

# **VDIC EEPROM MEMORY**

## **VDEE4M32XS64XX4V250-II USER MANUAL**

**Version : A0**

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## Contents

1	Description.....	1
2	Features.....	1
3	Block Diagram.....	2
4	Pin Configurations.....	3
5	Command Operation.....	4
5.1	Absolute Maximum Ratings.....	4
5.2	Recommended DC Operating Conditions.....	4
5.3	DC Characteristics ( VCC =2.7V to 3.6 V).....	4
6	Typical Application.....	5
7	Ordering Information.....	6
8	Package Dimensions.....	7
9	REVISION HISTORY.....	8

# VDIC-EEROM

## 3.3V 128K x 32bit

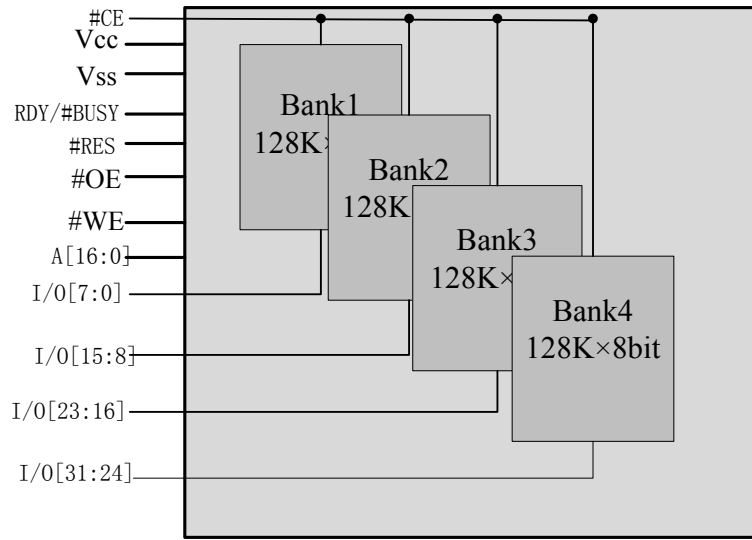
### 1 Description

The VDEE4M32XS64XX4V250-II is a 131,072 word×32 bit Electrically Erasable and Programmable CMOS ROM. It is organized as 4 dies of 1Mbit. Each die has 8-bit interface. All other signals are common to the four EEPROM 1Mbit. The device is manufactured using well known SiP technology. It is particularly well suited for use in high reliability, high performance and high density system applications. The VDEE4M32XS64XX4V250-II is packaged in a 64 pins SOP.

### 2 Features

- Single 3.3 V supply: 2.7 V to 5.5 V
- Access time: 250 ns (max)
- Power dissipation
  - Active: 100 mW/MHz, (max)
  - Standby: 550  $\mu$ W (max)
- On-chip latches: address, data, #CE, #OE, #WE
- Automatic byte write: 10 ms (max)
- Automatic page write (128 bytes): 10 ms (max)
- Data polling and RDY/#Busy
- Data protection circuit on power on/off
- Conforms to JEDEC byte-wide standard
- Reliable CMOS with MNOS cell technology
- $10^4$ erase/write cycles (in page mode)
- 10 years data retention
- Software data protection
- Write protection by #RES pin

### 3 Block Diagram



(All other signals are common to the four memories)

Figure 1 Block diagram

### 4 Pin Configurations

Pin Id	Pin #		Pin Id
A11	1	64	I/O24
A9	2	63	I/O16
A8	3	62	I/O8
A4	4	61	I/O0
A5	5	60	I/O25
A6	6	59	I/O17
A7	7	58	I/O9
A12	8	57	I/O1
A14	9	56	I/O26
A16	10	55	I/O18
RDY/#BUSY	11	54	I/O10
VCC	12	53	I/O2
VCC	13	52	I/O27
VCC	14	51	I/O19
VCC	15	50	I/O11
A15	16	49	I/O3
#RES	17	48	I/O28
#WE	18	47	I/O20
A13	19	46	I/O12
A0	20	45	I/O4
A1	21	44	I/O29
A2	22	43	I/O21
A3	23	42	I/O13
VSS	24	41	I/O5
VSS	25	40	I/O30
VSS	26	39	I/O22
VSS	27	38	I/O14
#CE	28	37	I/O6
NC	29	36	I/O31
NC	30	35	I/O23
A10	31	34	I/O15
#OE	32	33	I/O7

