.
- Individual-sector, multiple-sector, or bulk-erase capability.

| 3         8KB         (4KW)           2         8KB         (4KW)           2         8KB         (4KW)           3         8KB         (4KW)           4         8KB         (4KW)           5         8KB         (4KW)           5         8KB         (4KW)           5         8KB         (4KW)           5         8KB         (4KW)           6         8KB         (4KW)           7         8KB         (4KW)           1         64KB         (32KW)           0         64KB         (32KW)           1         64KB         (32KW)           2         64KB         (32KW)           3         64KB         (32KW)           4         64KB         (32KW)           7         64KB         (32KW)           1         64KB         (32KW)           1         64KB         (32KW)           2         64KB   | Word Mode<br>00000h<br>00100h<br>00200h<br>003000h<br>005000h<br>006000h<br>007000h<br>01000h<br>018000h<br>028000h<br>028000h<br>028000h<br>038000h<br>038000h<br>058000h<br>058000h<br>058000h<br>058000h<br>058000h<br>058000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h | 00000h<br>002000h<br>004000h<br>006000h<br>008000h<br>00C000h<br>00C000h<br>010000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>100000h<br>110000h<br>120000h<br>120000h<br>130000h<br>130000h<br>140000h<br>158000h<br>160000h<br>170000h<br>180000h<br>180000h<br>180000h  | Bank C  | SA71 : 64KB (32KW)           SA72 : 64KB (32KW)           SA73 : 64KB (32KW)           SA74 : 64KB (32KW)           SA74 : 64KB (32KW)           SA74 : 64KB (32KW)           SA75 : 64KB (32KW)           SA76 : 64KB (32KW)           SA77 : 64KB (32KW)           SA78 : 64KB (32KW)           SA78 : 64KB (32KW)           SA78 : 64KB (32KW)           SA80 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA83 : 64KB (32KW)           SA85 : 64KB (32KW)           SA85 : 64KB (32KW)           SA85 : 64KB (32KW)           SA87 : 64KB (32KW)           SA87 : 64KB (32KW)           SA89 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)  | Word Mode<br>200000h<br>208000h<br>218000h<br>218000h<br>228000h<br>238000h<br>238000h<br>238000h<br>258000h<br>258000h<br>258000h<br>258000h<br>268000h<br>278000h<br>278000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>28000h<br>28000h<br>28000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h  | Byte Modi<br>400000h<br>410000h<br>420000h<br>430000h<br>430000h<br>450000h<br>450000h<br>480000h<br>480000h<br>480000h<br>480000h<br>480000h<br>480000h<br>480000h<br>50000h<br>510000h<br>530000h<br>550000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000000000                                 |
|--|---|---|---|---|---|---|
| : 8KB (4KW)<br>: 64KB (32KW)<br>0 : 64KB (32KW)<br>2 : 64KB (32KW)<br>2 : 64KB (32KW)<br>2 : 64KB (32KW)<br>3 : 64KB (32KW)<br>6 : 64KB (32KW)<br>6 : 64KB (32KW)<br>9 : 64KB (32KW)<br>1 : 64KB (32KW)<br>2 : 64KB (32KW)<br>2 : 64KB (32KW)<br>2 : 64KB (32KW)<br>3 : 64KB (32KW)<br>2 : 64KB (32KW)<br>3 : 64KB (32KW)<br>4 : 64KB (32KW)<br>3 : 64KB (32KW)<br>4 : 64KB (32KW)<br>3 : 64KB (32KW)<br>4 : 64KB (32KW)<br>4 : 64KB (32KW)<br>4 : 64KB (32KW)<br>3 : 64KB (32KW)<br>4 : 64KB (32KW)<br>5 : 64KB (32KW             | 001000h<br>002000h<br>003000h<br>005000h<br>005000h<br>007000h<br>010000h<br>028000h<br>028000h<br>038000h<br>038000h<br>048000h<br>058000h<br>058000h<br>058000h<br>068000h<br>078000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h   | 002000h<br>004000h<br>006000h<br>002000h<br>002000h<br>002000h<br>002000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>020000h<br>100000h<br>1100000h<br>120000h<br>120000h<br>130000h<br>158000h<br>158000h<br>160000h<br>170000h<br>180000h<br>180000h  | Bank C  | SA72 : 64KB (32KW)           SA73 : 64KB (32KW)           SA74 : 64KB (32KW)           SA75 : 64KB (32KW)           SA76 : 64KB (32KW)           SA76 : 64KB (32KW)           SA76 : 64KB (32KW)           SA77 : 64KB (32KW)           SA78 : 64KB (32KW)           SA79 : 64KB (32KW)           SA79 : 64KB (32KW)           SA80 : 64KB (32KW)           SA81 : 64KB (32KW)           SA82 : 64KB (32KW)           SA83 : 64KB (32KW)           SA83 : 64KB (32KW)           SA83 : 64KB (32KW)           SA84 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA88 : 64KB (32KW)           SA89 : 64KB (32KW)           SA89 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA99 : 64KB (32KW)      S   | 21000h<br>21800h<br>22000h<br>22800h<br>23800h<br>248000h<br>248000h<br>258000h<br>268000h<br>268000h<br>278000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>28000h<br>28000h<br>2C0000h<br>2C0000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h  | 420000h<br>430000h<br>440000h<br>450000h<br>470000h<br>480000h<br>480000h<br>480000h<br>480000h<br>480000h<br>480000h<br>50000h<br>510000h<br>530000h<br>530000h<br>530000h<br>530000h<br>580000h<br>580000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h<br>50000h  |
| 2:         8KB         (4KW)           3:         64KB         (32KW)           0:         64KB         (32KW)           0:         64KB         (32KW)           1:         64KB         (32KW)           2:         64KB         (32KW)           3:         64KB         (32KW)           3:         64KB         (32KW)           3:         64KB         (32KW)           3:         64KB         (32KW)           0:         64KB         (32KW)           20:         64KB         (32KW)           21:         64KB         (32KW)           22:         64KB         (32KW)           23:         64KB         (32KW)           24:         64KB         (32KW)           25:         64KB         (32KW)           26:         64KB         (32KW)   | 003000h<br>004000h<br>005000h<br>007000h<br>018000h<br>020000h<br>028000h<br>028000h<br>038000h<br>038000h<br>058000h<br>058000h<br>058000h<br>078000h<br>078000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h   | 006000h<br>008000h<br>002000h<br>00E000h<br>010000h<br>020000h<br>020000h<br>030000h<br>040000h<br>050000h<br>050000h<br>070000h<br>050000h<br>070000h<br>050000h<br>050000h<br>050000h<br>100000h<br>120000h<br>130000h<br>140000h<br>158000h<br>158000h<br>180000h<br>180000h   | T<br>Bank C   | SA73 : 64KB (32KW)           SA74 : 64KB (32KW)           SA75 : 64KB (32KW)           SA76 : 64KB (32KW)           SA77 : 64KB (32KW)           SA77 : 64KB (32KW)           SA78 : 64KB (32KW)           SA79 : 64KB (32KW)           SA79 : 64KB (32KW)           SA79 : 64KB (32KW)           SA80 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA84 : 64KB (32KW)           SA84 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA89 : 64KB (32KW)           SA90 : 64KB (32KW)           SA90 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA97 : 64KB (32KW)      >   | 218000h<br>220000h<br>228000h<br>238000h<br>240000h<br>258000h<br>258000h<br>268000h<br>268000h<br>278000h<br>278000h<br>28000h<br>28000h<br>28000h<br>28000h<br>28000h<br>28000h<br>28000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>200000h<br>200000h<br>20000000h<br>200000h<br>200000 | 430000h<br>440000h<br>460000h<br>470000h<br>480000h<br>480000h<br>480000h<br>480000h<br>420000h<br>420000h<br>420000h<br>510000h<br>520000h<br>530000h<br>530000h<br>550000h<br>580000h<br>580000h<br>520000h<br>580000h<br>520000h<br>580000h<br>520000h<br>580000h<br>520000h   |
| 3:         8KB         (4KW)           1:         64KB         (32KW)           1:         64KB         (32KW)           2:         64KB         (32KW)           3:         64KB         (32KW)           4:         64KB         (32KW)           5:         64KB         (32KW)           9:         64KB         (32KW)           9:         64KB         (32KW)           12:         64KB         (32KW)   | 004000h<br>005000h<br>006000h<br>018000h<br>018000h<br>028000h<br>028000h<br>028000h<br>038000h<br>048000h<br>048000h<br>058000h<br>058000h<br>068000h<br>068000h<br>078000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h  | 008000h<br>00A000h<br>00E000h<br>010000h<br>030000h<br>050000h<br>050000h<br>050000h<br>050000h<br>050000h<br>050000h<br>050000h<br>050000h<br>050000h<br>050000h<br>050000h<br>050000h<br>100000h<br>110000h<br>130000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h<br>158000h                       | Bank C  | SA74 : 64KB (32KW)           SA75 : 64KB (32KW)           SA76 : 64KB (32KW)           SA77 : 64KB (32KW)           SA77 : 64KB (32KW)           SA77 : 64KB (32KW)           SA78 : 64KB (32KW)           SA80 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA83 : 64KB (32KW)           SA83 : 64KB (32KW)           SA83 : 64KB (32KW)           SA83 : 64KB (32KW)           SA84 : 64KB (32KW)           SA85 : 64KB (32KW)           SA85 : 64KB (32KW)           SA85 : 64KB (32KW)           SA85 : 64KB (32KW)           SA89 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA99 : 64KB (32KW)           SA99 : 64KB (32KW)      S   | 220000h<br>228000h<br>238000h<br>240000h<br>248000h<br>258000h<br>260000h<br>268000h<br>278000h<br>280000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>200000h<br>20000000h<br>200000h<br>200000h<br>200000 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440000h<br>450000h<br>460000h<br>470000h<br>480000h<br>480000h<br>480000h<br>480000h<br>480000h<br>50000h<br>510000h<br>530000h<br>530000h<br>530000h<br>570000h<br>580000h<br>580000h<br>580000h<br>50000h<br>580000h<br>50000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>580000h<br>58000000h<br>5800000h<br>580000000000 |
| SKB (4KW)     SKB (32KW)  | 005000h<br>006000h<br>007000h<br>010000h<br>028000h<br>028000h<br>028000h<br>038000h<br>048000h<br>058000h<br>058000h<br>058000h<br>068000h<br>068000h<br>078000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h  | 00A000h<br>00E000h<br>010000h<br>020000h<br>020000h<br>040000h<br>050000h<br>050000h<br>050000h<br>070000h<br>080000h<br>080000h<br>080000h<br>0D0000h<br>0D0000h<br>0D0000h<br>100000h<br>110000h<br>130000h<br>130000h<br>158000h<br>158000h<br>160000h<br>180000h<br>180000h   | Bank C  | SA75 : 64KB (32KW)           SA76 : 64KB (32KW)           SA77 : 64KB (32KW)           SA78 : 64KB (32KW)           SA78 : 64KB (32KW)           SA79 : 64KB (32KW)           SA80 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA82 : 64KB (32KW)           SA83 : 64KB (32KW)           SA85 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA89 : 64KB (32KW)           SA89 : 64KB (32KW)           SA90 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA99 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW) <td>228000h<br/>230000h<br/>238000h<br/>248000h<br/>258000h<br/>258000h<br/>268000h<br/>268000h<br/>278000h<br/>288000h<br/>288000h<br/>288000h<br/>288000h<br/>280000h<br/>280000h<br/>280000h<br/>2C0000h<br/>2C0000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h</td> <td>450000h<br/>460000h<br/>470000h<br/>480000h<br/>480000h<br/>480000h<br/>420000h<br/>420000h<br/>50000h<br/>50000h<br/>530000h<br/>530000h<br/>530000h<br/>560000h<br/>570000h<br/>580000h<br/>580000h<br/>520000h<br/>580000h<br/>50000h<br/>50000h<br/>50000h<br/>50000h</td> | 228000h<br>230000h<br>238000h<br>248000h<br>258000h<br>258000h<br>268000h<br>268000h<br>278000h<br>288000h<br>288000h<br>288000h<br>288000h<br>280000h<br>280000h<br>280000h<br>2C0000h<br>2C0000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h   | 450000h<br>460000h<br>470000h<br>480000h<br>480000h<br>480000h<br>420000h<br>420000h<br>50000h<br>50000h<br>530000h<br>530000h<br>530000h<br>560000h<br>570000h<br>580000h<br>580000h<br>520000h<br>580000h<br>50000h<br>50000h<br>50000h<br>50000h   |
| <ul> <li>: 8KB (4KW)</li> <li>: 8KB (4KW)</li> <li>: 8KB (4KW)</li> <li>: 8KB (4KW)</li> <li>: 64KB (32KW)</li> </ul>   | 006000h<br>007000h<br>008000h<br>018000h<br>028000h<br>028000h<br>038000h<br>040000h<br>058000h<br>058000h<br>068000h<br>078000h<br>078000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h  | 00C000h<br>00E000h<br>020000h<br>030000h<br>050000h<br>050000h<br>050000h<br>070000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>020000h<br>0E0000h<br>100000h<br>110000h<br>130000h<br>158000h<br>158000h<br>158000h<br>180000h<br>180000h   | Bank C  | SA76 : 64KB (32KW)           SA77 : 64KB (32KW)           SA78 : 64KB (32KW)           SA79 : 64KB (32KW)           SA80 : 64KB (32KW)           SA80 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA82 : 64KB (32KW)           SA83 : 64KB (32KW)           SA83 : 64KB (32KW)           SA84 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA88 : 64KB (32KW)           SA89 : 64KB (32KW)           SA89 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA96 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)           SA102 : 64KB (32KW) <td>230000h<br/>238000h<br/>248000h<br/>250000h<br/>258000h<br/>268000h<br/>270000h<br/>278000h<br/>288000h<br/>288000h<br/>288000h<br/>288000h<br/>288000h<br/>288000h<br/>288000h<br/>288000h<br/>2C0000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h<br/>2C8000h</td> <td>460000h<br/>470000h<br/>480000h<br/>480000h<br/>420000h<br/>420000h<br/>420000h<br/>420000h<br/>500000h<br/>510000h<br/>520000h<br/>530000h<br/>550000h<br/>560000h<br/>570000h<br/>580000h<br/>580000h<br/>520000h<br/>520000h</td>  | 230000h<br>238000h<br>248000h<br>250000h<br>258000h<br>268000h<br>270000h<br>278000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>288000h<br>2C0000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h<br>2C8000h   | 460000h<br>470000h<br>480000h<br>480000h<br>420000h<br>420000h<br>420000h<br>420000h<br>500000h<br>510000h<br>520000h<br>530000h<br>550000h<br>560000h<br>570000h<br>580000h<br>580000h<br>520000h<br>520000h   |
| 3:         8KB         (4KW)           3:         64KB (32KW)           3:         64KB (32KW)           1:         64KB (32KW)           1:         64KB (32KW)           1:         64KB (32KW)           1:         64KB (32KW)           2:         64KB (32KW)           3:         64KB (32KW)           4:         64KB (32KW)           5:         64KB (32KW)           6:         64KB (32KW)           8:         64KB (32KW)           9:         64KB (32KW)           20:         64KB (32KW)           21:         64KB (32KW)           22:         64KB (32KW)           21:         64KB (32KW)           22:         64KB (32KW)           23:         64KB (32KW)           24:         64KB (32KW)           25:         64KB (32KW)           26:         64KB (32KW)           27:         64KB (32KW)           28:         64KB (32KW)           29:         64KB (32KW)           29:         64KB (32KW)           20:         64KB (32KW)           21:         64KB (32KW)           22:  | 007000h<br>008000h<br>018000h<br>020000h<br>028000h<br>038000h<br>040000h<br>050000h<br>058000h<br>060000h<br>078000h<br>078000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h  | 00E000h<br>010000h<br>020000h<br>030000h<br>050000h<br>060000h<br>070000h<br>070000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>100000h<br>100000h<br>120000h<br>130000h<br>150000h<br>180000h<br>180000h<br>180000h   | Bank C  | SA77 : 64KB (32KW)           SA78 : 64KB (32KW)           SA79 : 64KB (32KW)           SA80 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA81 : 64KB (32KW)           SA83 : 64KB (32KW)           SA84 : 64KB (32KW)           SA85 : 64KB (32KW)           SA84 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA89 : 64KB (32KW)           SA90 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)   | 238000h<br>240000h<br>248000h<br>258000h<br>268000h<br>268000h<br>278000h<br>278000h<br>28000h<br>28000h<br>28000h<br>28000h<br>28000h<br>28000h<br>2C0000h<br>2C0000h<br>2C0000h<br>2C0000h<br>2D8000h<br>2D8000h<br>2E0000h<br>2E8000h  | 470000h<br>480000h<br>490000h<br>420000h<br>4D0000h<br>4D0000h<br>4E0000h<br>510000h<br>520000h<br>530000h<br>530000h<br>550000h<br>550000h<br>580000h<br>580000h<br>580000h<br>520000h<br>580000h<br>520000h   |
