

# **VDIC ASYNCHRONOUS STATIC RAM**

## **VDSR4M08XS44XX1C12 USER MANUAL**

**Version : B3**

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# VDIC-SRAM

## HIGH-SPEED 5.0V 512K × 8 bit

## ASYNCHRONOUS STATIC RAM

### 1 Description

The VDSR4M08XS44XX1C12 is a high-speed access time, high-density Static Random Access Memory with 4Mbit. Manufactured with VDIC Very Dense SIP technology, this block is stacked by one SRAM die employing CMOS process. It is organized as 512K×8bit wide data interface .The block can be selected separately with dedicated #CE.

Low interconnect parasitic capacitance of the stacking technology, by reducing the connection length, allows this SRAM module to be useful for a variety of high bandwidth, high performance and high density memory system applications.

The VDSR4M08XS44XX1C12 is available in a 44-pin SOP package.

### 2 Features

- High-speed access time: 12ns
- TTL compatible inputs and outputs
- Organized as 512k × 8-bit
- Single +5 ± 0.5V power supply
- Fully Static Operation
  - No clock or refresh required
- Three state Outputs.
- Centre Power/Ground Pin Configuration
- Available Temperature Range:
  - 0°C to 70°C
  - 40°C to +85°C
  - 55°C to +125°C

### 3 Block Diagram

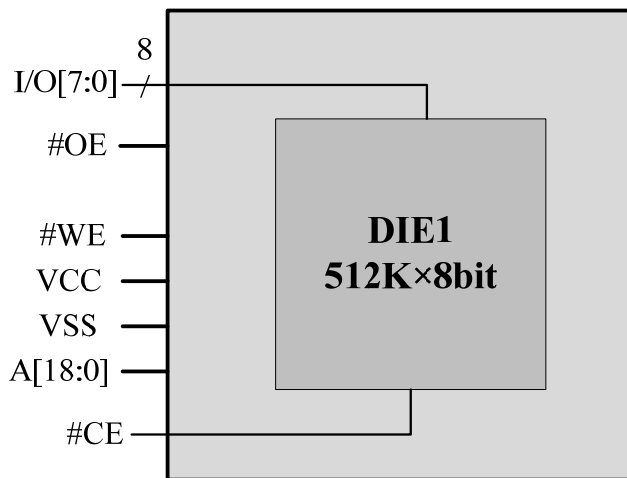


Figure 1 Block diagram

### 4 Pin Descriptions

Pin Id	Pin #	Pin Id
NC	1	44
NC	2	43
A0	3	42
A1	4	41
A2	5	40
A3	6	39
A4	7	38
#CE	8	37
I/O0	9	36
I/O1	10	35
VCC	11	34
VSS	12	33
I/O2	13	32
I/O3	14	31
#WE	15	30
A5	16	29
A6	17	28
A7	18	27
A8	19	26
A9	20	25
NC	21	24
NC	22	23

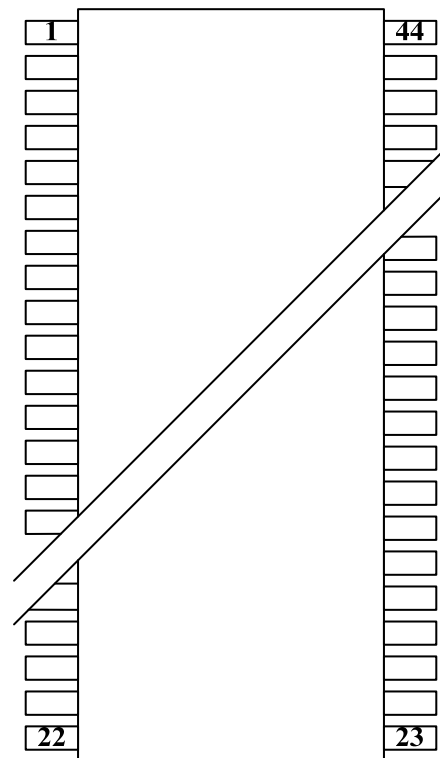


Figure 1 Pin configuration

Table 1 Pin description

Pin	Name	Function
#CE	Block select	Chip Enable Input
A0 ~ A18	Address	Address Inputs
#WE	Write enable	Write Enable Input
#OE	Output enable	Output Enable Input
I/O0~I/O7	Data input/output	Data inputs/outputs 8-bit wide bus
VCC/VSS	Power supply/ground	Power and ground for the input/output buffers and core logic.
NC	No connection	This pin is recommended to be left no Connection on the device.