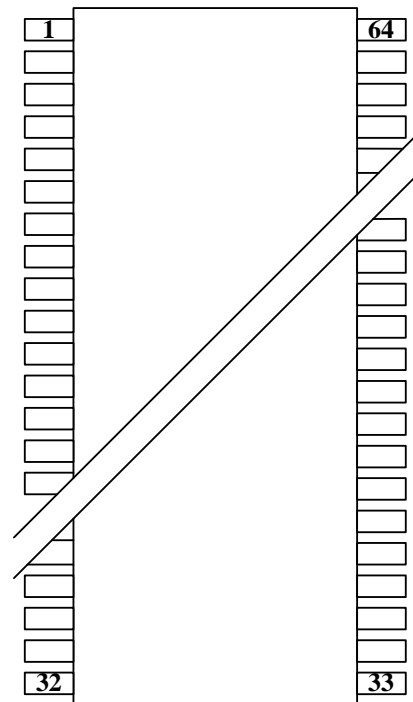


Figure 2 Pin configuration

Table 1 Pin description

Name	Function
A0~A16	Address Input.
I/O0- I/O31	Data Input/Output Ports. 40 bit-directional ports are used to read data from or write data into the EEPROM.
#CE	Die Enable Input .When #CE is Low, the command input cycle becomes valid. When #CEn is High, all inputs are ignored.
RDY/#BUSY	Ready busy.
#RES	Reset input.

#OE	Output enable.
#WE	Write Enable Input. Enables write operation.
VCC	Power supply, connect to 3.3V
VSS	Ground

## 5 Command Operation

### 5.1 Absolute Maximum Ratings

Table 2 Absolute maximum ratings

Parameter	Symbol	Value	Unit
Supply voltage relative to V <sub>SS</sub>	V <sub>CC</sub>	-0.6 to +7.0	V
Input voltage relative to V <sub>SS</sub>	V <sub>IN</sub>	-0.5 to +7.0	V
Operating temperature range	T <sub>OPR</sub>	-55 to +125	°C
Storage temperature range	T <sub>STG</sub>	-65 to +150	°C
Power Dissipation	P <sub>D</sub>	1	W

### 5.2 Recommended DC Operating Conditions

Table 3 Recommended DC operating condition

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage	V <sub>CC</sub>	2.7	3.3	3.6	V
	V <sub>SS</sub>	0	0	0	V
Input voltage	V <sub>IL</sub>	-0.3	-	0.8	V
	V <sub>IH</sub>	1.9	-	V <sub>CC</sub> +0.3	V
	V <sub>H</sub>	V <sub>CC</sub> -0.5	-	V <sub>CC</sub> +1.0	V

### 5.3 DC Characteristics ( VCC =2.7V to 5.5 V)

Table 4 DC characteristics

Parameter	Symbol	Test conditions	min.	max.	Unit
Output voltage low level	VOL	V <sub>CC</sub> =2.7V , I <sub>OL</sub> = 2.1mA	—	0.4	V
Output voltage high level	VOH	V <sub>CC</sub> =2.7V , I <sub>OH</sub> = -400uA	2.16	—	V