| 3 : 64KB (32KW)<br>9 : 64KB (32KW)<br>1 : 64KB (32KW)<br>1 : 64KB (32KW)<br>2 : 64KB (32KW)<br>3 : 64KB (32KW)<br>4 : 64KB (32KW)<br>5 : 64KB (32KW)<br>6 : 64KB (32KW)<br>9 : 64KB (32KW)<br>9 : 64KB (32KW)<br>9 : 64KB (32KW)<br>11 : 64KB (32KW)<br>12 : 64KB (32KW)<br>12 : 64KB (32KW)<br>13 : 64KB (32KW)<br>14 : 64KB (32KW)<br>15 : 64KB (32KW)<br>15 : 64KB (32KW)<br>16 : 64KB (32KW)<br>10 : 64KB (32KW)<br>10 : 64KB (32KW)<br>10 : 64KB (32KW)<br>10 : 64KB (32KW)<br>11 : 6                             | 008000h<br>010000h<br>028000h<br>028000h<br>038000h<br>040000h<br>048000h<br>058000h<br>068000h<br>068000h<br>068000h<br>078000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h   | 010000h<br>020000h<br>030000h<br>050000h<br>050000h<br>070000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>100000h<br>110000h<br>130000h<br>130000h<br>158000h<br>158000h<br>180000h<br>180000h  | Bank C  | SA79 : 64KB (32KW)           SA80 : 64KB (32KW)           SA81 : 64KB (32KW)           SA82 : 64KB (32KW)           SA83 : 64KB (32KW)           SA83 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA86 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA88 : 64KB (32KW)           SA89 : 64KB (32KW)           SA90 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA99 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)  | 24000h<br>24800h<br>25000h<br>26000h<br>268000h<br>27000h<br>278000h<br>28000h<br>28000h<br>28000h<br>28000h<br>28000h<br>28000h<br>28000h<br>28000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h<br>20000h  | 480000h<br>490000h<br>4B0000h<br>4C0000h<br>4C0000h<br>500000h<br>510000h<br>530000h<br>530000h<br>530000h<br>560000h<br>560000h<br>580000h<br>580000h<br>580000h<br>500000h<br>500000h<br>500000h<br>500000h   |
| <ul> <li>a): 64KB (32KW)</li> <li>b): 64KB (32KW)</li> <li>c): 64KB (32KW)</li> </ul>  | 01000h<br>018000h<br>028000h<br>03000h<br>048000h<br>05000h<br>058000h<br>058000h<br>068000h<br>078000h<br>078000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>000000h<br>000000h<br>00000h  | 020000h<br>030000h<br>050000h<br>050000h<br>080000h<br>080000h<br>080000h<br>080000h<br>00000h<br>00000h<br>00000h<br>00000h<br>100000h<br>110000h<br>120000h<br>130000h<br>130000h<br>158000h<br>158000h<br>160000h<br>170000h<br>180000h<br>180000h   | Bank C  | SA80 : 64KB (32KW)           SA81 : 64KB (32KW)           SA82 : 64KB (32KW)           SA83 : 64KB (32KW)           SA84 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA88 : 64KB (32KW)           SA89 : 64KB (32KW)           SA89 : 64KB (32KW)           SA90 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)  | 248000h<br>250000h<br>268000h<br>268000h<br>270000h<br>288000h<br>288000h<br>288000h<br>280000h<br>280000h<br>2A8000h<br>2A8000h<br>2C0000h<br>2C0000h<br>2C8000h<br>2C8000h<br>2D8000h<br>2E8000h<br>2E8000h   | 490000h<br>4A0000h<br>4B0000h<br>4D0000h<br>4D0000h<br>500000h<br>510000h<br>530000h<br>530000h<br>540000h<br>560000h<br>560000h<br>580000h<br>580000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A00000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A00000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A0000h<br>5A00000h<br>5A00000h<br>5A00000h<br>5A000000h<br>5A00000h<br>5A00000h<br>5A0000000000   |
| 0 : 64KB (32KW)<br>1 : 64KB (32KW)<br>2 : 64KB (32KW)<br>3 : 64KB (32KW)<br>4 : 64KB (32KW)<br>5 : 64KB (32KW)<br>6 : 64KB (32KW)<br>7 : 64KB (32KW)<br>9 : 64KB (32KW)<br>9 : 64KB (32KW)<br>11 : 64KB (32KW)<br>12 : 64KB (32KW)<br>13 : 64KB (32KW)<br>14 : 64KB (32KW)<br>15 : 64KB (32KW)<br>16 : 64KB (32KW)<br>17 : 64KB (32KW)<br>19 : 64KB (32KW)<br>10 : 64KB (32KW)<br>10 : 64KB (32KW)<br>11 : 64KB (32KW)<br>11 : 64KB (32KW)<br>12 : 64KB (32KW)<br>13 : 64KB (32KW)<br>14 : 64KB (32KW)<br>15 : 64KB (32KW)<br>14 : 64KB (32KW)<br>14 : 64KB (32KW)<br>15 : 64KB (32KW)<br>16 : 64KB (32KW)<br>16 : 64KB (32KW)<br>17 : 64KB (32KW)<br>17 : 64KB (32KW)<br>18 : 64KB (32KW)<br>19 : 64KB (32KW)<br>10 : 64KB (32KW)<br>10 : 64KB (32KW)<br>11 :                             | 018000h<br>020000h<br>038000h<br>038000h<br>040000h<br>058000h<br>058000h<br>068000h<br>078000h<br>078000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>008000h   | 030000h<br>040000h<br>050000h<br>060000h<br>070000h<br>080000h<br>0A0000h<br>0A0000h<br>0C0000h<br>0D0000h<br>0E0000h<br>100000h<br>100000h<br>120000h<br>130000h<br>140000h<br>150000h<br>160000h<br>180000h<br>1A0000h<br>180000h   | Bank C  | SA81 : 64KB (32KW)           SA82 : 64KB (32KW)           SA83 : 64KB (32KW)           SA84 : 64KB (32KW)           SA85 : 64KB (32KW)           SA85 : 64KB (32KW)           SA85 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA88 : 64KB (32KW)           SA89 : 64KB (32KW)           SA90 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)  | 258000h<br>260000h<br>278000h<br>278000h<br>280000h<br>280000h<br>298000h<br>2A0000h<br>2A0000h<br>2B0000h<br>2B0000h<br>2C0000h<br>2C0000h<br>2D8000h<br>2D8000h<br>2E0000h<br>2E0000h<br>2E8000h  | 4B0000h<br>4C0000h<br>4D0000h<br>4E0000h<br>500000h<br>510000h<br>520000h<br>530000h<br>550000h<br>560000h<br>570000h<br>580000h<br>580000h<br>580000h<br>520000h<br>520000h  |
| 1 : 64KB (32KW)<br>2 : 64KB (32KW)<br>3 : 64KB (32KW)<br>5 : 64KB (32KW)<br>5 : 64KB (32KW)<br>6 : 64KB (32KW)<br>7 : 64KB (32KW)<br>9 : 64KB (32KW)<br>9 : 64KB (32KW)<br>10 : 64KB (32KW)<br>11 : 64KB (32KW)<br>12 : 64KB (32KW)<br>13 : 64KB (32KW)<br>14 : 64KB (32KW)<br>15 : 64KB (32KW)<br>16 : 64KB (32KW)<br>17 : 64KB (32KW)<br>18 : 64KB (32KW)<br>19 : 64KB (32KW)<br>10 : 64KB (32KW)<br>10 : 64KB (32KW)<br>11 : 64KB (32KW)<br>11 : 64KB (32KW)<br>12 : 64KB (32KW)<br>13 : 64KB (32KW)<br>13 : 64KB (32KW)<br>14 : 64KB (32KW)<br>13 : 64KB (32KW)<br>14 : 64KB (32KW)<br>15 : 64KB (32KW)<br>15 : 64KB (32KW)<br>16 : 64KB (32KW)<br>16 : 64KB (32KW)<br>17 : 64KB (32KW)<br>18 : 64KB (32KW)<br>18 : 64KB (32KW)<br>19 : 64KB (32KW)<br>10 : 64KB (32KW)<br>10 : 64KB (32KW)<br>11                              | 028000h<br>03000h<br>038000h<br>048000h<br>058000h<br>068000h<br>068000h<br>078000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>08000h<br>08000h<br>00000h<br>00000h<br>00000h   | 050000h<br>060000h<br>070000h<br>080000h<br>080000h<br>0B0000h<br>0C0000h<br>0D0000h<br>0E0000h<br>100000h<br>110000h<br>110000h<br>130000h<br>130000h<br>158000h<br>158000h<br>160000h<br>180000h<br>180000h   | Bank C  | SA82 : 64KB (32KW)           SA83 : 64KB (32KW)           SA84 : 64KB (32KW)           SA85 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA89 : 64KB (32KW)           SA90 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)  | 260000h<br>268000h<br>270000h<br>278000h<br>280000h<br>290000h<br>298000h<br>2A0000h<br>280000h<br>2B0000h<br>2C0000h<br>2C0000h<br>2C0000h<br>2D8000h<br>2D8000h<br>2E0000h<br>2E0000h<br>2F8000h  | 4C0000h<br>4D0000h<br>4E0000h<br>500000h<br>510000h<br>520000h<br>530000h<br>560000h<br>570000h<br>580000h<br>580000h<br>580000h<br>520000h<br>50000h<br>50000h<br>5D0000h<br>5D0000h   |
| 2 : 64KB (32KW)<br>3 : 64KB (32KW)<br>4 : 64KB (32KW)<br>5 : 64KB (32KW)<br>6 : 64KB (32KW)<br>7 : 64KB (32KW)<br>9 : 64KB (32KW)<br>9 : 64KB (32KW)<br>11 : 64KB (32KW)<br>12 : 64KB (32KW)<br>12 : 64KB (32KW)<br>13 : 64KB (32KW)<br>14 : 64KB (32KW)<br>15 : 64KB (32KW)<br>15 : 64KB (32KW)<br>16 : 64KB (32KW)<br>10 : 64KB (32KW)<br>10 : 64KB (32KW)<br>11                             | 030000h<br>038000h<br>040000h<br>050000h<br>058000h<br>068000h<br>078000h<br>078000h<br>088000h<br>088000h<br>088000h<br>040000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>000000h<br>000000h<br>000000h  | 060000h<br>070000h<br>080000h<br>0A0000h<br>0C0000h<br>0C0000h<br>0C0000h<br>0E0000h<br>100000h<br>110000h<br>120000h<br>130000h<br>158000h<br>158000h<br>160000h<br>170000h<br>180000h<br>180000h  | Bank C  | SA83 : 64KB (32KW)           SA84 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA86 : 64KB (32KW)           SA86 : 64KB (32KW)           SA86 : 64KB (32KW)           SA89 : 64KB (32KW)           SA89 : 64KB (32KW)           SA90 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)  | 268000h<br>270000h<br>278000h<br>288000h<br>298000h<br>298000h<br>2A8000h<br>2A8000h<br>2B8000h<br>2C0000h<br>2C8000h<br>2C8000h<br>2D8000h<br>2E8000h<br>2E8000h   | 4D0000h<br>4E0000h<br>50000h<br>510000h<br>520000h<br>530000h<br>540000h<br>560000h<br>570000h<br>580000h<br>580000h<br>580000h<br>5A0000h<br>5A0000h<br>5C0000h<br>5D0000h<br>5D0000h  |
| 3 : 64KB (32KW)<br>4 : 64KB (32KW)<br>5 : 64KB (32KW)<br>6 : 64KB (32KW)<br>8 : 64KB (32KW)<br>9 : 64KB (32KW)<br>9 : 64KB (32KW)<br>20 : 64KB (32KW)<br>21 : 64KB (32KW)<br>22 : 64KB (32KW)<br>23 : 64KB (32KW)<br>25 : 64KB (32KW)<br>26 : 64KB (32KW)<br>26 : 64KB (32KW)<br>27 : 64KB (32KW)<br>29 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>21 : 64KB (32KW)<br>21 : 64KB (32KW)<br>21 : 64KB (32KW)<br>22 : 64KB (32KW)<br>23 : 64KB (32KW)<br>23 : 64KB (32KW)<br>23 : 64KB (32KW)<br>24 : 64KB (32KW)<br>25 : 64KB (32KW)<br>25 : 64KB (32KW)<br>26 : 64KB (32KW)<br>27 : 64KB (32KW)<br>27 : 64KB (32KW)<br>28 : 64KB (32KW)<br>28 : 64KB (32KW)<br>28 : 64KB (32KW)<br>29 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>21 : 64KB (32KW)<br>21 : 64KB (32KW)<br>22 : 64KB (32KW)<br>22 : 64KB (32KW)<br>22 : 64KB (32KW)<br>21 : 64KB (32KW)<br>22 : 64KB (32KW)<br>2                             | 038000h<br>040000h<br>050000h<br>058000h<br>068000h<br>078000h<br>078000h<br>088000h<br>088000h<br>098000h<br>040000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>000000h<br>000000h<br>000000h  | 070000h<br>080000h<br>0A0000h<br>0C0000h<br>0D0000h<br>0D0000h<br>0D0000h<br>100000h<br>100000h<br>120000h<br>130000h<br>140000h<br>150000h<br>160000h<br>180000h<br>1A0000h<br>1A0000h   | Bank C  | SA84 : 64KB (32KW)           SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA88 : 64KB (32KW)           SA89 : 64KB (32KW)           SA89 : 64KB (32KW)           SA91 : 64KB (32KW)           SA91 : 64KB (32KW)           SA91 : 64KB (32KW)           SA91 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)   | 270000h<br>278000h<br>280000h<br>290000h<br>298000h<br>2A8000h<br>2B8000h<br>2B8000h<br>2C0000h<br>2C8000h<br>2D8000h<br>2D8000h<br>2E8000h<br>2F8000h  | 4E0000h<br>4F0000h<br>500000h<br>510000h<br>520000h<br>530000h<br>550000h<br>560000h<br>580000h<br>580000h<br>580000h<br>5C0000h<br>5D0000h<br>5D0000h  |
| 4 : 64KB (32KW)<br>5 : 64KB (32KW)<br>6 : 64KB (32KW)<br>7 : 64KB (32KW)<br>9 : 64KB (32KW)<br>9 : 64KB (32KW)<br>11 : 64KB (32KW)<br>22 : 64KB (32KW)<br>23 : 64KB (32KW)<br>24 : 64KB (32KW)<br>25 : 64KB (32KW)<br>26 : 64KB (32KW)<br>29 : 64KB (32KW)<br>29 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>21 : 64KB (32KW)<br>22 : 64KB (32KW)<br>23 : 64KB (32KW)<br>24 : 64KB (32KW)<br>25 : 64KB (32KW)<br>25 : 64KB (32KW)<br>26 : 64KB (32KW)<br>27 : 64KB (32KW)<br>28 : 64KB (32KW)<br>28 : 64KB (32KW)<br>29 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>21 : 64KB (32KW)<br>22 : 64KB (32KW)<br>23 : 64KB (32KW)<br>24 : 64KB (32KW)<br>25 : 64KB (32KW)<br>26 : 64KB (32KW)<br>27 : 64KB (32KW)<br>27 : 64KB (32KW)<br>28 : 64KB (32KW)<br>28 : 64KB (32KW)<br>29 : 64KB (32KW)<br>20 : 64KB (32KW)<br>21 : 64KB (32KW)<br>22 : 64KB (32KW)<br>22 : 64KB (32KW)<br>23 : 64KB (32KW)<br>24 : 64KB (32KW)<br>24 : 64KB (32KW)<br>25 : 64KB (32KW)<br>26 : 64KB (32KW)<br>27 : 64KB (32KW)<br>27 : 64KB (32KW)<br>28 : 64KB (32KW)<br>28 : 64KB (32KW)<br>29 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>20 : 64KB (32KW)<br>21 : 64KB (32KW)<br>21 : 64KB (32KW)<br>22 : 64KB (32KW)<br>22 : 64KB (32KW)<br>23 : 64KB (32KW)<br>24 : 64KB (32KW)<br>24 : 64KB (32KW)<br>24 : 64KB (32KW)<br>25 : 64KB (32KW)<br>26 : 64KB (32KW)<br>27 : 64KB (32KW)<br>27 : 64KB (32KW)<br>28 : 64KB (32KW)                                 | 040000h<br>048000h<br>050000h<br>068000h<br>070000h<br>078000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>080000h<br>0C0000h<br>0C0000h<br>0D8000h  | 080000h<br>090000h<br>080000h<br>0C0000h<br>0C0000h<br>0E0000h<br>100000h<br>100000h<br>120000h<br>130000h<br>130000h<br>140000h<br>158000h<br>160000h<br>180000h<br>180000h<br>180000h   | Bank C  | SA85 : 64KB (32KW)           SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA88 : 64KB (32KW)           SA89 : 64KB (32KW)           SA90 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA96 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA99 : 64KB (32KW)           SA91 : 64KB (32KW)           SA91 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)   | 278000h<br>280000h<br>298000h<br>298000h<br>2A0000h<br>2B0000h<br>2B8000h<br>2C0000h<br>2C0000h<br>2C0000h<br>2D8000h<br>2D8000h<br>2E0000h<br>2E8000h<br>2F8000h   | 4F0000h<br>500000h<br>510000h<br>520000h<br>530000h<br>550000h<br>560000h<br>570000h<br>580000h<br>580000h<br>580000h<br>5C0000h<br>5D0000h<br>5D0000h  |
| 5:64KB (32KW)<br>6:64KB (32KW)<br>7:64KB (32KW)<br>9:64KB (32KW)<br>9:64KB (32KW)<br>1:64KB (32KW)<br>1:64KB (32KW)<br>1:64KB (32KW)<br>2:64KB (32KW)<br>5:64KB (32KW)<br>6:64KB (32KW)<br>6:64KB (32KW)<br>9:64KB (32KW)<br>9:64KB (32KW)<br>9:64KB (32KW)<br>9:64KB (32KW)<br>1:64KB (32KW)   | 048000h<br>050000h<br>068000h<br>068000h<br>078000h<br>080000h<br>088000h<br>088000h<br>088000h<br>088000h<br>080000h<br>080000h<br>080000h<br>080000h<br>000000h<br>000000h<br>000000h   | 090000h<br>080000h<br>0C0000h<br>0D0000h<br>0E0000h<br>100000h<br>110000h<br>110000h<br>130000h<br>130000h<br>158000h<br>158000h<br>160000h<br>170000h<br>180000h<br>180000h  | Bank C  | SA86 : 64KB (32KW)           SA87 : 64KB (32KW)           SA88 : 64KB (32KW)           SA89 : 64KB (32KW)           SA90 : 64KB (32KW)           SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA96 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA99 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)   | 280000h<br>288000h<br>290000h<br>298000h<br>2A0000h<br>2B0000h<br>2B8000h<br>2C0000h<br>2C0000h<br>2D8000h<br>2E0000h<br>2E8000h<br>2F8000h   | 500000h<br>510000h<br>520000h<br>530000h<br>540000h<br>560000h<br>570000h<br>580000h<br>580000h<br>580000h<br>520000h<br>5D0000h<br>5D0000h   |
| 7 : 64KB (32KW)<br>8 : 64KB (32KW)<br>9 : 64KB (32KW)<br>10 : 64KB (32KW)<br>11 : 64KB (32KW)<br>12 : 64KB (32KW)<br>13 : 64KB (32KW)<br>14 : 64KB (32KW)<br>15 : 64KB (32KW)<br>16 : 64KB (32KW)<br>17 : 64KB (32KW)<br>19 : 64KB (32KW)<br>10 : 64KB (32KW)<br>10 : 64KB (32KW)<br>11 : 64KB (32KW)<br>11 : 64KB (32KW)<br>12 : 64KB (32KW)<br>13 : 64KB (32KW)<br>14 : 64KB (32KW                               | 050000h<br>058000h<br>060000h<br>078000h<br>078000h<br>080000h<br>088000h<br>098000h<br>040000h<br>088000h<br>088000h<br>088000h<br>088000h<br>088000h<br>000000h<br>000000h<br>000000h   | 0A0000h<br>0B0000h<br>0D0000h<br>0E0000h<br>100000h<br>110000h<br>120000h<br>130000h<br>130000h<br>150000h<br>160000h<br>180000h<br>180000h<br>1A0000h<br>1A0000h   | Bank C  | SA88 : 64KB (32KW)<br>SA99 : 64KB (32KW)<br>SA90 : 64KB (32KW)<br>SA91 : 64KB (32KW)<br>SA92 : 64KB (32KW)<br>SA93 : 64KB (32KW)<br>SA93 : 64KB (32KW)<br>SA95 : 64KB (32KW)<br>SA95 : 64KB (32KW)<br>SA97 : 64KB (32KW)<br>SA98 : 64KB (32KW)<br>SA100 : 64KB (32KW)<br>SA100 : 64KB (32KW)<br>SA102 : 64KB (32KW)   | 288000h<br>290000h<br>298000h<br>2A8000h<br>2B0000h<br>2B8000h<br>2C8000h<br>2C8000h<br>2D8000h<br>2E8000h<br>2E8000h<br>2F8000h  | 510000h<br>520000h<br>530000h<br>550000h<br>560000h<br>570000h<br>580000h<br>580000h<br>580000h<br>5C0000h<br>5D0000h<br>5D0000h<br>5D0000h   |
| 8:64KB (32KW)<br>9:64KB (32KW)<br>20:64KB (32KW)<br>21:64KB (32KW)<br>22:64KB (32KW)<br>23:64KB (32KW)<br>24:64KB (32KW)<br>25:64KB (32KW)<br>26:64KB (32KW)<br>26:64KB (32KW)<br>29:64KB (32KW)<br>20:64KB (32KW)   | 058000h<br>060000h<br>070000h<br>078000h<br>080000h<br>080000h<br>098000h<br>0A0000h<br>080000h<br>0B8000h<br>0B8000h<br>0C0000h<br>0C0000h<br>0D8000h  | 0B0000h<br>0C0000h<br>0E0000h<br>0F0000h<br>110000h<br>120000h<br>130000h<br>130000h<br>150000h<br>160000h<br>180000h<br>180000h<br>1A0000h<br>1A0000h  | Bank C  | SA89 : 64KB (32KW)<br>SA90 : 64KB (32KW)<br>SA91 : 64KB (32KW)<br>SA92 : 64KB (32KW)<br>SA93 : 64KB (32KW)<br>SA94 : 64KB (32KW)<br>SA95 : 64KB (32KW)<br>SA97 : 64KB (32KW)<br>SA97 : 64KB (32KW)<br>SA99 : 64KB (32KW)<br>SA100 : 64KB (32KW)<br>SA101 : 64KB (32KW)<br>SA102 : 64KB (32KW)   | 290000h<br>298000h<br>2A0000h<br>2B0000h<br>2B8000h<br>2C0000h<br>2C8000h<br>2D8000h<br>2E0000h<br>2E8000h<br>2F8000h   | 520000h<br>530000h<br>550000h<br>560000h<br>570000h<br>580000h<br>580000h<br>580000h<br>580000h<br>500000h<br>5C0000h<br>5E0000h  |
