W558C320

32Mbit (4M x 8 / 2M x 16)

Parallel Mask ROM

Table of Contents-

1. GENERAL DESCIPTION

W558C320, Winbond parallel mask ROM series, which can be set as 4MByte (4Mx8; Byte-mode) or 2MWord (2Mx16; Word-mode) by /MODE (pad-1) setting. This device is working on wide range of operating voltage 2.7V ~ 3.6V.

2. FEATURES

- Mode setting:
  - 4M x 8 (Byte mode)
  - 2M x 16 (Word mode)
- Access time:
  - Random-mode access:
    - 70ns (max.) @ 3.0V~3.6V
    - 90ns (max.) @ 2.7V~3.6V
  - Page-mode access:
    - 25ns (max.) @ 3.0V~3.6V
    - 30ns (max.) @ 2.7V~3.6V
- Current consumption:
  - Operating:
    - 37mA @ 2.7V
    - 47mA @ 3.0V
    - 57mA @ 3.3V
    - 67mA @ 3.6V
  - Standby:
    - 5uA (max.) @ 3.6V
- Operating voltage:
  - 2.7V~3.6V

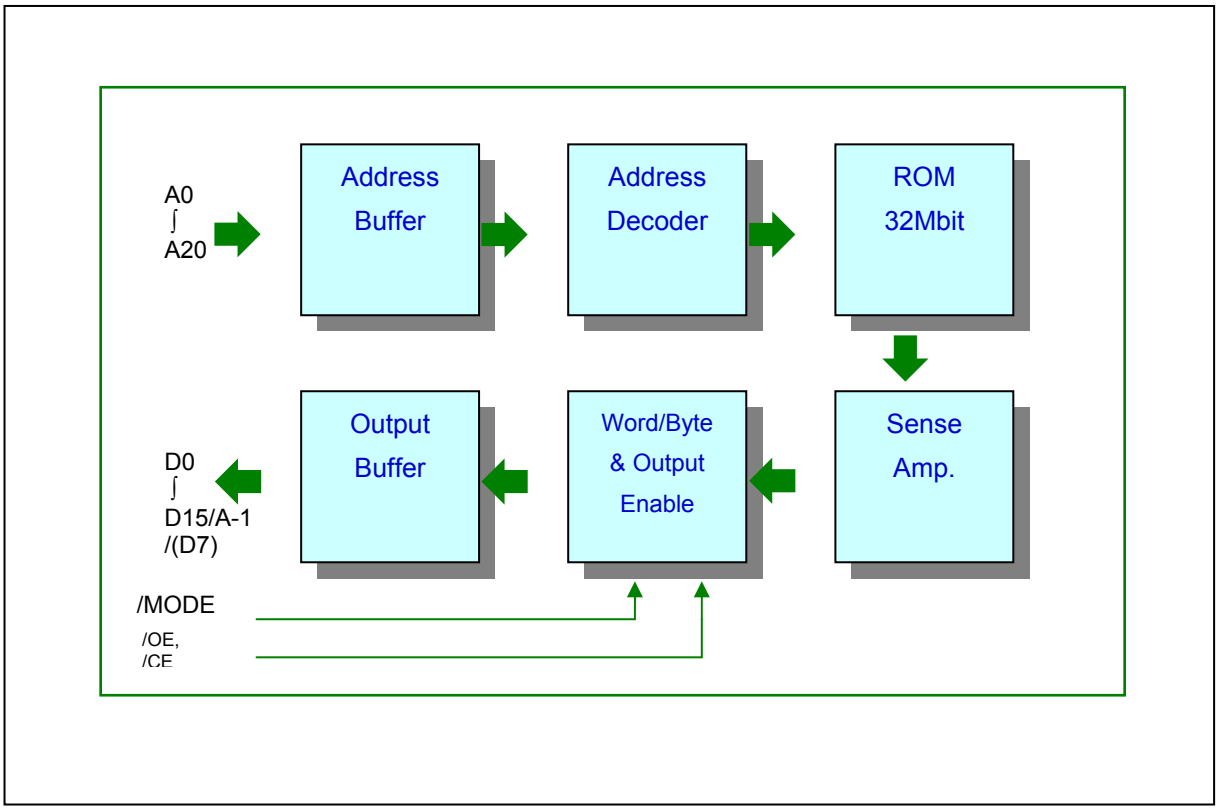
3. PAD DESCRIPTION

PAD NAME	PAD NO	I/O	DESCRIPTION
A0 ~ A20	23~16, 10~2, 15, 14, 11, 13	I	Address Inputs.
D0 ~ D14	28, 30, 32, 34, 39, 41, 43, 45, 29, 31, 33, 35, 40, 42, 44	O	Data Output.