## 6 Typical Application

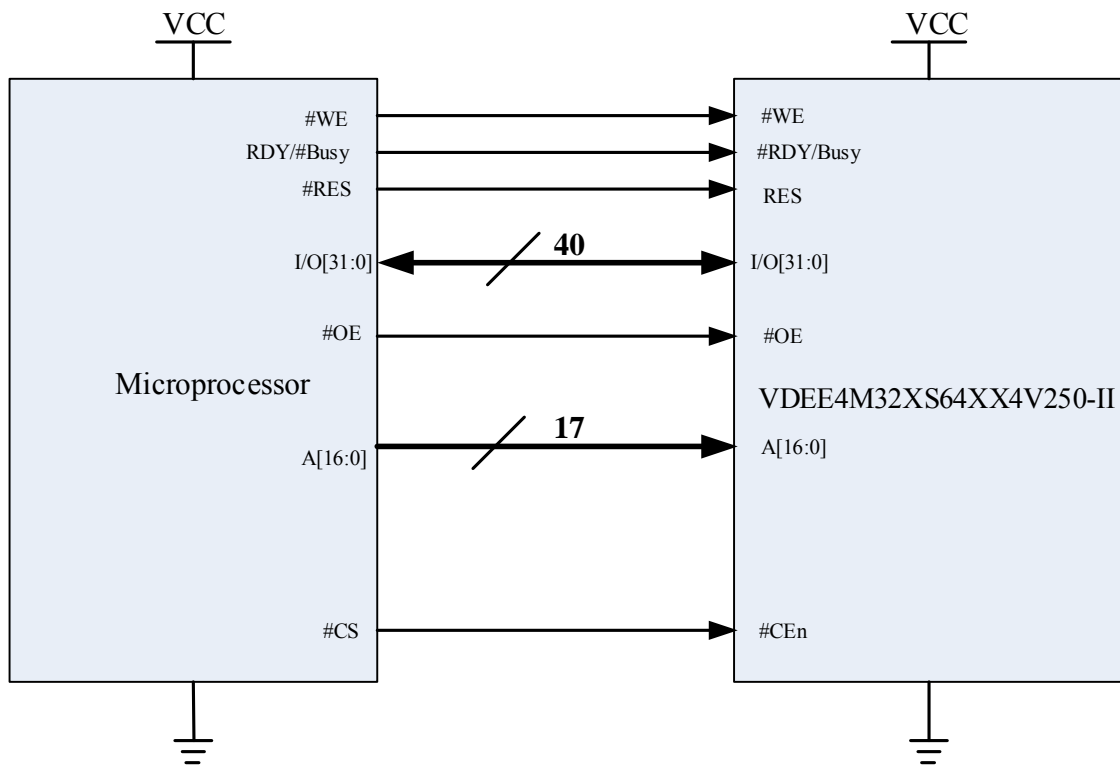


Figure 3 Typical application

## 7 Ordering Information

1	2	3	4	5	6	7	8	9	10	11	12	13
<u>VD</u>	<u>EE</u>	<u>4M</u>	<u>32</u>	<u>X</u>	<u>S</u>	<u>64</u>	<u>X</u>	<u>X</u>	<u>4</u>	<u>V</u>	<u>250</u>	<u>-II</u>
VDIC												
EEPROM												
Capability: 4M bit												
Bus Width: 32bit												
R= Radiation Data Tested; V= Generic Radiation Data Available												
Package: SOP												
Pin Quantity: 64 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: 4 layer												
Power Supply : 3.3V												
Speed: 250ns												
II=Second 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>		
VDEE4M32VS64EE4V250-II	4M	32	-	-	-	SOP64	0 ~ + 70
VDEE4M32VS64IB4V250-II	4M	32	-	-	-	SOP64	-40 ~ + 85
VDEE4M32VS64MM4V250-II	4M	32	-	-	-	SOP64	-55 ~ + 125
VDEE4M32RS64MS4V250-II	4M	32	TBD	TBD	TBD	SOP64	-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

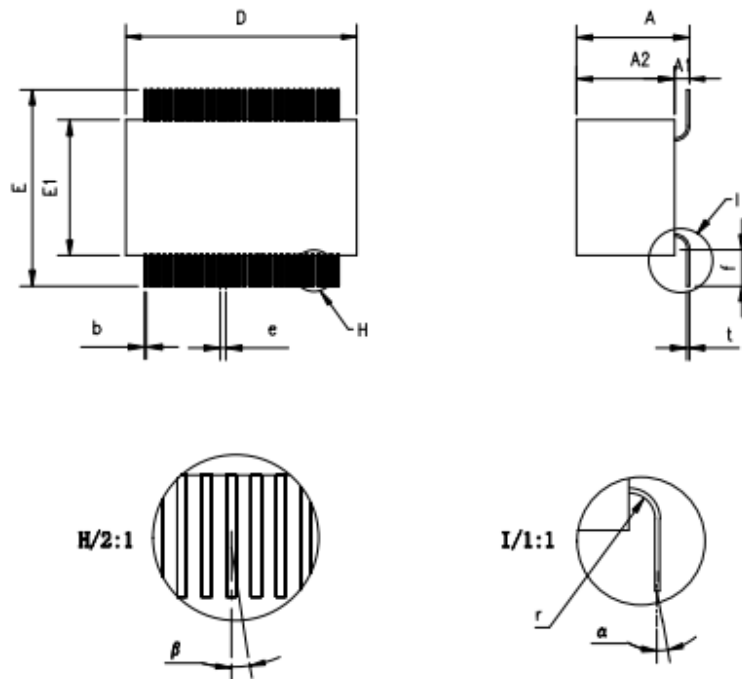


Figure 4 Package dimensions

Table 6 Dimensions information

	Min	Max
A	8.80	9.50
A2	7.60	8.20
D	18.50	18.90
E	15.80	16.20
E1	10.80	11.20
f	2.90	
b	0.25	
e	0.50	
r	1.00	
t	0.20	
$\alpha$	$\leq 3^\circ$	
$\beta$	$\leq 3^\circ$	
NOTE: 1.Uint: mm 2. A1=A - A2		

## 9 REVISION HISTORY

Table 7 Revision history

Revision	Date	Description of Change
A0	Mar 27th,2020	First Created