| 9:64KB (32KW)<br>0:64KB (32KW)<br>1:64KB (32KW)<br>2:64KB (32KW)<br>3:64KB (32KW)<br>4:64KB (32KW)<br>5:64KB (32KW)<br>5:64KB (32KW)<br>7:64KB (32KW)<br>9:64KB (32KW)<br>9:64KB (32KW)<br>11:64KB (32KW)<br>12:64KB (32KW)<br>13:64KB (32KW)<br>13:64KB (32KW)<br>14:64KB ( | 060000h<br>068000h<br>078000h<br>080000h<br>080000h<br>090000h<br>080000h<br>0A0000h<br>0B0000h<br>0B0000h<br>0C0000h<br>0C0000h<br>0D8000h   | 0C0000h<br>0D0000h<br>0E0000h<br>100000h<br>100000h<br>120000h<br>130000h<br>130000h<br>140000h<br>150000h<br>180000h<br>180000h<br>1A0000h<br>180000h  | Bank C  | SA90 : 64KB (32KW)<br>SA91 : 64KB (32KW)<br>SA92 : 64KB (32KW)<br>SA93 : 64KB (32KW)<br>SA94 : 64KB (32KW)<br>SA95 : 64KB (32KW)<br>SA96 : 64KB (32KW)<br>SA97 : 64KB (32KW)<br>SA98 : 64KB (32KW)<br>SA100 : 64KB (32KW)<br>SA100 : 64KB (32KW)<br>SA102 : 64KB (32KW)   | 2A0000h<br>2A8000h<br>2B0000h<br>2B8000h<br>2C0000h<br>2D0000h<br>2D8000h<br>2E0000h<br>2E8000h<br>2F8000h  | 530000h<br>540000h<br>550000h<br>560000h<br>570000h<br>580000h<br>580000h<br>580000h<br>5C0000h<br>5D0000h<br>5E0000h   |
| 20:64KB (32KW)<br>11:64KB (32KW)<br>22:64KB (32KW)<br>23:64KB (32KW)<br>25:64KB (32KW)<br>25:64KB (32KW)<br>26:64KB (32KW)<br>27:64KB (32KW)<br>29:64KB (32KW)<br>29:64KB (32KW)<br>10:64KB (32KW)<br>11:64KB (32KW)<br>12:64KB (32KW)<br>13:64KB (32KW)<br>14:64KB (32KW)<br>14:64KB (32KW)<br>14:64KB (32KW)<br>14:64KB (32KW)<br>14:64KB (32KW)<br>14:64KB (32KW)<br>14:64KB (32KW)<br>14:64KB (32KW)<br>14:64KB (32KW)<br>11:64KB (32KW)<br>14:64KB (32KW)<br>11:64KB (32KW)   | 070000h<br>078000h<br>080000h<br>098000h<br>098000h<br>0A0000h<br>0A0000h<br>0B8000h<br>0B8000h<br>0C8000h<br>0C8000h<br>0D8000h  | 0E0000h<br>0F0000h<br>100000h<br>120000h<br>130000h<br>130000h<br>158000h<br>160000h<br>170000h<br>180000h<br>180000h<br>1A0000h<br>180000h   | Bank C  | SA91 : 64KB (32KW)           SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA95 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA99 : 64KB (32KW)           SA91 : 64KB (32KW)           SA91 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)  | 2A8000h<br>2B0000h<br>2C8000h<br>2C8000h<br>2D8000h<br>2D8000h<br>2E8000h<br>2E8000h<br>2F8000h   | 550000H<br>560000H<br>570000H<br>580000H<br>590000H<br>5A0000H<br>5B0000H<br>5C0000H<br>5D0000H<br>5E0000H  |
| 11:64KB (32KW)<br>12:64KB (32KW)<br>13:64KB (32KW)<br>13:64KB (32KW)<br>15:64KB (32KW)<br>16:64KB (32KW)<br>17:64KB (32KW)<br>18:64KB (32KW)<br>10:64KB (32KW)<br>11:64KB (32KW)<br>12:64KB (32KW)<br>13:64KB (32KW)<br>14:64KB (32KW)   | 078000h<br>080000h<br>098000h<br>098000h<br>0A0000h<br>0A0000h<br>0B8000h<br>0C0000h<br>0C0000h<br>0D8000h<br>0D8000h   | 0F0000h<br>100000h<br>120000h<br>130000h<br>140000h<br>158000h<br>160000h<br>170000h<br>180000h<br>180000h<br>1A0000h<br>180000h  | Bank C  | SA92 : 64KB (32KW)           SA93 : 64KB (32KW)           SA94 : 64KB (32KW)           SA95 : 64KB (32KW)           SA96 : 64KB (32KW)           SA97 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA98 : 64KB (32KW)           SA99 : 64KB (32KW)           SA100 : 64KB (32KW)           SA101 : 64KB (32KW)           SA102 : 64KB (32KW)   | 2B0000h<br>2B8000h<br>2C0000h<br>2C8000h<br>2D0000h<br>2D8000h<br>2E0000h<br>2E8000h<br>2F0000h<br>2F8000h  | 560000h<br>570000h<br>580000h<br>590000h<br>5A0000h<br>5B0000h<br>5C0000h<br>5D0000h<br>5E0000h   |
| 22:64KB (32KW)<br>33:64KB (32KW)<br>44:64KB (32KW)<br>45:64KB (32KW)<br>46:64KB (32KW)<br>47:64KB (32KW)<br>48:64KB (32KW)<br>49:64KB (32KW)<br>49:64KB (32KW)<br>40:64KB (32KW)<br>40:64KB (32KW)<br>41:64KB (32KW)<br>41:64KB (32KW)   | 080000h<br>088000h<br>090000h<br>08000h<br>08000h<br>08000h<br>08000h<br>0C0000h<br>0C0000h<br>0D0000h  | 10000h<br>11000h<br>12000h<br>13000h<br>14000h<br>15800h<br>16000h<br>17000h<br>18000h<br>18000h<br>1A000h<br>1B0000h   | Bank C  | SA93 : 64KB (32KW)<br>SA94 : 64KB (32KW)<br>SA95 : 64KB (32KW)<br>SA96 : 64KB (32KW)<br>SA97 : 64KB (32KW)<br>SA97 : 64KB (32KW)<br>SA99 : 64KB (32KW)<br>SA100 : 64KB (32KW)<br>SA101 : 64KB (32KW)<br>SA102 : 64KB (32KW)   | 2B8000h<br>2C0000h<br>2D0000h<br>2D8000h<br>2E0000h<br>2E0000h<br>2E8000h<br>2F8000h  | 570000h<br>580000h<br>590000h<br>5A0000h<br>5B0000h<br>5C0000h<br>5D0000h<br>5E0000h  |
| 33 : 64KB (32KW)<br>44 : 64KB (32KW)<br>55 : 64KB (32KW)<br>56 : 64KB (32KW)<br>77 : 64KB (32KW)<br>78 : 64KB (32KW)<br>90 : 64KB (32KW)<br>90 : 64KB (32KW)<br>11 : 64KB (32KW)<br>12 : 64KB (32KW)<br>13 : 64KB (32KW)<br>14 : 64KB (32KW)   | 088000h<br>090000h<br>098000h<br>0A0000h<br>0B0000h<br>0B8000h<br>0C0000h<br>0C8000h<br>0D0000h<br>0D8000h  | 110000h<br>120000h<br>130000h<br>140000h<br>158000h<br>160000h<br>170000h<br>180000h<br>1A0000h<br>1B0000h  | Bank C  | SA94 : 64KB (32KW)<br>SA95 : 64KB (32KW)<br>SA96 : 64KB (32KW)<br>SA97 : 64KB (32KW)<br>SA98 : 64KB (32KW)<br>SA99 : 64KB (32KW)<br>SA100 : 64KB (32KW)<br>SA101 : 64KB (32KW)<br>SA102 : 64KB (32KW)   | 2C0000h<br>2C8000h<br>2D0000h<br>2D8000h<br>2E0000h<br>2E8000h<br>2F0000h<br>2F8000h  | 580000h<br>590000h<br>5A0000h<br>5B0000h<br>5C0000h<br>5D0000h<br>5E0000h   |
| 14:64KB (32KW)<br>5:64KB (32KW)<br>6:64KB (32KW)<br>17:64KB (32KW)<br>19:64KB (32KW)<br>19:64KB (32KW)<br>10:64KB (32KW)<br>10:64KB (32KW)<br>11:64KB (32KW)<br>13:64KB (32KW)<br>14:64KB (32KW)   | 090000h<br>098000h<br>0A0000h<br>0B0000h<br>0B0000h<br>0C8000h<br>0C8000h<br>0D0000h<br>0D8000h   | 120000h<br>130000h<br>140000h<br>158000h<br>160000h<br>170000h<br>180000h<br>180000h<br>1A0000h<br>1B0000h  | Bank C  | SA95 : 64KB (32KW)<br>SA96 : 64KB (32KW)<br>SA97 : 64KB (32KW)<br>SA98 : 64KB (32KW)<br>SA99 : 64KB (32KW)<br>SA100 : 64KB (32KW)<br>SA101 : 64KB (32KW)<br>SA102 : 64KB (32KW)   | 2C8000h<br>2D0000h<br>2D8000h<br>2E0000h<br>2E8000h<br>2F0000h<br>2F8000h   | 590000h<br>5A0000h<br>5B0000h<br>5C0000h<br>5D0000h<br>5E0000h  |
| 16:64KB (32KW)           17:64KB (32KW)           18:64KB (32KW)           19:64KB (32KW)           10:64KB (32KW)           10:64KB (32KW)           11:64KB (32KW)           12:64KB (32KW)           13:64KB (32KW)           14:64KB (32KW)           15:64KB (32KW)           16:64KB (32KW)           17:64KB (32KW)           17:64KB (32KW)           17:64KB (32KW)           17:64KB (32KW)  | 098000h<br>0A0000h<br>0B0000h<br>0B0000h<br>0C0000h<br>0C0000h<br>0C8000h<br>0D0000h<br>0D8000h   | 130000h<br>140000h<br>158000h<br>160000h<br>170000h<br>180000h<br>180000h<br>1A0000h<br>1B0000h   | Bank C  | SA97 : 64KB (32KW)<br>SA98 : 64KB (32KW)<br>SA99 : 64KB (32KW)<br>SA100 : 64KB (32KW)<br>SA101 : 64KB (32KW)<br>SA102 : 64KB (32KW)   | 2D0000h<br>2D8000h<br>2E0000h<br>2E8000h<br>2F0000h<br>2F8000h  | 5A0000h<br>5B0000h<br>5C0000h<br>5D0000h<br>5E0000h   |
| 27 : 64KB (32KW)<br>28 : 64KB (32KW)<br>29 : 64KB (32KW)<br>30 : 64KB (32KW)<br>11 : 64KB (32KW)<br>22 : 64KB (32KW)<br>23 : 64KB (32KW)<br>24 : 64KB (32KW)   | 0A0000h<br>0A8000h<br>0B0000h<br>0B8000h<br>0C0000h<br>0C8000h<br>0D0000h<br>0D8000h  | 140000h<br>158000h<br>160000h<br>170000h<br>180000h<br>190000h<br>1A0000h<br>1B0000h  | Bank C  | SA98 : 64KB (32KW)<br>SA99 : 64KB (32KW)<br>SA100 : 64KB (32KW)<br>SA101 : 64KB (32KW)<br>SA102 : 64KB (32KW)   | 2D8000h<br>2E0000h<br>2E8000h<br>2F0000h<br>2F8000h   | 5B0000h<br>5C0000h<br>5D0000h<br>5E0000h  |
| 28 : 64KB (32KW)<br>29 : 64KB (32KW)<br>30 : 64KB (32KW)<br>31 : 64KB (32KW)<br>32 : 64KB (32KW)<br>33 : 64KB (32KW)<br>34 : 64KB (32KW)   | 0A8000h<br>0B0000h<br>0B8000h<br>0C0000h<br>0C8000h<br>0D0000h<br>0D8000h   | 158000h<br>160000h<br>170000h<br>180000h<br>190000h<br>1A0000h<br>1B0000h   | Bank C  | <ul> <li>SA99 : 64KB (32KW)</li> <li>SA100 : 64KB (32KW)</li> <li>SA101 : 64KB (32KW)</li> <li>SA102 : 64KB (32KW)</li> </ul>   | 2E0000h<br>2E8000h<br>2F0000h<br>2F8000h  | 5D0000h<br>5E0000h  |
| 29 : 64KB (32KW)<br>30 : 64KB (32KW)<br>31 : 64KB (32KW)<br>32 : 64KB (32KW)<br>33 : 64KB (32KW)<br>34 : 64KB (32KW)   | 0B8000h<br>0C0000h<br>0C8000h<br>0D0000h<br>0D8000h   | 170000h<br>180000h<br>190000h<br>1A0000h<br>1B0000h   |   | SA100 : 64KB (32KW)<br>SA101 : 64KB (32KW)<br>SA102 : 64KB (32KW)   | 2F0000h<br>2F8000h  | 5E0000h   |
| 80:64KB (32KW)<br>31:64KB (32KW)<br>32:64KB (32KW)<br>33:64KB (32KW)<br>34:64KB (32KW)   | 0C0000h<br>0C8000h<br>0D0000h<br>0D8000h  | 180000h<br>190000h<br>1A0000h<br>1B0000h  |   | SA101 : 64KB (32KW)<br>SA102 : 64KB (32KW)  | 2F8000h   |   |
| 31 : 64KB (32KW)<br>32 : 64KB (32KW)<br>33 : 64KB (32KW)<br>34 : 64KB (32KW)   | 0C8000h<br>0D0000h<br>0D8000h   | 190000h<br>1A0000h<br>1B0000h   |   | SA102 : 64KB (32KW)   |   | 5F0000h   |
| 32 : 64KB (32KW)<br>33 : 64KB (32KW)<br>34 : 64KB (32KW)   | 0D0000h<br>0D8000h  | 1A0000h<br>1B0000h  |   |   | 300000n   |   |
| 34 : 64KB (32KW)   | 0D8000h   | 1B0000h   |   |   | 308000h   | 600000h<br>610000h  |
|  |   |   |   | SA104 : 64KB (32KW)   | 310000h   | 620000h   |
|  |   | 1C0000h   |   | SA105 : 64KB (32KW)   | 318000h   | 630000ł   |
| 35:64KB (32KW)   | 0E8000h   | 1D0000h   |   | SA106 : 64KB (32KW)   | 320000h   | 640000h   |
| 8 <u>6 : 64KB (32KW)</u><br>87 : 64KB (32KW)   | 0F0000h   | 1E0000h   |   | SA107 : 64KB (32KW)   | 328000h   | 650000h   |
| 38 : 64KB (32KW)   | 0F8000h   | 1F0000h   |   | SA108 : 64KB (32KW)<br>SA109 : 64KB (32KW)  | 330000h   | 660000ł   |
| 39 : 64KB (32KW)   | 100000h   | 200000h   |   | SA109 : 64KB (32KW)<br>SA110 : 64KB (32KW)  | 338000h   | 670000h   |
| 0 : 64KB (32KW)  | 108000h   | 210000h   |   | SA111 : 64KB (32KW)   | 340000h   | 680000h   |
| 1 : 64KB (32KW)  | 110000h<br>118000h  | 220000h<br>230000h  |   | SA112 : 64KB (32KW)   | 348000h<br>350000h  | 690000h<br>6A0000h  |
| 2 : 64KB (32KW)  | 120000h   | 240000h   |   | SA113 : 64KB (32KW)   | 358000h   | 6B0000h   |
| <u>13 : 64KB (32KW)</u>  | 128000h   | 250000h   |   | SA114 : 64KB (32KW)   | 360000h   | 6C0000h   |
| 4 : 64KB (32KW)  | 130000h   | 260000h   |   | SA115 : 64KB (32KW)   | 368000h   | 6D0000h   |
| 1 <u>5 : 64KB (32KW)</u><br>16 : 64KB (32KW)   | 138000h   | 270000h   | $\perp$   | SA116 : 64KB (32KW)<br>SA117 : 64KB (32KW)  | 370000h   | 6E0000ł   |
| 7 : 64KB (32KW)  | 140000h   | 280000h   |   | SA118 : 64KB (32KW)   | 378000h   | 6F0000ł   |
| 8 : 64KB (32KW)  | 148000h   | 290000h   |   | SA119 : 64KB (32KW)   | 380000h   | 700000ł   |
| 9 : 64KB (32KW)  | 150000h   | 2A0000h   | T   | SA120 : 64KB (32KW)   | 388000h<br>390000h  | 710000ł<br>720000ł  |
| <u>50 : 64KB (32KW)</u>  | 158000h<br>160000h  | 2B0000h<br>2C0000h  |   | SA121 : 64KB (32KW)   | 398000h   | 730000  |
| 51 : 64KB (32KW)   | 168000h   | 2D0000h   |   | SA122 : 64KB (32KW)   | 3A0000h   | 740000  |
| 52 : 64KB (32KW)<br>53 : 64KB (32KW)   | 170000h   | 2E0000h   |   | SA123 : 64KB (32KW)<br>SA124 : 64KB (32KW)  | 3A8000h   | 750000ł   |
| 54 : 64KB (32KW)   | 178000h   | 2F0000h   |   | SA125 : 64KB (32KW)   | 3B0000h   | 760000ł   |
| 55 : 64KB (32KW)   | 180000h   | 300000h   |   | SA126 : 64KB (32KW)   | 3B8000h   | 770000ł   |
| 6 : 64KB (32KW)  | 188000h   | 310000h   | Bank D  |   | 3C0000h   | 780000h   |
| 57 : 64KB (32KW)   | 190000h   | 320000h   | Dalik L   | SA128 : 64KB (32KW)   | 3C8000h<br>3D0000h  | 790000h<br>7A0000h  |
| 58 : 64KB (32KW)   |   |   |   | SA129 : 64KB (32KW)   |   | 7B0000  |
|  |   |   | 1   |   |   | 7C0000  |
|  | 1B0000h   | 360000h   |   | SA131 : 64KB (32KW)   | 3E8000h   | 7D0000ł   |
|  | 1B8000h   | 370000h   |   |   | 3F0000h   | 7E0000ł   |
|  | 1C0000h   | 380000h   |   |   |   | 7F0000ł   |
| 64 : 64KB (32KW)   | 1C8000h   | 390000h   |   | SA135 : 8KB (4KW)   |   | 7F2000h   |
| 65 : 64KB (32KW)   |   |   |   | SA136 : 8KB (4KW)   |   | 7F4000h   |
| 6 : 64KB (32KW)  |   |   |   | SA137: 8KB (4KW)  |   | 7F6000h<br>7F8000h  |
|  |   |   |   | SA138: 8KB (4KW)  |   | 7FA000h   |
|  |   |   |   |   |   | 7FC000l   |
|  | 1F8000h   | 3F0000h   | <b>V</b>  |   | 3FF000h   | 7FE000ł   |
|  | 1FFFFFh   | 3FFFFFh   | <b>I</b>  |   | 3FFFFFh   | 7FFFFF  |
| <u>69 : 64KB (32KW)</u><br>70 : 64KB (32KW)  |   |   |   |   |   |   |
|  |   | Seator A  | rohitooturo   |   |   |   |
|  |   | Sector A  | ichitecture   |   |   |   |
|  | 9:64KB (32KW)<br>0:64KB (32KW)<br>1:64KB (32KW)<br>3:64KB (32KW)<br>5:64KB (32KW)<br>6:64KB (32KW)<br>6:64KB (32KW)<br>6:64KB (32KW)<br>7:64KB (32KW)<br>9:64KB (32KW)  | 9:64KB (32KW)         1A8000h           0:64KB (32KW)         1A8000h           1:64KB (32KW)         1B8000h           2:64KB (32KW)         1B8000h           3:64KB (32KW)         1C8000h           4:64KB (32KW)         1C8000h           5:64KB (32KW)         1C8000h           6:64KB (32KW)         1C8000h           6:64KB (32KW)         1D8000h           7:64KB (32KW)         1D8000h           8:64KB (32KW)         1E8000h           9:64KB (32KW)         1F8000h | 0: 0+ND (32KW)         1A0000h         340000h           0: 64KB (32KW)         1A8000h         350000h           1: 64KB (32KW)         1A8000h         360000h           1: 64KB (32KW)         1B8000h         360000h           1: 64KB (32KW)         1C000h         380000h           1: 64KB (32KW)         1C000h         380000h           1: 64KB (32KW)         1C000h         380000h           1: 64KB (32KW)         1D0000h         3A0000h           1: 64KB (32KW)         1D8000h         3B0000h           1: 64KB (32KW)         1D8000h         3B0000h           1: 64KB (32KW)         1E8000h         3D0000h           1: 64KB (32KW)         1E8000h         3D0000h           1: 64KB (32KW)         1F8000h         3E0000h           1: 64KB (32KW)         1F8000h         3F0000h           1: 64KB (32KW)         1F8000h         3F0000h           1: 64KB (32KW)         1F8000h         3F0000h           1: 64KB (32KW)         1FFFFFh         3FFFFFh | 0. 04ND (32KW)       1A0000h       340000h         9: 64KB (32KW)       1A8000h       350000h         0: 64KB (32KW)       1A8000h       36000h         1: 64KB (32KW)       1B8000h       36000h         2: 64KB (32KW)       1C0000h       380000h         3: 64KB (32KW)       1C0000h       380000h         4: 64KB (32KW)       1C0000h       380000h         5: 64KB (32KW)       1C8000h       390000h         6: 64KB (32KW)       1D8000h       360000h         6: 64KB (32KW)       1D8000h       30000h         6: 64KB (32KW)       1E0000h       3C0000h         8: 64KB (32KW)       1E8000h       3D0000h         9: 64KB (32KW)       1F8000h       3E0000h         9: 64KB (32KW)       1F8000h       3F0000h         0: 64KB (32KW)       1F8000h       3F0000h         0: 64KB (32KW)       1F8000h       3F0000h         0: 64KB (32KW)       1FFFFFh       3FFFFFFh  | O: 04ND (32KW)         1A0000h         340000h         SA129: 04ND (32KW)           9: 64KB (32KW)         1A8000h         350000h         SA130: 64KB (32KW)           1: 64KB (32KW)         1B8000h         360000h         SA131: 64KB (32KW)           1: 64KB (32KW)         1B8000h         360000h         SA131: 64KB (32KW)           2: 64KB (32KW)         1B8000h         36000h         SA131: 64KB (32KW)           3: 64KB (32KW)         1C0000h         380000h         SA131: 64KB (32KW)           3: 64KB (32KW)         1C0000h         380000h         SA134: 8KB (4KW)           5: 64KB (32KW)         1D0000h         390000h         SA135: 8KB (4KW)           6: 64KB (32KW)         1D0000h         360000h         SA136: 8KB (4KW)           7: 64KB (32KW)         1D0000h         3C0000h         SA136: 8KB (4KW)           7: 64KB (32KW)         1E0000h         3C0000h         SA138: 8KB (4KW)           7: 64KB (32KW)         1F8000h         3D0000h         SA139: 8KB (4KW)           9: 64KB (32KW)         1F8000h         3F0000h         SA140: 8KB (4KW)  | 0: 04HD (32KW)       1A0000h       340000h       SA122: 04KD (32KW)       3D8000h         0: 64KB (32KW)       1A8000h       350000h       SA130: 64KB (32KW)       3D8000h         1: 64KB (32KW)       1B8000h       360000h       SA131: 64KB (32KW)       3E8000h         1: 64KB (32KW)       1B8000h       370000h       SA132: 64KB (32KW)       3F8000h         2: 64KB (32KW)       1C0000h       380000h       SA133: 64KB (32KW)       3F8000h         3: 64KB (32KW)       1C0000h       380000h       SA133: 64KB (32KW)       3F8000h         3: 64KB (32KW)       1C0000h       30000h       SA135: 8KB (4KW)       3F8000h         5: 64KB (32KW)       1D8000h       3A0000h       SA136: 8KB (4KW)       3F8000h         5: 64KB (32KW)       1D8000h       3C0000h       SA137: 8KB (4KW)       3F8000h         5: 64KB (32KW)       1B8000h       3D0000h       SA137: 8KB (4KW)       3F2000h         5: 64KB (32KW)       1E8000h       3D0000h       SA138: 8KB (4KW)       3F2000h         5: 64KB (32KW)       1E8000h       3D0000h       SA139: 8KB (4KW)       3F2000h         5: 64KB (32KW)       1E8000h       3D0000h       SA139: 8KB (4KW)       3F2000h         5: 64KB (32KW)       1F8000h       3   |

