memorix elektronik
PCMCIA / JEIDA SRAM CARD 8 Bit Data Bus

Contents

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PCMCIA / JEIDA SRAM CARD 8Bit
Features

★ PCMCIA / JEIDA standard ★ Dual back-up battery design
★ 1 Mbytes ~ 8 Mbytes memory capacity ★ BR2325 and CR2025 used as main battery
★ **8 Bit data bus**
★ Battery voltage detection function
★ Fast access time : 150ns (maximum) ★ Built-in write protect switch
★ Attribute memory : 2K byte E2PROM '
★ Battery case lock system
★ Connector type : 2-piece,2-row,68 pins
★ Single +5V operating voltage ★ Credit card size : 54.0 x 85.6 x 3.3 (mm)
★ Commercial / Industrial grade

General Description

memorix high performance SRAM cards conform to the PCMCIA / JEIDA international standard and consist of multiple very low power consumption CMOS SRAM ICs , decoder IC and power control IC mounted on a very thin printed circuit board using surface mounting technology. With the dual back-up battery design , each SRAM card contains a replaceable but non-rechargeable 3V lithium battery (main battery) and an on-board rechargeable but non-replaceable battery (auxiliary battery) for data retention. This design allows replacement of main battery without data loss for 20 minutes approximately. Digital signals on the BVD1*/BVD2* pins were used to alarm the user whether the main battery should be replaced to prevent the stored data from loss. With the flexible and user-friendly design , both BR2325 and CR2025 can be used as main battery. There is battery case lock system to prevent battery dropping from the card. Also , with the write-protect switch design , data will not be written into the card by accident.Memory card attribute information represents various attribute information of a card and is stored at EVEN address of a " attribute memory" space which is enabled by asserting REG* signal. Regarding to the attribute information format , please refer to the PCMCIA 2.0 or JEIDA 4.1 specification. With the flexible design of this series cards , they provide 2K bytes E**2**PROM available for attribute memory

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Product Number Definition

Product Number

SC001M-15C-00-A002K-8bit
SC SRAM Card
001M 1 Mbyte Capacity
15 Access time (150 ns)
C Common temperature range 0° C ~70 ° C
I Industrial Temperaturerange -25° C ~ +70° C
A002K (optional) Attribut memory 2Kbyte
8 Bit Data Bus

Product List

SRAM Cards
SC001M-15C-00-A002K-8bit
SC002M-15C-00-A002K-8bit
SC004M-15C-00-A002K-8bit
SC008M-15C-00-A002K-8bit
Commercial Temperature Range 0° C ~70 ° C

Product List

SRAM Cards
SC001M-15I-00-A002K-8bit
SC002M-15I-00-A002K-8bit
SC004M-15I-00-A002K-8bit
SC008M-15I-00-A002K-8bit
Industrial Temperature Range -25° C ~ +75° C

Recommended Operating Conditions

Supply Voltage VCC 4.5 5.5 V
Input High Voltage VIH 0.7VCC VCC + 0.3 V
Input Low Voltage VIL - 0.3 0.8 V
Battery Voltage VBAT 2.37 V

Relative Humidity (non-condensing) HUM 95 %

Absolute Maximum Ratings *

Parameter Symbol Value Unit
Supply Voltage VCC -0.5 to + 6.0 V
Input Voltage VIN -0.5 to VCC + 0.3 (6V max.) V
Output Voltage VOUT -0.5 to + 6.0 V
Operating Temperature (Commercial) TOPR -0 to + 70 °C
Storage Temperature (Commercial) TSTR -25 to + 70 °C
Operating Temperature (Industrial) TOPR -25 to + 75 °C
Storage Temperature(Industrial) TSTR -40 to + 85 °C
Relative Humidity (non-condensing) HUM 95 (maximum) %

***Comments**

Stress above those listed under " Absolute Maximum Ratings " may cause permanent damage to the products. These are stress rating only. Functional operation of these products at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect product reliability.

DC Electrical Characteristics

(recommended operating conditions unless otherwise noted)

Symbol Parameter Min. Max. Unit Test Conditions
I_{LI} Input Leakage Current -10 10 uA V_{IN} = 0V to Vcc (Note 3)
-70 10 uA V_{IN} = 0V to Vcc (Note 4)
I_{LO} Output Leakage Current -10 10 uA CE1* = CE2* = V_{IH} or OE* = V_{IH} ,
$V_{I/O}$ = 0V to V_{CC} (Note 1)
V_{OH} Output High Voltage 3.8 V I_{OH} = -2mA (Note 2)
V_{OL} Output Low Voltage 0.4 V I_{OL} = 3.2mA (Note 2)
V_{IH} Input High Voltage 0.7Vcc Vcc+0.3 V
V_{IL} Input Low Voltage -0.3 0.3Vcc V
I_{CC} Vcc Operating Current 120 mA Min. cycle , I_{Out} = 0mA
I_{SB} Vcc Standby Current 0.1 mA For page 3 & 4, item 9
(CE1*= CE2*= V_{IH} or 0.2 mA For page 3 & 4, item 10
CE1*= CE2*≥VCC - 0.2V) 0.1 mA For page 3 & 4, item 11,17