## 5 Command Operation

### 5.1 Absolute Maximum Ratings

Table 2 Absolute maximum ratings

Parameter	Symbol	Maximum ratings	Unit
Voltage on VCC supply relative to Vss	VCC	-0.5 ~ VCC+0.5	V
Voltage on any pin relative to Vss	V <sub>IN</sub>	-0.5 ~ VCC+0.5	V
Power Dissipation	P <sub>D</sub>	1.0	W
Thermal Resistance Junction to Case	R <sub>J-C</sub>	<20	°C/W
Manual Soldering Temperature Range	T <sub>M</sub>	+250 ~ +280	°C
Reflow Soldering Temperature	T <sub>SOL</sub>	215	°C
Operating Temperature Range	T <sub>OPR</sub>	-55 ~ +125	°C
Storage Temperature Range	T <sub>STG</sub>	-65 ~ +150	°C

### 5.2 Recommended DC Operating Conditions

Table 3 Recommended DC operating condition

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage	VCC	4.5	5.0	5.5	V
Input high voltage	V <sub>IH</sub>	2.0	—	VCC+0.5	V
Input low voltage	V <sub>IL</sub>	-0.5	—	0.8	V

### 5.3 DC Electrical Characteristics

Table 4 DC characteristics

Parameter	Symbol	TEST CONDITIONS	Min	Max	Unit
Output voltage low level	V <sub>OL</sub>	VCC=4.5V, I <sub>OL</sub> = 4mA	—	0.4	V
Output voltage high level	V <sub>OH</sub>	VCC=4.5V, I <sub>OH</sub> = -4.0mA	2.4	—	V

## 6 Typical Application

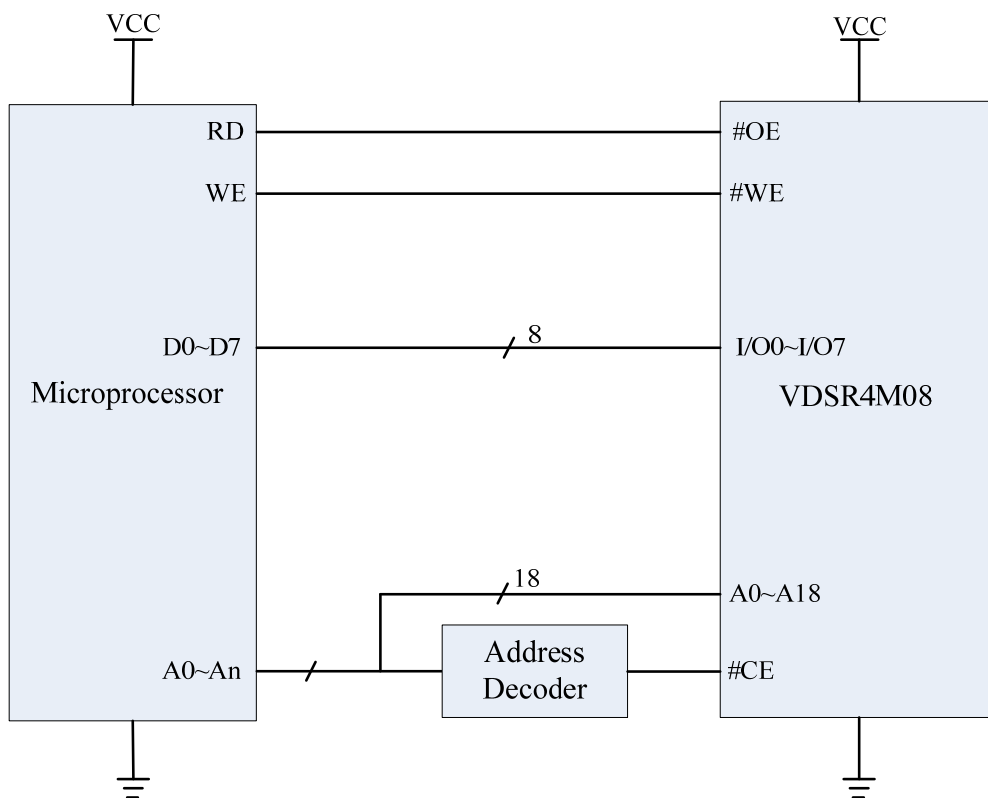


Figure 2 Typical application

## 7 Ordering Information

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>
<u>VD</u>	<u>SR</u>	<u>4M</u>	<u>08</u>	<u>X</u>	<u>S</u>	<u>44</u>	<u>X</u>	<u>X</u>	<u>1</u>	<u>C</u>	<u>12</u>	-
VDIC												
SRAM												
Capability: 4Mbit												
Bus Width: 8bit												
R= Radiation Data Tested; V= Generic Radiation Data Available												
Package: SOP												
Pin Quantity: 44 Pin												
Temperature: E=0~+70°C;I=-40~+85°C; M=-55~+125°C												
Quality: E= Sample; B= Industry; M=Military; S= Space												
Stacking Layer: 1layer												
Power Supply : 5.0V												
Speed: 12ns												
Version: First Version												