| Bank   |         | Bank 1      | Bank 2  |                          |  |  |  |  |
|--------|---------|-------------|---------|--------------------------|--|--|--|--|
| Splits | Volume  | Combination | Volume  | Combination              |  |  |  |  |
| 1      | 8 Mbit  | Bank A      | 56 Mbit | Remainder (Bank B, C, D) |  |  |  |  |
| 2      | 24 Mbit | Bank B      | 40 Mbit | Remainder (Bank A, C, D) |  |  |  |  |
| 3      | 24 Mbit | Bank C      | 40 Mbit | Remainder (Bank A, B, D) |  |  |  |  |
| 4      | 8 Mbit  | Bank D      | 56 Mbit | Remainder (Bank A, B, C) |  |  |  |  |

#### FlexBank<sup>™</sup> Architecture

#### **Example of Virtual Banks Combination**

| Bank   |         | Ba          | nk 1                          |         | Ba          | ank 2                         |
|--------|---------|-------------|-------------------------------|---------|-------------|-------------------------------|
| Splits | Volume  | Combination | Sector Size                   | Volume  | Combination | Sector Size                   |
|        |         |             |                               |         | Bank B      |                               |
|        |         |             | $8 \times 8$ Kbyte/4 Kword    |         | +           | $8 \times 8$ Kbyte/4 Kword    |
| 1      | 8 Mbit  | Bank A      | +                             | 56 Mbit | Bank C      | +                             |
|        |         |             | $15 \times 64$ Kbyte/32 Kword |         | +           | 111 $	imes$ 64 Kbyte/32 Kword |
|        |         |             |                               |         | Bank D      |                               |
|        |         | Bank A      | 16 × 8 Kbyte/4 Kword          |         | Bank B      |                               |
| 2      | 16 Mbit | +           | +                             | 48 Mbit | +           | $96 \times 64$ Kbyte/32 Kword |
|        |         | Bank D      | $30 \times 64$ Kbyte/32 Kword |         | Bank C      |                               |
|        |         |             |                               |         | Bank A      |                               |
|        |         |             |                               |         | +           | $16 \times 8$ Kbyte/4 Kword   |
| 3      | 24 Mbit | Bank B      | $48 \times 64$ Kbyte/32 Kword | 40 Mbit | Bank C      | +                             |
|        |         |             |                               |         | +           | $78 \times 64$ Kbyte/32 Kword |
|        |         |             |                               |         | Bank D      |                               |
|        |         | Bank A      | 8 × 8 Kbyte/4 Kword           |         | Bank C      | 8 × 8 Kbyte/4 Kword           |
| 4      | 32 Mbit | +           | +                             | 32 Mbit | +           | +                             |
|        |         | Bank B      | $63 \times 64$ Kbyte/32 Kword |         | Bank D      | $63 \times 64$ Kbyte/32 Kword |

Note : When multiple sector erase over several banks is operated, the system cannot read out of the bank to which a sector being erased belongs. For example, suppose that erasing is taking place at both Bank A and Bank B, neither Bank A nor Bank B is read out (they would output the sequence flag once they were selected.) Meanwhile the system would get to read from either Bank C or Bank D.

#### **Simultaneous Operation**

| Case | Bank 1 Status   | Bank 2 Status   |  |  |  |  |
|------|-----------------|-----------------|--|--|--|--|
| 1    | Read mode       | Read mode       |  |  |  |  |
| 2    | Read mode       | Autoselect mode |  |  |  |  |
| 3    | Read mode       | Program mode    |  |  |  |  |
| 4    | Read mode       | Erase mode *    |  |  |  |  |
| 5    | Autoselect mode | Read mode       |  |  |  |  |
| 6    | Program mode    | Read mode       |  |  |  |  |
| 7    | Erase mode *    | Read mode       |  |  |  |  |

\*: By writing erase suspend command on the bank address of sector being erased, the erase operation gets suspended so that it enables reading from or programming the remaining sectors.

Note: Bank 1 and Bank 2 are divided for the sake of convenience at Simultaneous Operation. Actually, the Bank consists of 4 banks, Bank A, Bank B, Bank C and Bank D. Bank Address (BA) meant to specify each of the Banks.

|        |        | 1           |                        |             |             | -           | ector       |             | C33 I       | abies       | •                      |                    | _                  |
|--------|--------|-------------|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------------|--------------------|--------------------|
|        |        |             |                        |             | Se          | ctor /      | Addre       | ess         |             |             |                        | Address            | s Range            |
| Bank   | Sector | Ban         | k Add                  | lress       |             |             |             |             |             |             |                        | Dute Mede          | Word Modo          |
|        |        | <b>A</b> 21 | <b>A</b> <sub>20</sub> | <b>A</b> 19 | <b>A</b> 18 | <b>A</b> 17 | <b>A</b> 16 | <b>A</b> 15 | <b>A</b> 14 | <b>A</b> 13 | <b>A</b> <sub>12</sub> | Byte Mode          | Word Mode          |
|        | SA0    | 0           | 0                      | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0                      | 000000h to 001FFFh | 000000h to 000FFFh |
|        | SA1    | 0           | 0                      | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 1                      | 002000h to 003FFFh | 001000h to 001FFFh |
|        | SA2    | 0           | 0                      | 0           | 0           | 0           | 0           | 0           | 0           | 1           | 0                      | 004000h to 005FFFh | 002000h to 002FFFh |
|        | SA3    | 0           | 0                      | 0           | 0           | 0           | 0           | 0           | 0           | 1           | 1                      | 006000h to 007FFFh | 003000h to 003FFFh |
|        | SA4    | 0           | 0                      | 0           | 0           | 0           | 0           | 0           | 1           | 0           | 0                      | 008000h to 009FFFh | 004000h to 004FFFh |
|        | SA5    | 0           | 0                      | 0           | 0           | 0           | 0           | 0           | 1           | 0           | 1                      | 00A000h to 00BFFFh | 005000h to 005FFFh |
|        | SA6    | 0           | 0                      | 0           | 0           | 0           | 0           | 0           | 1           | 1           | 0                      | 00C000h to 00DFFFh | 006000h to 006FFFh |
|        | SA7    | 0           | 0                      | 0           | 0           | 0           | 0           | 0           | 1           | 1           | 1                      | 00E000h to 00FFFFh | 007000h to 007FFFh |
|        | SA8    | 0           | 0                      | 0           | 0           | 0           | 0           | 1           | Х           | Х           | Х                      | 010000h to 01FFFFh | 008000h to 00FFFFh |
|        | SA9    | 0           | 0                      | 0           | 0           | 0           | 1           | 0           | Х           | Х           | Х                      | 020000h to 02FFFFh | 010000h to 017FFFh |
|        | SA10   | 0           | 0                      | 0           | 0           | 0           | 1           | 1           | Х           | Х           | Х                      | 030000h to 03FFFFh | 018000h to 01FFFFh |
| Bank A | SA11   | 0           | 0                      | 0           | 0           | 1           | 0           | 0           | Х           | Х           | Х                      | 040000h to 04FFFFh | 020000h to 027FFFh |
|        | SA12   | 0           | 0                      | 0           | 0           | 1           | 0           | 1           | Х           | Х           | Х                      | 050000h to 05FFFFh | 028000h to 02FFFFh |
|        | SA13   | 0           | 0                      | 0           | 0           | 1           | 1           | 0           | Х           | Х           | Х                      | 060000h to 06FFFFh | 030000h to 037FFFh |
|        | SA14   | 0           | 0                      | 0           | 0           | 1           | 1           | 1           | Х           | Х           | Х                      | 070000h to 07FFFFh | 038000h to 03FFFFh |
|        | SA15   | 0           | 0                      | 0           | 1           | 0           | 0           | 0           | Х           | Х           | Х                      | 080000h to 08FFFFh | 040000h to 047FFFh |
|        | SA16   | 0           | 0                      | 0           | 1           | 0           | 0           | 1           | Х           | Х           | Х                      | 090000h to 09FFFFh | 048000h to 04FFFFh |
|        | SA17   | 0           | 0                      | 0           | 1           | 0           | 1           | 0           | Х           | Х           | Х                      | 0A0000h to 0AFFFFh | 050000h to 057FFFh |
|        | SA18   | 0           | 0                      | 0           | 1           | 0           | 1           | 1           | Х           | Х           | Х                      | 0B0000h to 0BFFFFh | 058000h to 05FFFFh |
|        | SA19   | 0           | 0                      | 0           | 1           | 1           | 0           | 0           | Х           | Х           | Х                      | 0C0000h to 0CFFFFh | 060000h to 067FFFh |
|        | SA20   | 0           | 0                      | 0           | 1           | 1           | 0           | 1           | Х           | Х           | Х                      | 0D0000h to 0DFFFFh | 068000h to 06FFFFh |
|        | SA21   | 0           | 0                      | 0           | 1           | 1           | 1           | 0           | Х           | Х           | Х                      | 0E0000h to 0EFFFFh | 070000h to 077FFFh |
|        | SA22   | 0           | 0                      | 0           | 1           | 1           | 1           | 1           | Х           | Х           | Х                      | 0F0000h to 0FFFFFh | 078000h to 07FFFFh |
|        |        |             |                        |             | •           |             |             |             | •           | •           | •                      | •                  | (Continued)        |

### Sector Address Tables

(Continued)

|        |              |             |             |             | Se          | ctor /      | Addre       | ess         |             |             |             | Addres             | s Range            |
|--------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------|--------------------|
| Bank   | Sector       | Ban         | k Add       | lress       |             |             |             |             |             |             |             | Byte Mode          | Word Mode          |
|        |              | <b>A</b> 21 | <b>A</b> 20 | <b>A</b> 19 | <b>A</b> 18 | <b>A</b> 17 | <b>A</b> 16 | <b>A</b> 15 | <b>A</b> 14 | <b>A</b> 13 | <b>A</b> 12 |                    |                    |
|        | SA23         | 0           | 0           | 1           | 0           | 0           | 0           | 0           | Х           | Х           | Х           | 100000h to 10FFFFh | 080000h to 087FFFh |
|        | SA24         | 0           | 0           | 1           | 0           | 0           | 0           | 1           | Х           | Х           | Х           | 110000h to 11FFFFh | 088000h to 08FFFFh |
|        | SA25         | 0           | 0           | 1           | 0           | 0           | 1           | 0           | Х           | Х           | Х           | 120000h to 12FFFFh | 090000h to 097FFFh |
|        | SA26         | 0           | 0           | 1           | 0           | 0           | 1           | 1           | Х           | Х           | Х           | 130000h to 13FFFFh | 098000h to 09FFFFh |
|        | SA27         | 0           | 0           | 1           | 0           | 1           | 0           | 0           | Х           | Х           | Х           | 140000h to 14FFFFh | 0A0000h to 0A7FFFh |
|        | SA28         | 0           | 0           | 1           | 0           | 1           | 0           | 1           | Х           | Х           | Х           | 150000h to 15FFFFh | 0A8000h to 0AFFFFh |
|        | SA29         | 0           | 0           | 1           | 0           | 1           | 1           | 0           | Х           | Х           | Х           | 160000h to 16FFFFh | 0B0000h to 0B7FFFh |
|        | SA30         | 0           | 0           | 1           | 0           | 1           | 1           | 1           | Х           | Х           | Х           | 170000h to 17FFFFh | 0B8000h to 0BFFFFh |
|        | SA31         | 0           | 0           | 1           | 1           | 0           | 0           | 0           | Х           | Х           | Х           | 180000h to 18FFFFh | 0C0000h to 0C7FFFh |
|        | SA32         | 0           | 0           | 1           | 1           | 0           | 0           | 1           | Х           | Х           | Х           | 190000h to 19FFFFh | 0C8000h to 0CFFFFh |
|        | SA33         | 0           | 0           | 1           | 1           | 0           | 1           | 0           | Х           | Х           | Х           | 1A0000h to 1AFFFFh | 0D0000h to 0D7FFFh |
|        | SA34         | 0           | 0           | 1           | 1           | 0           | 1           | 1           | Х           | Х           | Х           | 1B0000h to 1BFFFFh | 0D8000h to 0DFFFFh |
|        | SA35         | 0           | 0           | 1           | 1           | 1           | 0           | 0           | Х           | Х           | Х           | 1C0000h to 1CFFFFh | 0E0000h to 0E7FFFh |
|        | SA36         | 0           | 0           | 1           | 1           | 1           | 0           | 1           | Х           | Х           | Х           | 1D0000h to 1DFFFFh | 0E8000h to 0EFFFFh |
|        | SA37         | 0           | 0           | 1           | 1           | 1           | 1           | 0           | Х           | Х           | Х           | 1E0000h to 1EFFFFh | 0F0000h to 0F7FFFh |
|        | SA38         | 0           | 0           | 1           | 1           | 1           | 1           | 1           | Х           | Х           | Х           | 1F0000h to 1FFFFFh | 0F8000h to 0FFFFFh |
|        | SA39         | 0           | 1           | 0           | 0           | 0           | 0           | 0           | Х           | Х           | Х           | 200000h to 20FFFFh | 100000h to 107FFFh |
|        | SA40         | 0           | 1           | 0           | 0           | 0           | 0           | 1           | Х           | Х           | Х           | 210000h to 21FFFFh | 108000h to 10FFFFh |
|        | SA41         | 0           | 1           | 0           | 0           | 0           | 1           | 0           | Х           | Х           | Х           | 220000h to 22FFFFh | 110000h to 117FFFh |
|        | SA42         | 0           | 1           | 0           | 0           | 0           | 1           | 1           | Х           | Х           | Х           | 230000h to 23FFFFh | 118000h to 11FFFFh |
|        | SA43         | 0           | 1           | 0           | 0           | 1           | 0           | 0           | Х           | Х           | Х           | 240000h to 24FFFFh | 120000h to 127FFFh |
|        | SA44         | 0           | 1           | 0           | 0           | 1           | 0           | 1           | Х           | Х           | Х           | 250000h to 25FFFFh | 128000h to 12FFFFh |
|        | SA45         | 0           | 1           | 0           | 0           | 1           | 1           | 0           | Х           | Х           | Х           | 260000h to 26FFFFh | 130000h to 137FFFh |
|        | SA46         | 0           | 1           | 0           | 0           | 1           | 1           | 1           | Х           | Х           | Х           | 270000h to 27FFFFh | 138000h to 13FFFFh |
| Bank B | SA47         | 0           | 1           | 0           | 1           | 0           | 0           | 0           | Х           | Х           | Х           | 280000h to 28FFFFh | 140000h to 147FFFh |
|        | SA48         | 0           | 1           | 0           | 1           | 0           | 0           | 1           | Х           | Х           | Х           | 290000h to 29FFFFh | 148000h to 14FFFFh |
|        | SA49         | 0           | 1           | 0           | 1           | 0           | 1           | 0           | Х           | Х           | Х           | 2A0000h to 2AFFFFh | 150000h to 157FFFh |
|        | SA50         | 0           | 1           | 0           | 1           | 0           | 1           | 1           | Х           | Х           | Х           | 2B0000h to 2BFFFFh | 158000h to 15FFFFh |
|        | SA51         | 0           | 1           | 0           | 1           | 1           | 0           | 0           | Х           | Х           | Х           | 2C0000h to 2CFFFFh | 160000h to 167FFFh |
|        | SA52         | 0           | 1           | 0           | 1           | 1           | 0           | 1           | Х           | Х           | Х           | 2D0000h to 2DFFFFh | 168000h to 16FFFFh |
|        | SA53         | 0           | 1           | 0           | 1           | 1           | 1           | 0           | Х           | Х           | Х           | 2E0000h to 2EFFFFh | 170000h to 177FFFh |
|        | SA54         | 0           | 1           | 0           | 1           | 1           | 1           | 1           | X           | X           | X           | 2F0000h to 2FFFFh  | 178000h to 17FFFFh |
|        | SA55         | 0           | 1           | 1           | 0           | 0           | 0           | 0           | Х           | Х           | Х           | 300000h to 30FFFFh | 180000h to 187FFFh |
|        | SA56         | 0           | 1           | 1           | 0           | 0           | 0           | 1           | Х           | Х           | Х           | 310000h to 31FFFFh | 188000h to 18FFFFh |
|        | SA57         | 0           | 1           | 1           | 0           | 0           | 1           | 0           | X           | X           | X           | 320000h to 32FFFFh | 190000h to 197FFFh |
|        | SA58         | 0           | 1           | 1           | 0           | 0           | 1           | 1           | X           | X           | X           | 330000h to 33FFFFh | 198000h to 19FFFFh |
|        | SA59         | 0           | 1           | 1           | 0           | 1           | 0           | 0           | X           | X           | X           | 340000h to 34FFFFh | 1A0000h to 1A7FFFh |
|        | SA60         | 0           | 1           | 1           | 0           | 1           | 0           | 1           | X           | X           | X           | 350000h to 35FFFFh | 1A8000h to 1AFFFFh |
|        | SA61         | 0           | 1           | 1           | 0           | 1           | 1           | 0           | X           | X           | X           | 360000h to 36FFFFh | 1B0000h to 1B7FFFh |
|        | SA62         | 0           | 1           | 1           | 0           | 1           | 1           | 1           | X           | X           | X           | 370000h to 37FFFFh | 1B8000h to 1BFFFFh |
|        | SA63         | 0           | 1           | 1           | 1           | 0           | 0           | 0           | X           | X           | X           | 380000h to 38FFFFh | 1C0000h to 1C7FFFh |
|        | SA64         | 0           | 1           | 1           | 1           | 0           | 0           | 1           | X           | X           | X           | 390000h to 39FFFFh | 1C8000h to 1CFFFh  |
|        | SA65         | 0           | 1           | 1           | 1           | 0           | 1           | 0           | X           | X           | X           | 3A0000h to 3AFFFFh | 1D0000h to 1D7FFFh |
|        | SA65         | 0           | 1           | 1           | 1           | 0           | 1           | 1           | X           | X           | X           | 3B0000h to 3BFFFFh | 1D8000h to 1DFFFFh |
|        | SA60<br>SA67 | 0           | 1           | 1           | 1           | 1           | 0           | 0           | X           | X           | X           | 3C0000h to 3CFFFFh | 1E0000h to 1E7FFFh |
|        | SA67         | 0           | 1           | 1           | 1           | 1           | 0           | 1           | X           | X           | X           | 3D0000h to 3DFFFFh | 1E8000h to 1EFFFFh |
|        | SA69         | 0           | 1           | 1           | 1           | 1           | 1           | 0           | X           | X           | X           | 3E0000h to 3EFFFFh | 1F0000h to 1F7FFFh |
|        | SA09<br>SA70 | 0           | 1           | 1           | 1           | 1           | 1           | 1           | X           | X           | X           | 3F0000h to 3FFFFFh | 1F8000h to 1FFFFh  |
|        | 5410         | 0           | 1           |             | I           | 1           | 1           | '           | ^           | ^           | ^           |                    | (Continued         |