AC Electrical Characteristics (Common Memory)

(recommended operating conditions unless otherwise noted)

Read Cycle (Common Memory)

Symbol Parameter Min. Max. Unit Test Condition
t_{cr} Read Cycle Time 150 ns
$t_{a(A)}$ Address Access Time 150 ns
$t_{a(CE)}$ Card Enable Access Time 150 ns
$t_{a(OE)}$ Output Enable Access Time 75 ns
$t_{dis(CE)}$ Output Disable Time (CE*) 75 ns
$t_{dis(OE)}$ Output Disable Time (OE*) 75 ns
$t_{en(CE)}$ Output Enable Time (CE*) 5 ns
$t_{en(OE)}$ Output Enable Time (OE*) 5 ns
$t_{v(A)}$ Data Hold Time (from address changed) 0 ns

Write Cycle (Common Memory)

Symbol Parameter Min. Max Unit Test Condition
t_{cw} Write Cycle Time 150 ns
$t_{w(WE)}$ Write Pulse Width 80 ns
$t_{su(A)}$ Address Setup Time 20 ns
$t_{su(A-WEH)}$ Address Setup Time (WE*) 100 ns
$t_{su(CE-WEH)}$ CE* Setup Time (WE*) 100 ns
$t_{su(D-WEH)}$ Data Setup Time (WE*) 50 ns
$t_{h(D)}$ Data Hold Time 20 ns
$t_{rec(WE)}$ Write Recovery Time 20 ns
$t_{dis(WE)}$ Output Disable Time (WE*) 75 ns
$t_{dis(OE)}$ Output Disable Time (OE*) 75 ns
$t_{en(WE)}$ Output Enable Time (WE*) 5 ns
$t_{en(OE)}$ Output Enable Time (OE*) 5 ns
$t_{en(OE-WE)}$ Output Enable Setup Time (WE*) 10 ns
$t_{h(OE-WE)}$ Output Enable Hold Time (WE*) 10 ns

AC Electrical Characteristics (Attribute Memory)

(recommended operating conditions unless otherwise noted)

Read Cycle (Attribute Memory)

Symbol Parameter Min. Max Unit Test Condition
tcr Read Cycle Time 300 ns
ta(A) Address Access Time 300 ns
ta(CE) Card Select Access Time 300 ns
ta(OE) Output Enable Access Time 150 ns
tdis(CE) Output Disable Time (from CE*) 100 ns
tdis(OE) Output Disable Time (from OE*) 100 ns
ten(CE) Output Enable Time (from CE*) 5 ns
ten(OE) Output Enable Time (from OE*) 5 ns
tv(A) Data Hold Time (from address changed) 0 ns

Write Cycle (Attribute Memory)

Symbol Parameter Min. Max. Unit Test Condition
tCW Write Cycle Time 1 ms
tAS Address Setup Time 30 ns
tAH Address Hold Time 50 ns
tWP Write Pulse Width 120 ns
tCS Card Enable Time to WE* 15 ns
tCH Card Enable Hold Time from WE* High 0 ns
tDS Data Setup Time 70 ns
tDH Data Hold Time 30 ns
tOES OE* Setup Time 30 ns
tOEH OE* Hold Time 30 ns
tDB Delay from WE* high to BUSY* Asserted 50 ns

Battery Voltage Detection

BVD1*/BVD2* pins are used to monitor the voltage of the main battery which should be maintained at 2.65V or greater for data retention. The following table described the main battery status by reading the signals on
BVD1*/BVD2* pins.

BVD1* BVD2* Main Battery Comments
H H $V_{BAT} \geq$ 2.65V Data retention is OK. Battery is operational
H L 2.37V < V_{BAT} < 2.65V Data retention is OK. But battery should be replaced.
L L V_{BAT} < 2.37V Data integrity is not guaranteed.
Battery must be replaced.
Note : if the main battery is removed , BVD1* and BVD2* pins will not function

Main Battery Specifications

- 3V Lithium battery
- Recommended parts .

RAYOVAC BR2325
TOSHIBA CR2025
PANASONIC BR2325
PANASONIC CR2025

Approximate Battery Life Time Under Battery Back-up Only
(Ta=25°C, Humidity=60% R.H.)

Product Part No. Battery Life Product Part No. Battery Life

SC001M-15C-00-A002K-8bit 3,5 years SC001M-15I-00-A002K-8bit 3,0 years
SC002M-15C-00-A002K-8bit 1,5 years SC002M-15I-00-A002K-8bit 1,0 years
SC004M-15C-00-A002K-8bit 1,0 years SC004M-15I-00-A002K-8bit 0,5 years
SC008M-15C-00-A002K-8bit 0,5 years SC006M-15I-00-A002K-8bit 0,5 years