Table 5 Ordering information

Part Number	Capacity (bit)	Bus Width (bit)	Radiation			Packaging	Temperature ( °C )
			TID <sup>1</sup>	SEL <sup>2</sup>	SEU <sup>3</sup>		
VDSR4M08VS44EE1C12	4M	8	-	-	-	SOP44	0 ~ + 70
VDSR4M08VS44IB1C12	4M	8	-	-	-	SOP44	-40 ~ + 85
VDSR4M08VS44MM1C12	4M	8	-	-	-	SOP44	-55 ~ + 125
VDSR4M08RS44MS1C12	4M	8	> 100	> 59	> 0.2	SOP44	-55 ~ + 125

<sup>1</sup> TID: Total Dose (Krad(Si))

<sup>2</sup> SEL: LET Threshold (Mev.cm2/mg)

<sup>3</sup> SEU:SEU Threshold (Mev.cm2/mg)

### 8 Package Dimensions

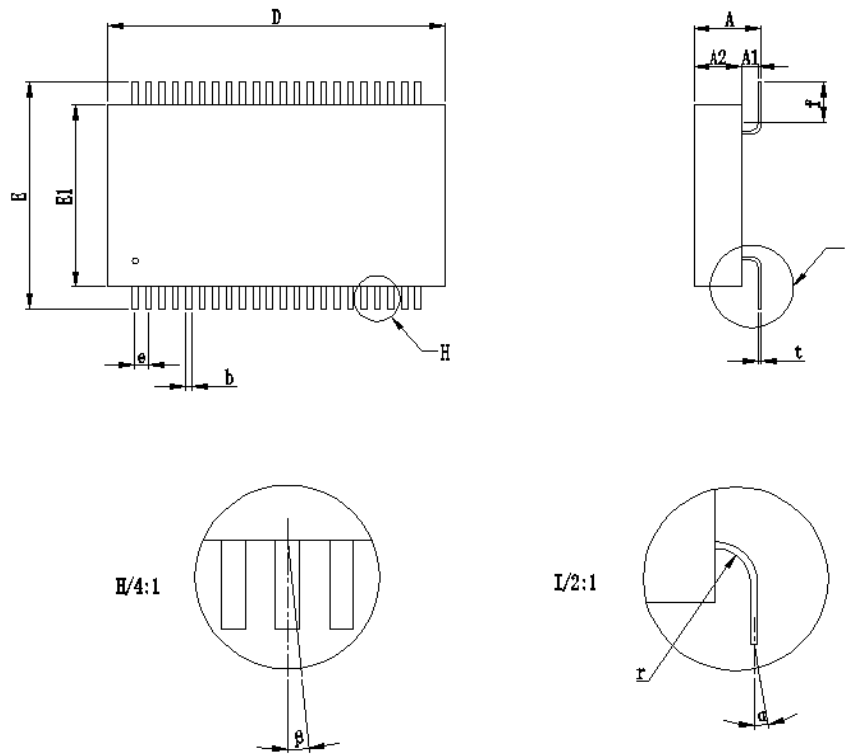


Figure 3 Package dimensions

Table 6 Dimensions information

	Min	Max
A	3.70	4.40
A2	2.50	3.10
D	19.80	20.20
E	13.40	13.80
E1	10.80	11.20
f	2.00	
b	0.35	
e	0.80	
r	1.00	
t	0.20	
$\alpha$	$\leq 3^\circ$	
$\beta$	$\leq 3^\circ$	
NOTE: 1. Unit: mm 2. $A1 = A - A2$		



## 9 Revision History

**Table 7 Revision history**

Revision	Date	Description of Change
A0	Nov 3,2015	First Created
A1	Mar 14,2016	Modified the PIN DESCRIPTIONS
A2	Aug 23,2016	Modified the ORDERING INFORMATION
A3	Jan 9,2017	Modified the PACKAGE DIMENSIONS
A4	Oct.25,2017	Changed company's name to Zhuhai Orbita Aerospace Science & Technology Co., Ltd
A5	Nov.15.2017	Modified Features
B0	Apr 13,2018	Add or reduce chapters
B1	Feb21,2019	Change Features and Command Operation
B2	Apr 15, 2019	Change Features
B3	May 15, 2019	Change Features
B4	Mar 21,2020	Update TID and SEE