(Continued)

| Bank   |        |             |             |             | Se          | ctor /      | Addre       | ess         |             |             |             | Address            | s Range            |
|--------|--------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------|--------------------|
| Bank   | Sector | Banl        | k Add       | ress        |             |             |             |             |             |             |             | Byte Mode          | Word Mode          |
|        |        | <b>A</b> 21 | <b>A</b> 20 | <b>A</b> 19 | <b>A</b> 18 | <b>A</b> 17 | <b>A</b> 16 | <b>A</b> 15 | <b>A</b> 14 | <b>A</b> 13 | <b>A</b> 12 | Byte wode          |                    |
|        | SA71   | 1           | 0           | 0           | 0           | 0           | 0           | 0           | Х           | Х           | Х           | 400000h to 40FFFFh | 200000h to 207FFFh |
|        | SA72   | 1           | 0           | 0           | 0           | 0           | 0           | 1           | Х           | Х           | Х           | 410000h to 41FFFFh | 208000h to 20FFFFh |
|        | SA73   | 1           | 0           | 0           | 0           | 0           | 1           | 0           | Х           | Х           | Х           | 420000h to 42FFFFh | 210000h to 217FFFh |
|        | SA74   | 1           | 0           | 0           | 0           | 0           | 1           | 1           | Х           | Х           | Х           | 430000h to 43FFFFh | 218000h to 21FFFF  |
|        | SA75   | 1           | 0           | 0           | 0           | 1           | 0           | 0           | Х           | Х           | Х           | 440000h to 44FFFFh | 220000h to 227FFF  |
|        | SA76   | 1           | 0           | 0           | 0           | 1           | 0           | 1           | Х           | Х           | Х           | 450000h to 45FFFFh | 228000h to 22FFFF  |
|        | SA77   | 1           | 0           | 0           | 0           | 1           | 1           | 0           | Х           | Х           | Х           | 460000h to 46FFFFh | 230000h to 237FFFI |
|        | SA78   | 1           | 0           | 0           | 0           | 1           | 1           | 1           | Х           | Х           | Х           | 470000h to 47FFFFh | 238000h to 23FFFF  |
|        | SA79   | 1           | 0           | 0           | 1           | 0           | 0           | 0           | Х           | Х           | Х           | 480000h to 48FFFFh | 240000h to 247FFF  |
|        | SA80   | 1           | 0           | 0           | 1           | 0           | 0           | 1           | Х           | Х           | Х           | 490000h to 49FFFFh | 248000h to 24FFFF  |
|        | SA81   | 1           | 0           | 0           | 1           | 0           | 1           | 0           | Х           | Х           | Х           | 4A0000h to 4AFFFFh | 250000h to 257FFFI |
|        | SA82   | 1           | 0           | 0           | 1           | 0           | 1           | 1           | Х           | Х           | Х           | 4B0000h to 4BFFFFh | 258000h to 25FFFFh |
|        | SA83   | 1           | 0           | 0           | 1           | 1           | 0           | 0           | Х           | Х           | Х           | 4C0000h to 4CFFFFh | 260000h to 267FFF  |
|        | SA84   | 1           | 0           | 0           | 1           | 1           | 0           | 1           | Х           | Х           | Х           | 4D0000h to 4DFFFFh | 268000h to 26FFFF  |
|        | SA85   | 1           | 0           | 0           | 1           | 1           | 1           | 0           | Х           | Х           | Х           | 4E0000h to 4EFFFFh | 270000h to 277FFF  |
|        | SA86   | 1           | 0           | 0           | 1           | 1           | 1           | 1           | Х           | Х           | Х           | 4F0000h to 4FFFFh  | 278000h to 27FFFF  |
|        | SA87   | 1           | 0           | 1           | 0           | 0           | 0           | 0           | Х           | Х           | Х           | 500000h to 50FFFFh | 280000h to 287FFF  |
|        | SA88   | 1           | 0           | 1           | 0           | 0           | 0           | 1           | Х           | Х           | Х           | 510000h to 51FFFFh | 288000h to 28FFFF  |
|        | SA89   | 1           | 0           | 1           | 0           | 0           | 1           | 0           | Х           | Х           | Х           | 520000h to 52FFFFh | 290000h to 297FFF  |
|        | SA90   | 1           | 0           | 1           | 0           | 0           | 1           | 1           | X           | X           | X           | 530000h to 53FFFFh | 298000h to 29FFFF  |
|        | SA91   | 1           | 0           | 1           | 0           | 1           | 0           | 0           | X           | X           | X           | 540000h to 54FFFFh | 2A0000h to 2A7FFF  |
|        | SA92   | 1           | 0           | 1           | 0           | 1           | 0           | 1           | X           | X           | X           | 550000h to 55FFFFh | 2A8000h to 2AFFFF  |
|        | SA93   | 1           | 0           | 1           | 0           | 1           | 1           | 0           | X           | X           | X           | 560000h to 56FFFFh | 2B0000h to 2B7FFF  |
|        | SA94   | 1           | 0           | 1           | 0           | 1           | 1           | 1           | X           | X           | X           | 570000h to 57FFFFh | 2B8000h to 2BFFFF  |
| Bank C | SA95   | 1           | 0           | 1           | 1           | 0           | 0           | 0           | X           | X           | X           | 580000h to 58FFFFh | 2C0000h to 2C7FFF  |
|        | SA96   | 1           | 0           | 1           | 1           | 0           | 0           | 1           | X           | X           | X           | 590000h to 59FFFFh | 2C8000h to 2CFFFF  |
|        | SA97   | 1           | 0           | 1           | 1           | 0           | 1           | 0           | X           | X           | X           | 5A0000h to 5AFFFFh | 2D0000h to 2D7FFF  |
|        | SA98   | 1           | 0           | 1           | 1           | 0           | 1           | 1           | X           | X           | X           | 5B0000h to 5BFFFFh | 2D8000h to 2DFFFF  |
|        | SA99   | 1           | 0           | 1           | 1           | 1           | 0           | 0           | X           | X           | X           | 5C0000h to 5CFFFFh | 2E0000h to 2E7FFF  |
|        | SA100  | 1           | 0           | 1           | 1           | 1           | 0           | 1           | X           | X           | X           | 5D0000h to 5DFFFFh | 2E8000h to 2EFFFF  |
|        | SA101  | 1           | 0           | 1           | 1           | 1           | 1           | 0           | X           | X           | X           | 5E0000h to 5EFFFFh | 2F0000h to 2F7FFFI |
|        | SA102  | 1           | 0           | 1           | 1           | 1           | 1           | 1           | X           | X           | X           | 5F0000h to 5FFFFh  | 2F8000h to 2FFFFF  |
|        | SA103  | 1           | 1           | 0           | 0           | 0           | 0           | 0           | X           | X           | X           | 600000h to 60FFFFh | 300000h to 307FFF  |
|        | SA104  | 1           | 1           | 0           | 0           | 0           | 0           | 1           | X           | X           | X           | 610000h to 61FFFFh | 308000h to 30FFFF  |
|        | SA105  | 1           | 1           | 0           | 0           | 0           | 1           | 0           | X           | X           | X           | 620000h to 62FFFFh | 310000h to 317FFF  |
|        | SA105  | 1           | 1           | 0           | 0           | 0           | 1           | 1           | X           | X           | X           | 630000h to 63FFFFh | 318000h to 31FFFF  |
|        | SA107  | 1           | 1           | 0           | 0           | 1           | 0           | 0           | X           | X           | X           | 640000h to 64FFFFh | 320000h to 327FFFI |
|        | SA108  | 1           | 1           | 0           | 0           | 1           | 0           | 1           | X           | X           | X           | 650000h to 65FFFFh | 328000h to 32FFFF  |
|        | SA109  | 1           | 1           | 0           | 0           | 1           | 1           | 0           | X           | X           | X           | 660000h to 66FFFFh | 330000h to 337FFF  |
|        | SA110  | 1           | 1           | 0           | 0           | 1           | 1           | 1           | X           | X           | X           | 670000h to 67FFFh  | 338000h to 33FFFFI |
|        | SA111  | 1           | 1           | 0           | 1           | 0           | 0           | 0           | X           | X           | X           | 680000h to 68FFFFh | 340000h to 347FFF  |
|        | SA112  | 1           | 1           | 0           | 1           | 0           | 0           | 1           | X           | X           | X           | 690000h to 69FFFFh | 348000h to 34FFFF  |
|        | SA113  | 1           | 1           | 0           | 1           | 0           | 1           | 0           | X           | X           | X           | 6A0000h to 6AFFFFh | 350000h to 357FFF  |
|        | SA114  | 1           | 1           | 0           | 1           | 0           | 1           | 1           | X           | X           | X           | 6B0000h to 6BFFFFh | 358000h to 35FFFF  |
|        | SA115  | 1           | 1           | 0           | 1           | 1           | 0           | 0           | X           | X           | X           | 6C0000h to 6CFFFh  | 360000h to 367FFF  |
|        | SA116  | 1           | 1           | 0           | 1           | 1           | 0           | 1           | X           | X           | X           | 6D0000h to 6DFFFFh | 368000h to 36FFFF  |
|        | SA117  | 1           | 1           | 0           | 1           | 1           | 1           | 0           | X           | X           | X           | 6E0000h to 6EFFFFh | 370000h to 377FFFI |
|        | 0,111  | 1           | 1           | 0           | 1           | 1           | 1           | 1           | X           | X           | X           | 6F0000h to 6FFFFh  | 378000h to 37FFFF  |

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|        |        |             |             |             | Se          | ctor /      | Addre       | ess         |             |             |             | Address            | s Range            |
|--------|--------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------|--------------------|
| Bank   | Sector | Banl        | k Add       | ress        |             |             |             |             |             |             |             | Dute Made          | Mand Made          |
|        |        | <b>A</b> 21 | <b>A</b> 20 | <b>A</b> 19 | <b>A</b> 18 | <b>A</b> 17 | <b>A</b> 16 | <b>A</b> 15 | <b>A</b> 14 | <b>A</b> 13 | <b>A</b> 12 | Byte Mode          | Word Mode          |
|        | SA119  | 1           | 1           | 1           | 0           | 0           | 0           | 0           | Х           | Х           | Х           | 700000h to 70FFFFh | 380000h to 387FFFh |
|        | SA120  | 1           | 1           | 1           | 0           | 0           | 0           | 1           | Х           | Х           | Х           | 710000h to 71FFFFh | 388000h to 38FFFFh |
|        | SA121  | 1           | 1           | 1           | 0           | 0           | 1           | 0           | Х           | Х           | Х           | 720000h to 72FFFFh | 390000h to 397FFFh |
|        | SA122  | 1           | 1           | 1           | 0           | 0           | 1           | 1           | Х           | Х           | Х           | 730000h to 73FFFFh | 398000h to 39FFFFh |
|        | SA123  | 1           | 1           | 1           | 0           | 1           | 0           | 0           | Х           | Х           | Х           | 740000h to 74FFFFh | 3A0000h to 3A7FFFh |
|        | SA124  | 1           | 1           | 1           | 0           | 1           | 0           | 1           | Х           | Х           | Х           | 750000h to 75FFFFh | 3A8000h to 3AFFFFh |
|        | SA125  | 1           | 1           | 1           | 0           | 1           | 1           | 0           | Х           | Х           | Х           | 760000h to 76FFFFh | 3B0000h to 3B7FFFh |
|        | SA126  | 1           | 1           | 1           | 0           | 1           | 1           | 1           | Х           | Х           | Х           | 770000h to 77FFFFh | 3B8000h to 3BFFFFh |
|        | SA127  | 1           | 1           | 1           | 1           | 0           | 0           | 0           | Х           | Х           | Х           | 780000h to 78FFFFh | 3C0000h to 3C7FFFh |
| F      | SA128  | 1           | 1           | 1           | 1           | 0           | 0           | 1           | Х           | Х           | Х           | 790000h to 79FFFFh | 3C8000h to 3CFFFFh |
|        | SA129  | 1           | 1           | 1           | 1           | 0           | 1           | 0           | Х           | Х           | Х           | 7A0000h to 7AFFFFh | 3D0000h to 3D7FFFh |
| Bank D | SA130  | 1           | 1           | 1           | 1           | 0           | 1           | 1           | Х           | Х           | Х           | 7B0000h to 7BFFFFh | 3D8000h to 3DFFFFh |
|        | SA131  | 1           | 1           | 1           | 1           | 1           | 0           | 0           | Х           | Х           | Х           | 7C0000h to 7CFFFFh | 3E0000h to 3E7FFFh |
|        | SA132  | 1           | 1           | 1           | 1           | 1           | 0           | 1           | Х           | Х           | Х           | 7D0000h to 7DFFFFh | 3E8000h to 3EFFFFh |
|        | SA133  | 1           | 1           | 1           | 1           | 1           | 1           | 0           | Х           | Х           | Х           | 7E0000h to 7EFFFFh | 3F0000h to 3F7FFFh |
|        | SA134  | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 0           | 0           | 0           | 7F0000h to 7F1FFFh | 3F8000h to 3F8FFFh |
|        | SA135  | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 0           | 0           | 1           | 7F2000h to 7F3FFFh | 3F9000h to 3F9FFFh |
|        | SA136  | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 0           | 1           | 0           | 7F4000h to 7F5FFFh | 3FA000h to 3FAFFFh |
|        | SA137  | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 0           | 1           | 1           | 7F6000h to 7F7FFFh | 3FB000h to 3FBFFFh |
|        | SA138  | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 0           | 0           | 7F8000h to 7F9FFFh | 3FC000h to 3FCFFFh |
|        | SA139  | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 0           | 1           | 7FA000h to 7FBFFFh | 3FD000h to 3FDFFFh |
|        | SA140  | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 0           | 7FC000h to 7FDFFFh | 3FE000h to 3FEFFFh |
|        | SA141  | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 1           | 7FE000h to 7FFFFFh | 3FF000h to 3FFFFFh |

| Sector Group   | <b>A</b> 21 | <b>A</b> 20 | <b>A</b> 19 | A18 | A17 | A16 | A15 | <b>A</b> 14 | <b>A</b> 13 | <b>A</b> 12 | Sectors         |
|----------------|-------------|-------------|-------------|-----|-----|-----|-----|-------------|-------------|-------------|-----------------|
| SGA0           | 0           | 0           | 0           | 0   | 0   | 0   | 0   | 0           | 0           | 0           | SA0             |
| SGA1           | 0           | 0           | 0           | 0   | 0   | 0   | 0   | 0           | 0           | 1           | SA1             |
| SGA2           | 0           | 0           | 0           | 0   | 0   | 0   | 0   | 0           | 1           | 0           | SA1             |
| SGA3           | 0           | 0           | 0           | 0   | 0   | 0   | 0   | 0           | 1           | 1           | SA3             |
| SGA4           | 0           | 0           | 0           | 0   | 0   | 0   | 0   | 1           | 0           | 0           | SA3             |
| SGA5           | 0           | 0           | 0           | 0   | 0   | 0   | 0   | 1           | 0           | 1           | SA5             |
| SGA5<br>SGA6   | 0           | 0           | 0           | 0   | 0   | 0   | 0   | 1           | 1           | 0           | SA5<br>SA6      |
|                | 0           | 0           | 0           | 0   | 0   | 0   | -   |             |             | -           | SA0             |
| SGA7           | 0           | 0           | 0           | 0   | 0   | -   | 0   | 1           | 1           | 1           | 547             |
| 0040           | 0           | 0           | ~           |     | 0   | 0   | 1   | Ň           | X           | X           |                 |
| SGA8           | 0           | 0           | 0           | 0   | 0   | 1   | 0   | Х           | Х           | X           | SA8 to SA10     |
| SGA9           | 0           | 0           | 0           | 0   | 1   | 0   | 1   | V           | V           | V           | SA11 to SA14    |
|                | -           | 0           | 0           | 0   | 1   | X   | X   | X           | X           | X           |                 |
| SGA10          | 0           | 0           | 0           | 1   | 0   | X   | X   | X           | X           | X           | SA15 to SA18    |
| SGA11          | 0           | 0           | 0           | 1   | 1   | X   | X   | X           | X           | X           | SA19 to SA22    |
| SGA12          | 0           | 0           | 1           | 0   | 0   | X   | Х   | X           | X           | X           | SA23 to SA26    |
| SGA13          | 0           | 0           | 1           | 0   | 1   | Х   | Х   | Х           | Х           | Х           | SA27 to SA30    |
| SGA14          | 0           | 0           | 1           | 1   | 0   | Х   | Х   | Х           | Х           | Х           | SA31 to SA34    |
| SGA15          | 0           | 0           | 1           | 1   | 1   | Х   | Х   | Х           | Х           | Х           | SA35 to SA38    |
| SGA16          | 0           | 1           | 0           | 0   | 0   | Х   | Х   | Х           | Х           | Х           | SA39 to SA42    |
| SGA17          | 0           | 1           | 0           | 0   | 1   | Х   | Х   | Х           | Х           | Х           | SA43 to SA46    |
| SGA18          | 0           | 1           | 0           | 1   | 0   | Х   | Х   | Х           | Х           | Х           | SA47 to SA50    |
| SGA19          | 0           | 1           | 0           | 1   | 1   | Х   | Х   | Х           | Х           | Х           | SA51 to SA54    |
| SGA20          | 0           | 1           | 1           | 0   | 0   | Х   | Х   | Х           | Х           | Х           | SA55 to SA58    |
| SGA21          | 0           | 1           | 1           | 0   | 1   | Х   | Х   | Х           | Х           | Х           | SA59 to SA62    |
| SGA22          | 0           | 1           | 1           | 1   | 0   | Х   | Х   | Х           | Х           | Х           | SA63 to SA66    |
| SGA23          | 0           | 1           | 1           | 1   | 1   | Х   | Х   | Х           | Х           | Х           | SA67 to SA70    |
| SGA24          | 1           | 0           | 0           | 0   | 0   | Х   | Х   | Х           | Х           | Х           | SA71 to SA74    |
| SGA25          | 1           | 0           | 0           | 0   | 1   | Х   | Х   | Х           | Х           | Х           | SA75 to SA78    |
| SGA26          | 1           | 0           | 0           | 1   | 0   | Х   | Х   | Х           | Х           | Х           | SA79 to SA82    |
| SGA27          | 1           | 0           | 0           | 1   | 1   | Х   | Х   | Х           | Х           | Х           | SA83 to SA86    |
| SGA28          | 1           | 0           | 1           | 0   | 0   | Х   | Х   | Х           | х           | Х           | SA87 to SA90    |
| SGA29          | 1           | 0           | 1           | 0   | 1   | X   | X   | X           | X           | X           | SA91 to SA94    |
| SGA30          | 1           | 0           | 1           | 1   | 0   | X   | X   | X           | X           | X           | SA95 to SA98    |
| SGA31          | 1           | 0           | 1           | 1   | 1   | X   | X   | X           | X           | X           | SA99 to SA102   |
| SGA32          | 1           | 1           | 0           | 0   | 0   | X   | X   | X           | X           | X           | SA103 to SA106  |
| SGA33          | 1           | 1           | 0           | 0   | 1   | X   | X   | X           | X           | X           | SA107 to SA110  |
| SGA34          | 1           | 1           | 0           | 1   | 0   | X   | X   | X           | X           | X           | SA111 to SA114  |
| SGA35          | 1           | 1           | 0           | 1   | 1   | X   | X   | X           | X           | X           | SA115 to SA118  |
| SGA35<br>SGA36 | 1           | 1           | 1           | 0   | 0   | X   | X   | X           | X           | X           | SA119 to SA122  |
| SGA30<br>SGA37 | 1           | 1           | 1           | 0   | 1   |     | X   |             |             |             | SA123 to SA122  |
|                |             |             | 1           | -   |     | X   |     | X           | X           | X           |                 |
| SGA38          | 1           | 1           | 1           | 1   | 0   | X   | X   | Х           | Х           | Х           | SA127 to SA130  |
| 00400          |             |             |             |     |     | 0   | 0   |             |             |             | 0.4.04 / 0.4.00 |
| SGA39          | 1           | 1           | 1           | 1   | 1   | 0   | 1   | Х           | Х           | Х           | SA131 to SA133  |
|                |             |             |             |     |     | 1   | 0   |             |             |             |                 |
| SGA40          | 1           | 1           | 1           | 1   | 1   | 1   | 1   | 0           | 0           | 0           | SA134           |
| SGA41          | 1           | 1           | 1           | 1   | 1   | 1   | 1   | 0           | 0           | 1           | SA135           |
| SGA42          | 1           | 1           | 1           | 1   | 1   | 1   | 1   | 0           | 1           | 0           | SA136           |
| SGA43          | 1           | 1           | 1           | 1   | 1   | 1   | 1   | 0           | 1           | 1           | SA137           |
| SGA44          | 1           | 1           | 1           | 1   | 1   | 1   | 1   | 1           | 0           | 0           | SA138           |
| SGA45          | 1           | 1           | 1           | 1   | 1   | 1   | 1   | 1           | 0           | 1           | SA139           |
| SGA46          | 1           | 1           | 1           | 1   | 1   | 1   | 1   | 1           | 1           | 0           | SA140           |
| SGA47          | 1           | 1           | 1           | 1   | 1   | 1   | 1   | 1           | 1           | 1           | SA141           |

#### Sector Group Addresses

| Туре                         | A21 to A12                | A <sub>6</sub> | A3 | <b>A</b> 2 | <b>A</b> 1 | Ao | Code (HEX) |
|------------------------------|---------------------------|----------------|----|------------|------------|----|------------|
| Manufacture's Code           | BA                        | L              | L  | L          | L          | L  | 04h        |
| Device Code                  | BA                        | L              | L  | L          | L          | Н  | 227Eh      |
| Extended Device              | BA                        | L              | Н  | Н          | Н          | L  | 2202h      |
| Code *2                      | BA                        | L              | Н  | Н          | Н          | Н  | 2201h      |
| Sector Group Protec-<br>tion | Sector Group<br>Addresses | L              | L  | L          | Н          | L  | 01h*1      |

#### Flash Memory Autoselect Codes

Legend:  $L = V_{IL}$ ,  $H = V_{IH}$ . See DC Characteristics for voltage levels.

\*1 : Outputs 01h at protected sector group addresses and outputs 00h at unprotected sector group addresses.

\*2 : A read cycle at address (BA) 01h outputs device code. When 227Eh was output, this indicates that there will require two additional codes, called Extended Device Codes. Therefore the system may continue reading out these Extended Device Codes at the address of (BA) 0Eh, as well as at (BA) 0Fh.

|  |              | _                      |                  |       |                   |           | mmand            |       | Fourth       | Bus   |                |       | •              | _     |
|--|--------------|------------------------|------------------|-------|-------------------|-----------|------------------|-------|--------------|-------|----------------|-------|----------------|-------|
| Comma<br>Sequen                              |              | Bus<br>Write<br>Cycles | First<br>Write ( |       | Secono<br>Write ( | Cycle     | Third<br>Write ( | Cycle | Read/<br>Cyc | Write | Fifth<br>Write | Cycle | Sixth<br>Write | Cycle |
|  |              | Req'd                  | Addr.            | Data  | Addr.             | Data      | Addr.            | Data  | Addr.        | Data  | Addr.          | Data  | Addr.          | Data  |
| Read/Reset                                   | Word<br>Byte | 1                      | XXXh             | F0h   | _                 | —         | —                | —     | —            | —     | _              | —     | _              | _     |
| Read/Reset                                   | Word<br>Byte | 3                      | 555h<br>AAAh     | AAh   | 2AAh<br>555h      | 55h       | 555h<br>AAAh     | F0h   | RA           | RD    |                | _     |                | _     |
|  | Word         |                        | 555h             |       | 2AAh              |           | (BA)<br>555h     |       |              |       |                |       |                |       |
| Autoselect                                   | Byte         | 3                      | AAAh             | AAh   | 555h              | 55h       | (BA)<br>AAAh     | 90h   | _            | _     | —              | _     | —              | _     |
| Program                                      | Word<br>Byte | 4                      | 555h<br>AAAh     | AAh   | 2AAh<br>555h      | 55h       | 555h<br>AAAh     | A0h   | PA           | PD    | _              | _     | _              | _     |
| Program Sus                                  | pend         | 1                      | BA               | B0h   | _                 | —         | _                | —     | —            | —     | _              | _     | _              | —     |
| Program Res                                  | ume          | 1                      | BA               | 30h   | _                 | —         | _                | —     | —            | —     | _              | _     | _              | —     |
| Chip Erase                                   | Word<br>Byte | 6                      | 555h<br>AAAh     | AAh   | 2AAh<br>555h      | 55h       | 555h<br>AAAh     | 80h   | 555h<br>AAAh | AAh   | 2AAh<br>555h   | 55h   | 555h<br>AAAh   | 10h   |
| Sector<br>Erase                              | Word<br>Byte | 6                      | 555h<br>AAAh     | AAh   | 2AAh<br>555h      | 55h       | 555h<br>AAAh     | 80h   | 555h<br>AAAh | AAh   | 2AAh<br>555h   | 55h   | SA             | 30h   |
| Erase Suspe                                  |              | 1                      | BA               | B0h   |                   |           |                  | _     |              | _     |                |       |                | _     |
| Erase Resum                                  |              | 1                      | BA               | 30h   |                   |           |                  |       |              |       | _              |       | _              | _     |
| Extended<br>Sector<br>Group<br>Protection *2 | Word<br>Byte | 4                      | XXXh             | 60h   | SPA               | 60h       | SPA              | 40h   | SPA          | SD    |                | _     |                |       |
| Set to<br>Fast Mode                          | Word<br>Byte | 3                      | 555h<br>AAAh     | AAh   | 2AAh<br>555h      | 55h       | 555h<br>AAAh     | 20h   | _            |       |                |       |                | _     |
| Fast<br>Program *1                           | Word<br>Byte | 2                      | XXXh<br>XXXh     | A0h   | PA                | PD        |                  | _     |              | _     |                |       |                |       |
| Reset from<br>Fast Mode *1                   | Word<br>Byte | 2                      | BABA             | 90h   | XXXh<br>XXXh      | *4<br>F0h | _                |       |              |       |                |       |                | _     |
| Over   | Word         | 4                      | (BA)<br>55h      | 006   |                   |           |                  |       |              |       |                |       |                |       |
| Query  | Byte         | 1                      | (BA)<br>AAh      | 98h   | _                 |           | _                | _     |              | _     | _              | _     | _              | _     |
| HiddenROM<br>Entry                           | Word<br>Byte | 3                      | 555h<br>AAAh     | AAh   | 2AAh<br>555h      | 55h       | 555h<br>AAAh     | 88h   | _            | _     |                | _     |                | _     |
| HiddenROM<br>Program * <sup>3</sup>          | Word<br>Byte | 4                      | 555h<br>AAAh     | AAh   | 2AAh<br>555h      | 55h       | 555h<br>AAAh     | A0h   | (HRA)<br>PA  | PD    |                | _     |                | _     |
| HiddenROM                                    | Word         | 4                      | 555h             | ۸ ۸ հ | 2AAh              | E E L     | (HRBA)<br>555h   | 005   | VVVL         | 005   |                |       |                |       |
| Exit *3                                      | Byte         | 4                      | AAAh             | AAh   | 555h              | 55h       | (HRBA)<br>AAAh   | 90h   | XXXh         | 00h   |                |       |                |       |

**Flash Memory Command Definitions** 

#### (Continued)

\*1: This command is valid while Fast Mode.

\*2: This command is valid while  $\overline{\text{RESET}} = V_{\text{ID.}}$ 

- \*3: This command is valid while HiddenROM mode.
- \*4: The data "00h" is also acceptable.
- Notes : Address bits A<sub>21</sub> to A<sub>11</sub> = X = "H" or "L" for all address commands except or Program Address (PA), Sector Address (SA), and Bank Address (BA), and Sector Group Address (SPA).
  - Bus operations are defined.
  - RA = Address of the memory location to be read
  - PA = Address of the memory location to be programmed

Addresses are latched on the falling edge of the write pulse.

- SA = Address of the sector to be erased. The combination of A<sub>21</sub>, A<sub>20</sub>, A<sub>19</sub>, A<sub>18</sub>, A<sub>17</sub>, A<sub>16</sub>, A<sub>15</sub>, A<sub>14</sub>, A<sub>13</sub>, and
- A12 will uniquely select any sector.
  - $BA = Bank Address (A_{21}, A_{20}, A_{19})$
- RD = Data read from location RA during read operation.
  - PD = Data to be programmed at location PA. Data is latched on the rising edge of write pulse.
- SPA = Sector group address to be protected. Set sector group address and (A<sub>6</sub>, A<sub>3</sub>, A<sub>2</sub>, A<sub>1</sub>, A<sub>0</sub>) = (0, 0, 0, 1, 0).

SD = Sector group protection verify data. Output 01h at protected sector group addresses and output 00h at unprotected sector group addresses.

• HRA = Address of the HiddenROM area Word Mode : 000000h to 00007Fh

Byte Mode : 000000h to 0000FFh

- HRBA = Bank Address of the HiddenROM area (A<sub>21</sub> = A<sub>20</sub> = A<sub>19</sub> = VIL)
- The system should generate the following address patterns: Word Mode: 555h or 2AAh to addresses A<sub>10</sub> to A<sub>0</sub>
  - Byte Mode: AAAh or 555h to addresses A10 to A0, and A-1
- Both Read/Reset commands are functionally equivalent, resetting the device to the read mode.

### ABSOLUTE MAXIMUM RATINGS

| Parameter                               | Symbol             | Rat  | ing       | Unit |
|---|--------------------|------|-----------|------|
| Falameter                               | Symbol             | Min  | Max       | Onit |
| Storage Temperature                     | Tstg               | -55  | +125      | °C   |
| Ambient Temperature with Power Applied  | Та                 | -40  | +85       | °C   |
| Voltage with Respect to Ground All pins | Vin, Vout          | -0.3 | Vccf +0.3 | V    |
| except RESET, WP/ACC *1                 | VIN, VOUT          | -0.3 | Vccs +0.3 | V    |
| Vccf/Vccs Supply *1                     | Vccf, Vcc <b>s</b> | -0.3 | +3.3      | V    |
| RESET *2                                | Vin                | -0.5 | + 13.0    | V    |
| WP/ACC *3                               | Vin                | -0.5 | +10.5     | V    |

\*1 Minimum DC voltage on input or I/O pins is -0.3 V. During voltage transitions, input or I/O pins may undershoot Vss to -2.0 V for periods of up to 20 ns. Maximum DC voltage on input or I/O pins is Vccf + 0.3 V or Vccs + 0.3 V. During voltage transitions, input or I/O pins may overshoot to Vccf + 2.0 V or Vccs + 2.0 V for periods of up to 20 ns.

- \*2: Minimum DC input voltage on RESET pin is –0.5 V. During voltage transitions, RESET pins may undershoot Vss to –2.0 V for periods of up to 20 ns. Voltage difference between input and supply voltage (VIN-Vccf or Vccs) does not exceed +9.0 V. Maximum DC input voltage on RESET pins is +13.0 V which may overshoot to +14.0 V for periods of up to 20 ns.
- \*3: Minimum DC input voltage on WP/ACC pin is –0.5 V. During voltage transitions, WP/ACC pin may undershoot Vss to –2.0 V for periods of up to 20 ns. Maximum DC input voltage on WP/ACC pin is +10.5 V which may overshoot to +12.0 V for periods of up to 20 ns, when Vccf is applied.
- WARNING: Semiconductor devices can be permanently damaged by application of stress (voltage, current, temperature, etc.) in excess of absolute maximum ratings. Do not exceed these ratings.

### RECOMMENDED OPERATING CONDITIONS

| Parameter                 | Symbol     | Value | Unit |      |
|---------------------------|------------|-------|------|------|
| Farameter                 | Symbol     | Min   | Max  | Unit |
| Ambient Temperature       | Та         | -40   | +85  | °C   |
| Vccf/Vccs Supply Voltages | Vccf, Vccs | +2.7  | +3.1 | V    |

Note: Operating ranges define those limits between which the functionality of the device is guaranteed.

WARNING: The recommended operating conditions are required in order to ensure the normal operation of the semiconductor device. All of the device's electrical characteristics are warranted when the device is operated within these ranges.

Always use semiconductor devices within their recommended operating condition ranges. Operation outside these ranges may adversely affect reliability and could result in device failure.

No warranty is made with respect to uses, operating conditions, or combinations not represented on the data sheet. Users considering application outside the listed conditions are advised to contact their FUJITSU representatives beforehand.

### ■ ELECTRICAL CHARACTERISTICS

### 1. DC Characteristics

| Parameter   | Symbol             | Co   | nditions                   |         |      | Value |      | Unit |
|---|--------------------|--|----------------------------|---------|------|-------|------|------|
| Farameter   | Symbol             |  | nations                    |         | Min  | Тур   | Max  | Unit |
| Input Leakage Current                               | lu                 | VIN = Vss to Vccf, V   | /cc <b>s</b>               |         | -1.0 | _     | +1.0 | μΑ   |
| Output Leakage Current                              | Ilo                | Vout = Vss to Vccf,  | Vccs                       |         | -1.0 | —     | +1.0 | μΑ   |
| RESET Inputs Leakage<br>Current                     | Ілт                | Vccf = Vccf Max, V<br>RESET = 12.5 V   | ′ccs = Vccs Max,           |         | _    | _     | 35   | μA   |
| Acc Input Leakage Current                           | LIA                | Vccf = Vccf Max, V<br>WP/ACC = Vacc M  |                            |         | _    | 20    | mA   |      |
|   |                    |  | tcycle = 5 MHz             | Byte    | _    | _     | 16   | m۸   |
| Flash Vcc Active Current                            | lf                 | <u>CE</u> f = Vı∟,   | tcycle = 5 MHz             | Word    | _    | _     | 18   | – mA |
| (Read) *1   | lcc₁f              | OE = VIH   | tcycle = 1 MHz             | Byte    | _    | _     | 4    |      |
|   |                    |  | tcycle = 1 MHz             | Word    | _    | _     | 4    | mA   |
| Flash Vcc Active Current*2                          | Icc <sub>2</sub> f | $\overline{CE}f = V_{IL}, \overline{OE} = V_{I}$   | н                          |         | _    | _     | 30   | mA   |
| Flash Vcc Active Current                            |                    |  |                            | Byte    | _    | _     | 46   |      |
| (Read-While-Program) *5                             | lcc3f              | $\overline{CE}f = V_{IL}, \overline{OE} = V_{I}$   | Н                          | Word    | _    | _     | 48   | mA   |
| Flash Vcc Active Current                            |                    |  |                            | Byte    | _    | _     | 46   |      |
| (Read-While-Erase) *5                               | lcc₄f              | $\overline{CE}f = V_{IL}, \overline{OE} = V_{I}$   | Н                          | Word    | _    | _     | 48   | mA   |
| Flash Vcc Active Current<br>(Erase-Suspend-Program) | lcc5f              | $\overline{CE}f = V_{IL}, \overline{OE} = V_{I}$   | 1                          | _       | _    | 30    | mA   |      |
| SRAM Vcc Active Current                             | Icc1S              | $\label{eq:Vccs} \begin{split} \frac{V_{ccs} = V_{ccs} \; Max,}{CE1s = V_{IL},} \\ CE2s = V_{IH} \end{split}$                                  | tcycle = 10 MHz            | _       | _    | 50    | mA   |      |
|   |                    | <u>CE1</u> s = 0.2 V,  | tcycle = 10 MHz            |         | _    | _     | 50   | mA   |
| SRAM Vcc Active Current                             | Icc2S              | CE2s =<br>Vccs – 0.2 V   | tcycle = 1 MHz             |         | —    | _     | 10   | mA   |
| Flash Vcc Standby Current                           | Isb1f              | Vccf = Vccf Max, C<br>RESET = Vccf ± 0<br>WP/ACC = Vccf ± 0  | .3 V,                      | /       | _    | 1     | 5    | μA   |
| Flash Vcc Standby Current (RESET)                   | Isb2f              | Vccf = Vccf Max, F<br>WP/ACC = Vccf±   |                            | 3 V,    | _    | 1     | 5    | μΑ   |
| Flash Vcc Current<br>(Automatic Sleep Mode) *3      | lsвзf              | $\frac{V_{ccf} = V_{ccf} Max, \overline{C}}{\overline{RESET} = V_{ccf} \pm 0}$ $\frac{WP}{ACC} = V_{ccf} \pm 0$ $V_{IN} = V_{ccf} \pm 0.3 V C$ | .3 V,<br>0.3 V,            |         |      | 1     | 5    | μA   |
| SRAM Vcc Standby<br>Current                         | Isb1 <b>S</b>      | CE1s ≥ Vccs – 0.2  | 2 V, CE2s <u>&gt;</u> Vccs | – 0.2 V | _    | _     | 15   | μΑ   |
| SRAM Vcc Standby<br>Current                         | Isb2 <b>S</b>      | CE2s <u>&lt;</u> 0.2V  |                            |         | _    | _     | 15   | μA   |

(Continued)

| Parameter   | Symbol | Conditions                    |       |               | Value |   | Unit |
|---|--------|-------------------------------|-------|---------------|-------|---|------|
| Farameter   | Symbol | Conditions                    |       | Min           | Тур   | Max         0.5         Vcc+0.3         *6         12.5         9.5         0.45         0.4            2.5 | Unit |
| Input Low Level   | VIL    | —                             |       | -0.3          | _     | 0.5   | V    |
| Input High Level  | Vін    | _                             |       | 2.4           |       |   | V    |
| Voltage for Sector Protection,<br>and Temporary Sector Unpro-<br>tection (RESET) *4 | Vid    | _                             |       | 11.5          | 12    | 12.5  | V    |
| Voltage for Program<br>Acceleration (WP/ACC) *4                                     | VACC   | _                             |       | 8.5           | 9.0   | 9.5   | V    |
| Output Low Voltage Level  | Vol    | Vccf = Vccf Min, Io∟= 4.0 mA  | Flash | _             | _     | 0.45  | V    |
| Oulput Low Voltage Level  | VOL    | Vccs = Vccs Min, Io∟= 1.0 mA  | SRAM  | _             | _     | 0.4   | V    |
| Output High Voltage Level   | Vон    | Vccf = Vccf Min, Iон= –0.1 mA | Flash | 0.85×<br>Vccf | _     | _   | V    |
|   |        | Vccs = Vccs Min, Iон= –0.5 mA | SRAM  | 2.2           | _     | _   | V    |
| Flash Low Vccf Lock-Out<br>Voltage  | Vlko   | _                             |       | 2.3           | 2.4   | 2.5   | V    |

\*1: The Icc current listed includes both the DC operating current and the frequency dependent component.

\*2: Icc active while Embedded Algorithm (program or erase) is in progress.

\*3: Automatic sleep mode enables the low power mode when address remains stable for 150 ns.

\*4: Applicable for only Vccf applying.

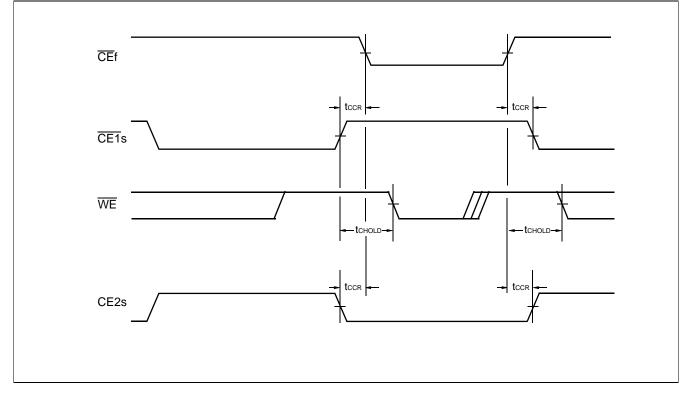
\*5: Embedded Alogorithm (program or erase) is in progress. (@5 MHz)

\*6: Vcc indicates lower of Vccf or Vccs.

# 2. AC Characteristics • CE Timing

| Parameter       | Syn   | nbol           | Condition | Va  | Unit |      |
|-----------------|-------|----------------|-----------|-----|------|------|
| Farameter       | JEDEC | Standard       | Condition | Min | Max  | Onit |
| CE Recover Time | _     | tccr           | —         | 0   | —    | ns   |
| CE Hold Time    | _     | <b>t</b> CHOLD | —         | 3   | —    | ns   |

### • Timing Diagram for alternating SRAM to Flash

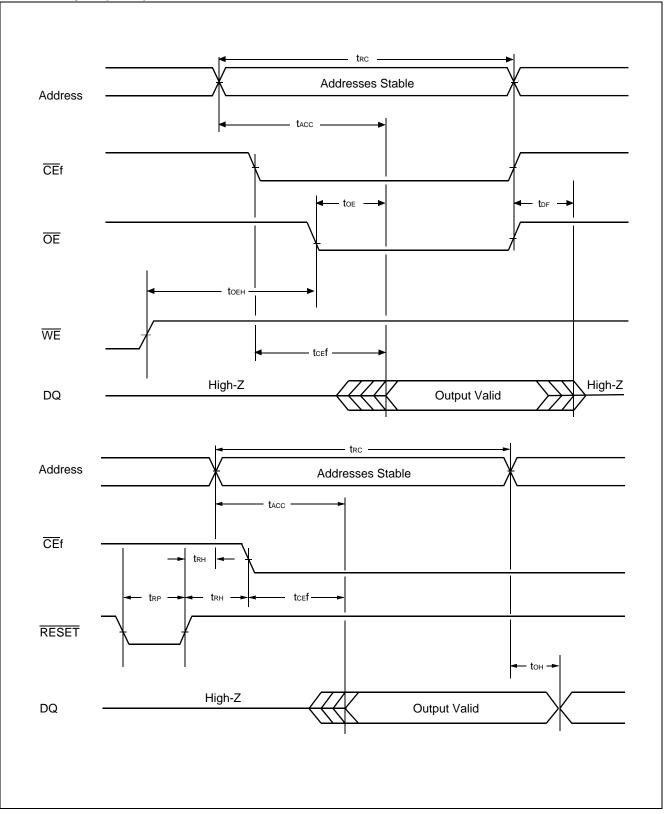


| Parameter   | Syn               | nbol           | Condition                                       | Val | ue* | Unit |
|---|-------------------|----------------|---|-----|-----|------|
| Farameter   | JEDEC             | Standard       | Condition                                       | Min | Max | Unit |
| Read Cycle Time   | tavav             | <b>t</b> RC    | _   | 70  | —   | ns   |
| Address to Output Delay   | <b>t</b> avqv     | tacc           | $\frac{\overline{CE}f}{\overline{OE}} = V_{IL}$ | —   | 70  | ns   |
| Chip Enable to Output Delay   | <b>t</b> elqv     | tc⊧f           | OE = VIL  | _   | 70  | ns   |
| Output Enable to Output Delay   | <b>t</b> GLQV     | toe            | —   | —   | 30  | ns   |
| Chip Enable to Output High-Z  | <b>t</b> ehqz     | tdf            | —   | —   | 25  | ns   |
| Output Enable to Output High-Z  | t <sub>GHQZ</sub> | tdf            | —   | —   | 25  | ns   |
| Output Hold Time From Addresses,<br>CEf or OE, Whichever Occurs First | taxqx             | tон            | _   | 0   | _   | ns   |
| RESET Pin Low to Read Mode  | —                 | <b>t</b> READY | —   | —   | 20  | μs   |

### • Read Only Operations Characteristics (Flash)

\*: Test Conditions– Output Load:1 TTL gate and 30 pF Input rise and fall times: 5 ns Input pulse levels: 0.0 V to Vccf Timing measurement reference level Input: 0.5×Vccf Output: 0.5×Vccf

### • Read Cycle (Flash)



#### • Write/Erase/Program Operations

| Write/Erase/Program Operations                                 |                         | Symbol         |                | Value          |     |     |     |      |
|--|-------------------------|----------------|----------------|----------------|-----|-----|-----|------|
| Parameter  |                         |                | JEDEC          | Standard       | Min | Тур | Max | Unit |
| Write Cycle Time   |                         |                | <b>t</b> avav  | twc            | 70  |     |     | ns   |
| Address Setup Time   |                         |                | <b>t</b> avwl  | tas            | 0   |     |     | ns   |
| Address Setup Time to OE Low During Toggle Bit Polling         |                         |                | taso           | 12             |     |     | ns  |      |
| Address Hold Time  |                         |                | <b>t</b> wLAX  | tан            | 45  |     |     | ns   |
| Address Hold Time from CE or OE High During Toggle Bit Polling |                         |                | tант           | 0              |     |     | ns  |      |
| Data Setup Time  |                         |                | <b>t</b> dvwh  | tos            | 30  |     |     | ns   |
| Data Hold Time   |                         | <b>t</b> whdx  | tон            | 0              |     |     | ns  |      |
| Output<br>Enable Hold<br>Time                                  | Read                    |                |                | tоен           | 0   |     |     | ns   |
|  | Toggle and Data Polling |                |                |                | 10  |     |     | ns   |
| CE High During Toggle Bit Polling                              |                         |                | <b>t</b> CEPH  | 20             |     |     | ns  |      |
| OE High During Toggle Bit Polling                              |                         |                |                | toeph          | 20  |     |     | ns   |
| Read Recover Time Before Write                                 |                         |                | <b>t</b> GHWL  | <b>t</b> GHWL  | 0   |     |     | ns   |
| Read Recover Time Before Write                                 |                         |                | <b>t</b> GHEL  | <b>t</b> GHEL  | 0   | —   |     | ns   |
| CE Setup Time  |                         |                | <b>t</b> elwl  | tcs            | 0   |     |     | ns   |
| WE Setup Time  |                         | twlel          | tws            | 0              |     |     | ns  |      |
| CE Hold Time   |                         | twhen          | tсн            | 0              |     |     | ns  |      |
| WE Hold Time   |                         | <b>t</b> ehwh  | twн            | 0              |     |     | ns  |      |
| Write Pulse Width  |                         | <b>t</b> wlwh  | twp            | 35             |     | —   | ns  |      |
| CE Pulse Width   |                         | <b>t</b> eleh  | tcp            | 35             | —   |     | ns  |      |
| Write Pulse Width High   |                         | <b>t</b> whwL  | twpн           | 25             |     |     | ns  |      |
| CE Pulse Width High  |                         | <b>t</b> ehel  | tсрн           | 25             |     |     | ns  |      |
| Programming Operation  |                         | Byte           | <b>t</b>       | twnwn1         |     | 4   |     | μs   |
|  | peration                | Word           | twhwh1         | LVVHVVHI       |     | 6   | _   | μs   |
| Sector Erase Operation *1                                      |                         | <b>t</b> wHwH2 | <b>t</b> wHwH2 |                | 0.5 | —   | S   |      |
| Vcc Setup Time   |                         |                |                | tvcs           | 50  | —   |     | μs   |
| Rise Time to V <sub>ID</sub> *2                                |                         |                |                | tvidr          | 500 |     | —   | ns   |
| Rise Time to V <sub>ACC</sub> *3                               |                         |                |                | <b>t</b> vaccr | 500 |     |     | ns   |
| Voltage Transition Time *2                                     |                         |                |                | tvlht          | 4   |     |     | μs   |
| Write Pulse Wic  | Write Pulse Width *2    |                |                | twpp           | 100 |     |     | μs   |

(Continued)

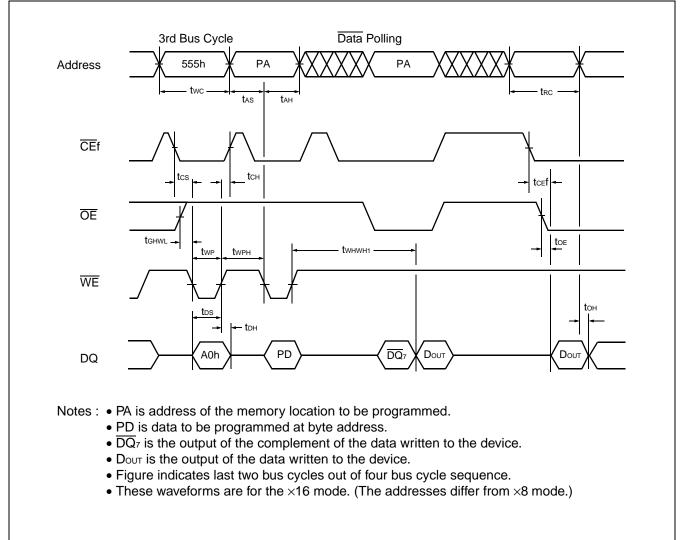
| Peromotor                                 | Symbol |               | Value |     |     | l Init |
|---|--------|---------------|-------|-----|-----|--------|
| Parameter                                 | JEDEC  | Standard      | Min   | Тур | Max | Unit   |
| OE Setup Time to WE Active *2             |        | toesp         | 4     |     |     | μs     |
| CE Setup Time to WE Active *2             |        | tcsp          | 4     |     | _   | μs     |
| Recover Time from RY/BY                   |        | trв           | 0     |     |     | ns     |
| RESET Pulse Width                         |        | <b>t</b> RP   | 500   |     | _   | ns     |
| RESET High Level Period Before Read       | —      | tкн           | 200   |     | _   | ns     |
| BYTE Switching Low to Output High-Z       |        | <b>t</b> FLQZ |       |     | 30  | ns     |
| BYTE Switching High to Output Active      |        | <b>t</b> fhqv |       |     | 70  | ns     |
| Program/Erase Valid to RY/BY Delay        |        | <b>t</b> BUSY |       |     | 90  | ns     |
| Delay Time from Embedded<br>Output Enable |        | <b>t</b> eoe  | _     | _   | 70  | ns     |
| Erase Time-out Time                       | —      | tтоw          | 50    |     | _   | μs     |
| Erase Suspend Transition Time             |        | <b>t</b> spd  |       |     | 20  | μs     |

\*1: This does not include preprogramming time.

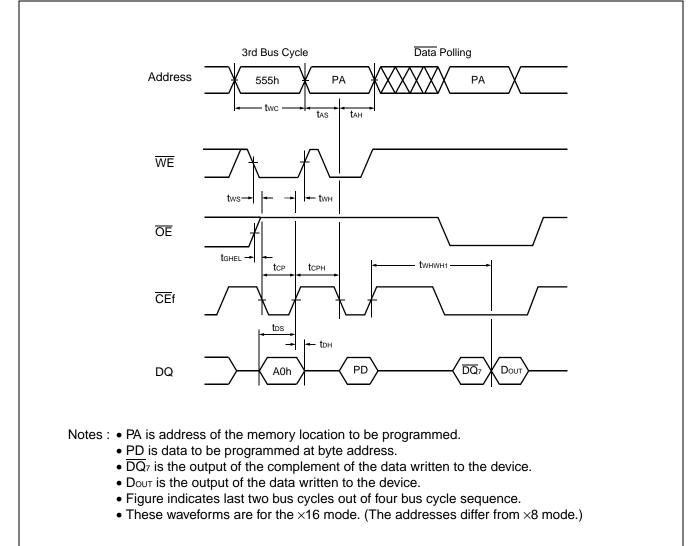
\*2: This timing is for Sector Group Protection operation.

\*3: This timing is for Accelerated Program operation.

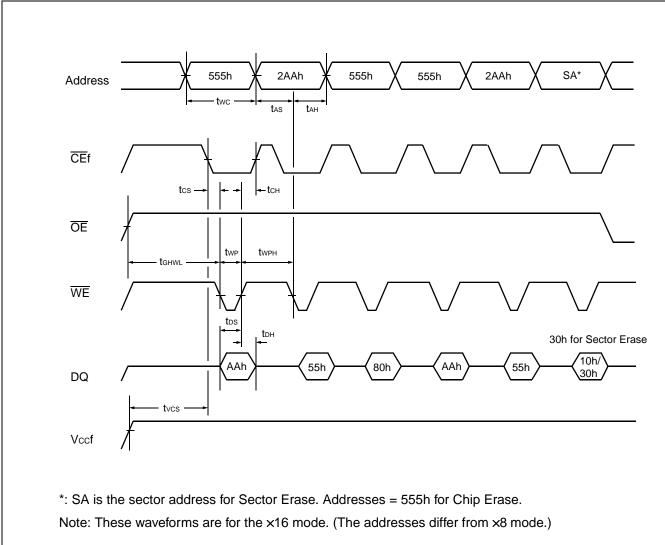
• Write Cycle (WE control) (Flash)

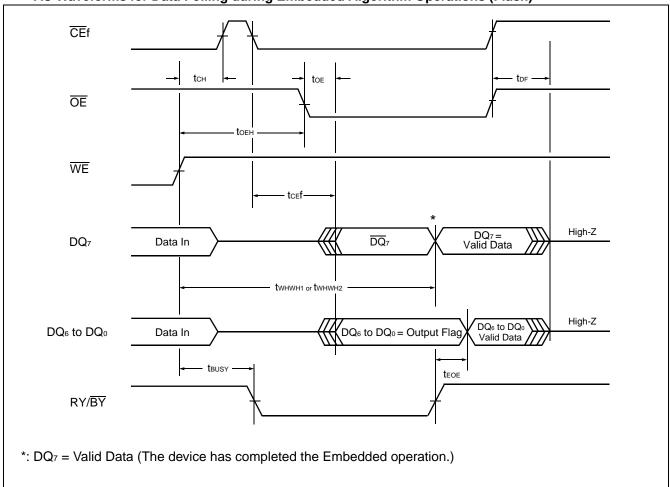


• Write Cycle (CEf control) (Flash)

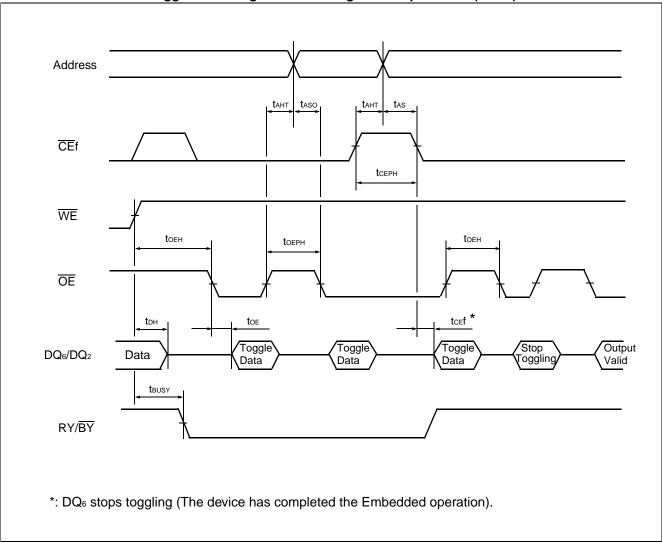




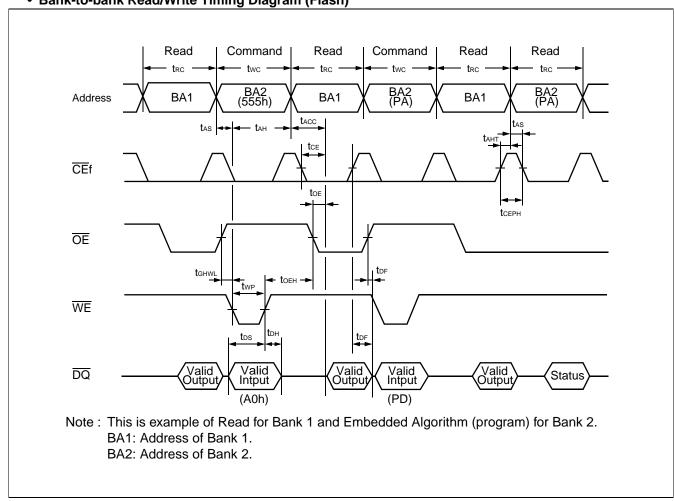




### • AC Waveforms for Data Polling during Embedded Algorithm Operations (Flash)

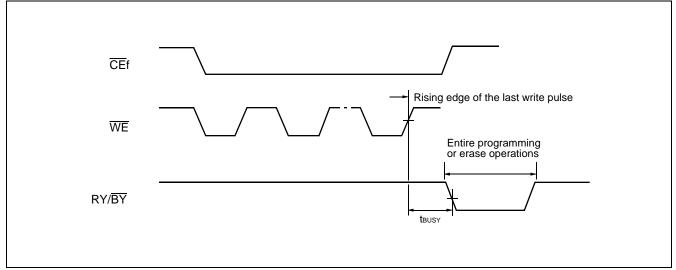


• AC Waveforms for Toggle Bit during Embedded Algorithm Operations (Flash)

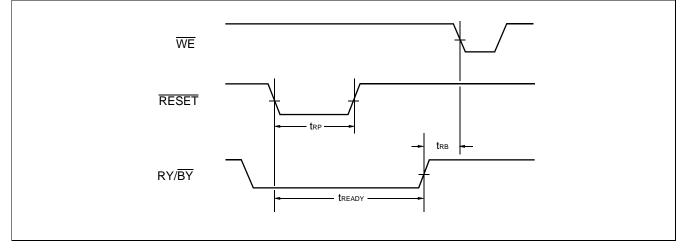


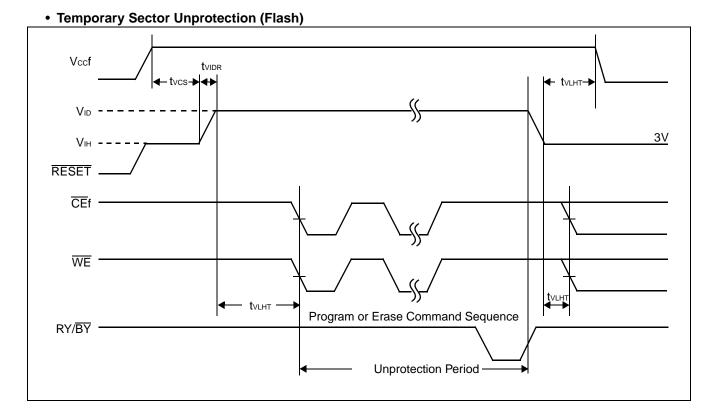
#### • Bank-to-bank Read/Write Timing Diagram (Flash)

### • RY/BY Timing Diagram during Write/Erase Operations (Flash)

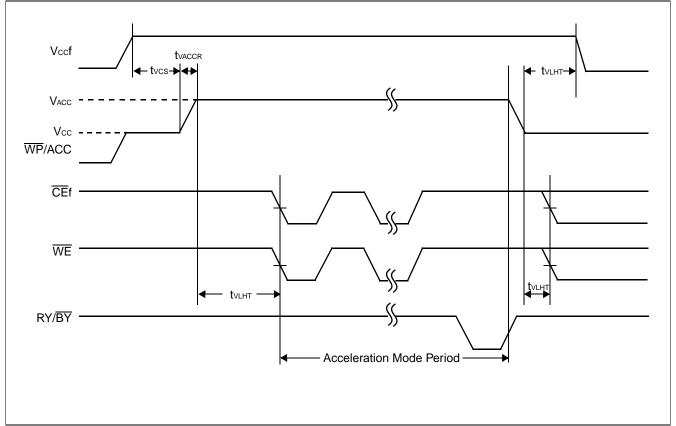


### • RESET, RY/BY Timing Diagram (Flash)

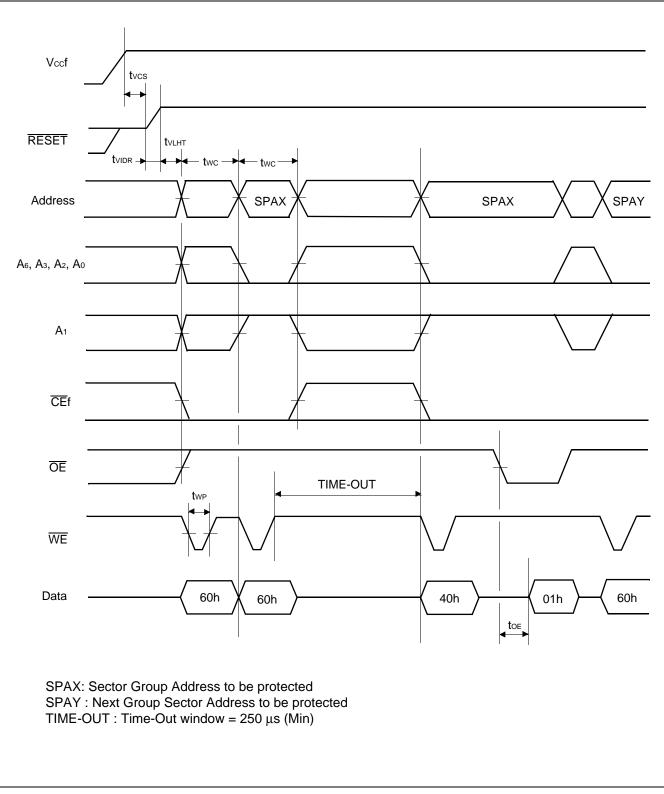




#### • Acceleration Mode Timing Diagram (Flash)



• Extended Sector Group Protection (Flash)



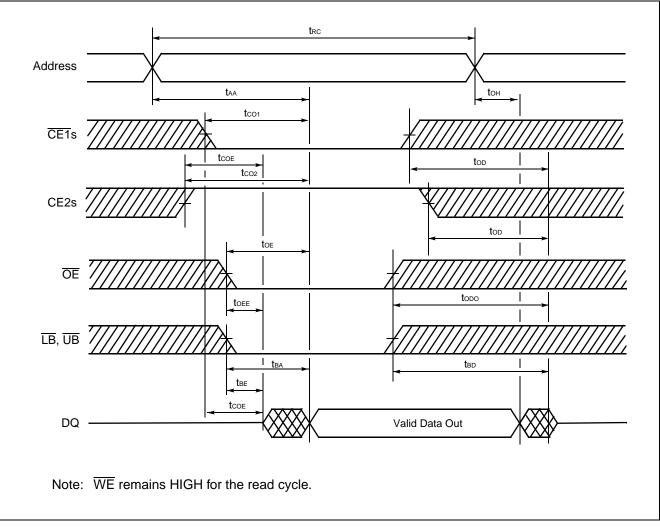
#### ■ 8M SRAM CHARACTERISTICS for MCP

• Read Cycle (SRAM)

| Parameter   | Symbol       | Va  | Unit |      |
|---|--------------|-----|------|------|
| Falametei   | Symbol       | Min | Max  | Unit |
| Read Cycle Time                                       | <b>t</b> RC  | 70  | —    | ns   |
| Address Access Time                                   | <b>t</b> AA  | —   | 70   | ns   |
| Chip Enable (CE1s) Access Time                        | tco1         | —   | 70   | ns   |
| Chip Enable (CE2s) Access Time                        | tco2         | —   | 70   | ns   |
| Output Enable Access Time                             | <b>t</b> OE  | —   | 35   | ns   |
| LB, UB to Output Valid                                | tва          | —   | 70   | ns   |
| Chip Enable (CE1s Low and CE2s High) to Output Active | <b>t</b> COE | 5   | —    | ns   |
| Output Enable Low to Output Active                    | toee         | 0   | —    | ns   |
| LB, UB Enable Low to Output Active                    | tве          | 0   | —    | ns   |
| Chip Enable (CE1s High or CE2s Low) to Output High-Z  | tod          | —   | 25   | ns   |
| Output Enable High to Output High-Z                   | todo         | —   | 25   | ns   |
| LB, UB Output Enable to Output High-Z                 | <b>t</b> BD  | —   | 25   | ns   |
| Output Data Hold Time                                 | tон          | 10  | —    | ns   |

Note: Test Conditions-Output Load:1 TTL gate and 30 pF

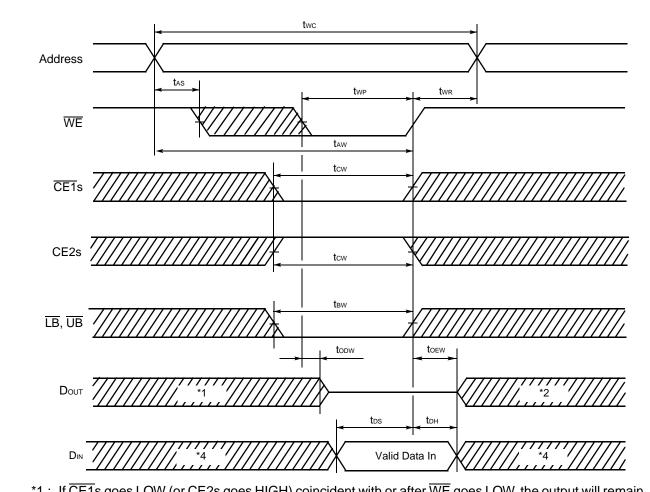
Input rise and fall times: 5 ns Input pulse levels: 0.0 V or 3.0 V Timing measurement reference level Input:  $0.5 \times Vccs$ Output:  $0.5 \times Vccs$  • Read Cycle (SRAM)



#### • Write Cycle (SRAM)

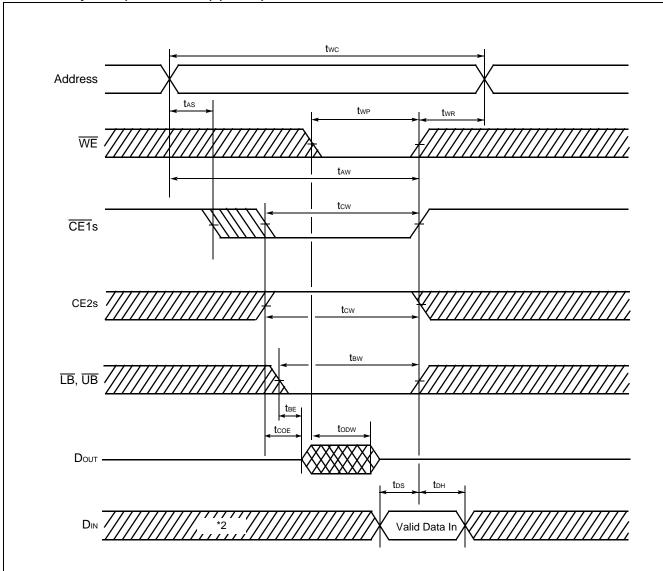
| Parameter                     | Symbol | Va  | Unit |      |
|-------------------------------|--------|-----|------|------|
| Falametei                     | Symbol | Min | Max  | Unit |
| Write Cycle Time              | twc    | 70  | —    | ns   |
| Write Pulse Width             | twp    | 50  | —    | ns   |
| Chip Enable to End of Write   | tcw    | 55  | —    | ns   |
| Address valid to End of Write | taw    | 55  | —    | ns   |
| LB, UB to End of Write        | tвw    | 55  | —    | ns   |
| Address Setup Time            | tas    | 0   | —    | ns   |
| Write Recovery Time           | twr    | 0   | —    | ns   |
| WE Low to Output High-Z       | todw   | —   | 25   | ns   |
| WE High to Output Active      | toew   | 0   | —    | ns   |
| Data Setup Time               | tos    | 30  | —    | ns   |
| Data Hold Time                | tрн    | 0   |      | ns   |

• Write Cycle \*3 (WE control) (SRAM)



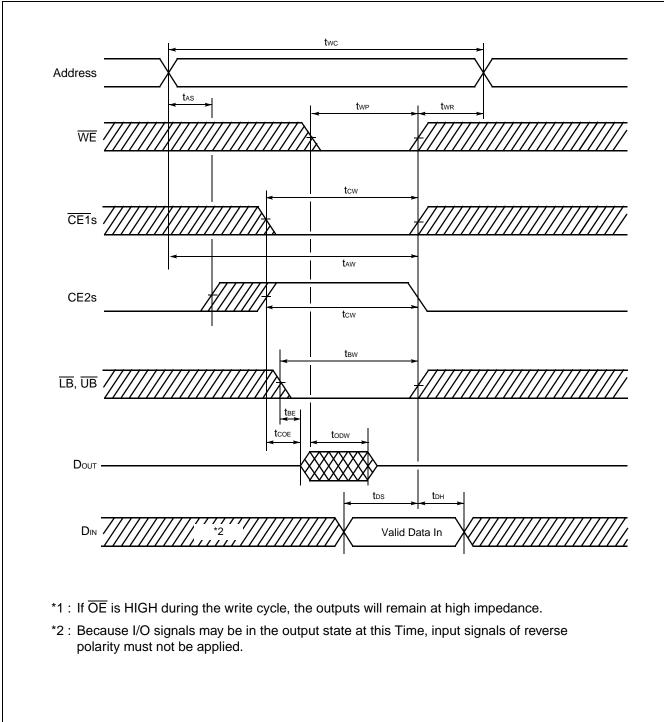
- \*1 : If CE1s goes LOW (or CE2s goes HIGH) coincident with or after WE goes LOW, the output will remain at high impedance.
- \*2 : If CE1s goes HIGH (or CE2s goes LOW) coincident with or before WE goes HIGH, the output will remain at high impedance.
- \*3 : If OE is HIGH during the write cycle, the outputs will remain at high impedance.
- \*4 : Because I/O signals may be in the output state at this Time, input signals of reverse polarity must not be applied.

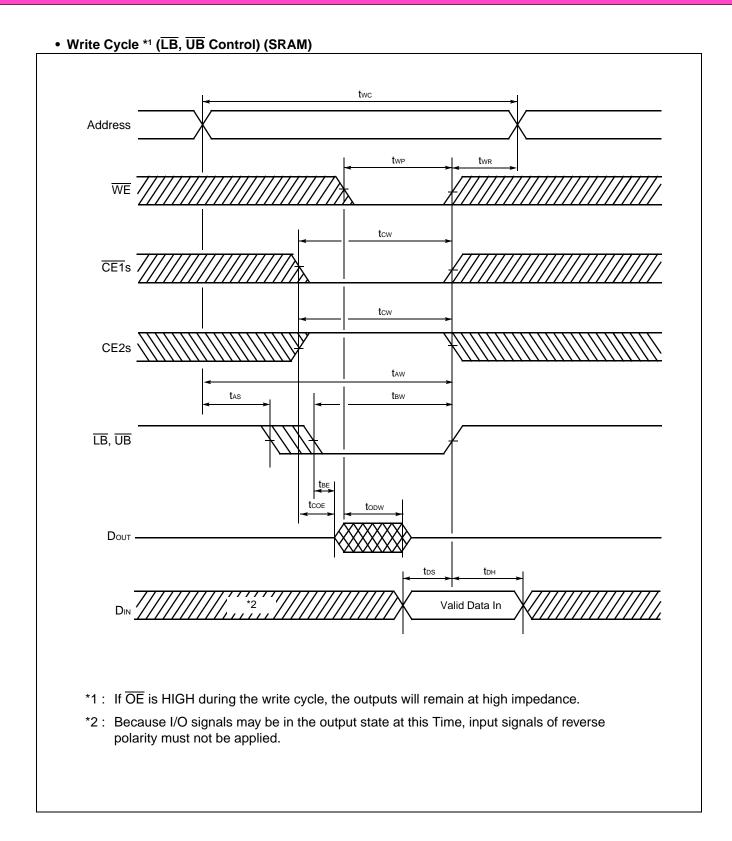
Write Cycle \*1 (CE1s control) (SRAM)



- \*1 : If  $\overline{\text{OE}}$  is HIGH during the write cycle, the outputs will remain at high impedance.
- \*2 : Because I/O signals may be in the output state at this Time, input signals of reverse polarity must not be applied.

• Write Cycle \*1 (CE2s Control) (SRAM)





### ■ ERASE AND PROGRAMMING PERFORMANCE (Flash)

| Parameter             | Value   |      |     | Unit  | Remarks                                    |  |
|-----------------------|---------|------|-----|-------|--|--|
| Farameter             | Min     | Тур  | Max | Onit  | Rellidiks                                  |  |
| Sector Erase Time     | _       | 0.5  | 2   | S     | Excludes programming time prior to erasure |  |
| Word Programming Time |         | 6    | 100 | μs    | Excludes system-level<br>overhead          |  |
| Byte Programming Time | _       | 4    | 80  | μs    | Excludes system-level<br>overhead          |  |
| Chip Programming Time | _       | 25.2 | 95  | S     | Excludes system-level<br>overhead          |  |
| Erase/Program Cycle   | 100,000 | _    | _   | cycle |  |  |

Note : Typical Erase conditions  $T_A = +25^{\circ}C$ , VCCf\_1 & VCCf\_2 = 2.9 V Typical Program conditions  $T_A = +25^{\circ}C$ , VCCf\_1 & VCCf\_2 = 2.9 V D

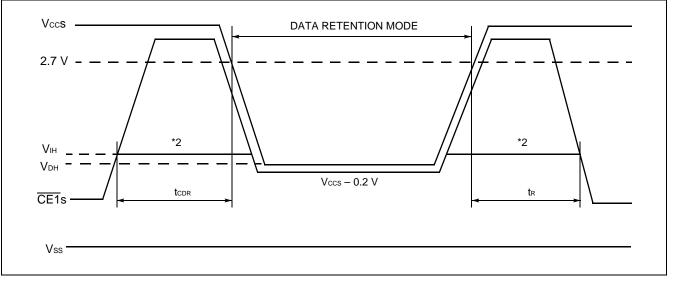
Data= Checker

#### ■ DATA RETENTION CHARACTERISTICS (SRAM)

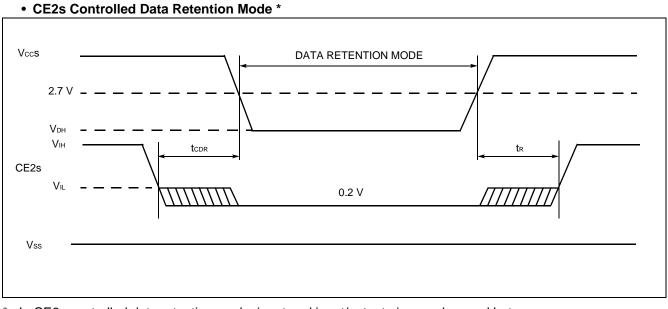
| Parameter                                 |                         | Symbol         | Value       |     |     | Unit |
|---|-------------------------|----------------|-------------|-----|-----|------|
|   |                         | Symbol         | Min         | Тур | Max | Onit |
| Data Retention Supply Voltage             |                         | Vdh            | 1.5         | _   | 3.1 | V    |
| Standby Current                           | V <sub>DH</sub> = 3.0 V | DDS2           | —           | —   | 15  | μA   |
| Chip Deselect to Data Retention Mode Time |                         | <b>t</b> cdr   | 0           | _   | —   | ns   |
| Recovery Time                             |                         | t <sub>R</sub> | <b>t</b> RC |     |     | ns   |

Note : tRC: Read cycle time

#### • CE1s Controlled Data Retention Mode \*1



- \*1 : In CE1s controlled data retention mode, input level of CE2s should be fixed Vccs to Vccs–0.2 V or Vss to 0.2 V during data retention mode. Other input and input/output pins can be used between –0.3 V to Vccs+0.3 V.
- \*2 : When CE1s is operating at the VIH Min level, the standby current is given by IsB1s during the transition of Vccs from Vccs Max to VIH Min level.



 \*: In CE2s controlled data retention mode, input and input/output pins can be used between -0.3 V to Vccs+0.3V.

### ■ PIN CAPACITANCE

| Parameter               | Symbol | Test Setup          | Val  | Unit |      |
|-------------------------|--------|---------------------|------|------|------|
|                         | Symbol | Test Setup          | Тур  | Max  | Unit |
| Input Capacitance       | CIN    | V <sub>IN</sub> = 0 | 11   | 14   | pF   |
| Output Capacitance      | Соит   | Vout = 0            | 12   | 16   | pF   |
| Control Pin Capacitance | CIN2   | V <sub>IN</sub> = 0 | 14   | 16   | pF   |
| WP/ACC Pin Capacitance  | Сімз   | V <sub>IN</sub> = 0 | 21.5 | 26   | pF   |

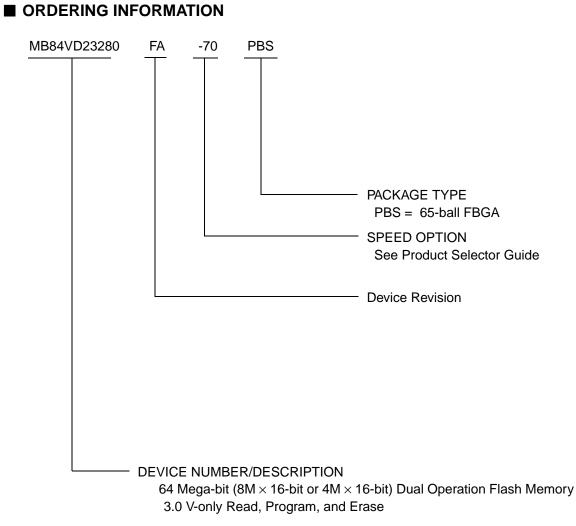
Note: Test conditions Ta =  $+25^{\circ}$ C, f = 1.0 MHz

### HANDLING OF PACKAGE

Please handle this package carefully since the sides of packages are right angle.

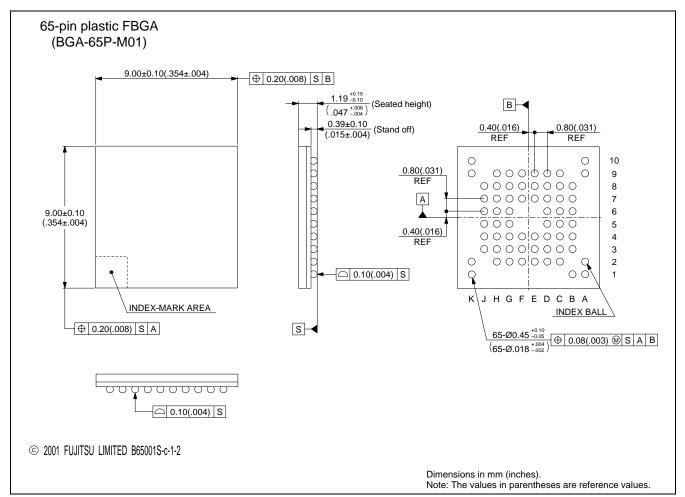
### ■ CAUTION

- (1) The high voltage (V<sub>ID</sub>) can not apply to address pins and control pins except RESET. Therefore, it can not use autoselect and sector protect function by applying the high voltage (V<sub>ID</sub>) to specific pins.
- (2) For the sector protection, since the high voltage (V<sub>ID</sub>) can be applied to the RESET, it can be protected the sector useing "Extended sector protect" command.



8 Mega-bit(1M  $\times$  8-bit or 512K  $\times$  16-bit) SRAM

#### ■ PACKAGE DIMENSION



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