D15/A-1	46	I/O	D15 (Word-mode)/ LSB Address (Byte-mode). * In the "Word-mode", D15 must be 100K Ohm pull-up resistor; otherwise the stand-by current Isb will be large. * In the "Byte-mode", D15 no needs pull-up resistor because it is regarded as "A-1" actually and assumed in the stand-by mode, it is fixed to "1" or "0" by the external application circuit.
/CE	24	I	Chip Enable Input.
/OE	27	I	Output Enable Input.
/MODE	1	I	Mode Setting: 1 => word-mode; 0 => byte-mode.
VDD	36~38		Power Supply 2.7V ~ 3.6V
VSS	12, 25, 26, 47, 48		GND

4. MODE SETTING

/CE	/OE	/MODE	D15/A-1	D0 ~ D7	D8 ~ D15	MODE	POWER
H	X	X	X	High-Z	High-Z	--	Stand-by
L	H	X	X	High-Z	High-Z	--	Active
L	L	H	D15	D0 ~ D7	D8 ~ D15	Word	Active
L	L	L	A-1	D0 ~ D7	High-Z	Byte	Active

5. BLOCK DIAGRAM



6. ABSOLUTE MAXIMUM RATINGS

6.1 DC Characteristics

(V_{DD}–V_{SS} = 3.6V, No load, T_A = 25° C)

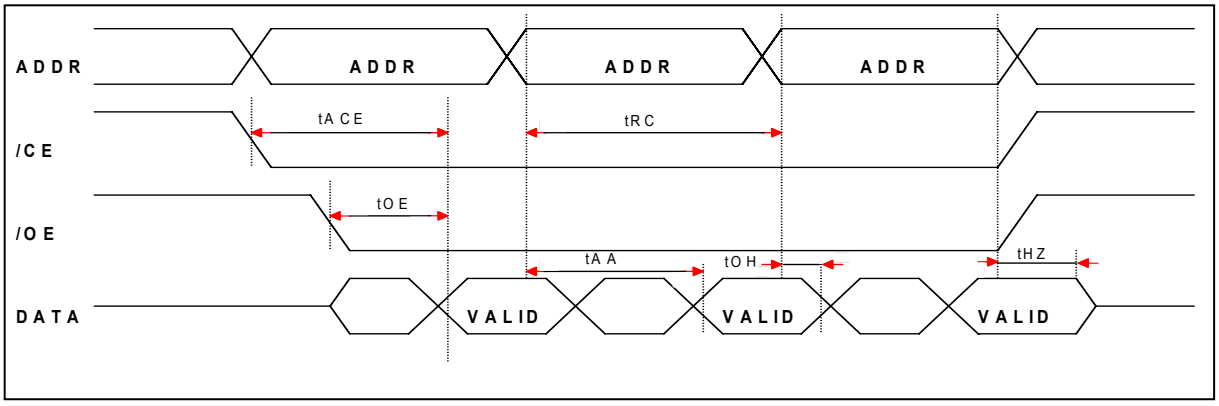
PARAMETER	SYM.	CONDITIONS	MIN	TYP	MAX	UNIT
Output High Voltage	V_{OH}	I_{OH} = -0.4mA	2.3	-	-	V
Output Low Voltage	V_{OL}	I_{OL} = 1.6mA	-	-	0.4	• V
Input High Voltage	V_{IH}	-	2.1	-	V_{DD} +0.3	V
Input Low Voltage	V_{IL}	-	-0.3	-	0.1 x V_{DD}	V
Input Leakage Current	I_{LI}	V_{DD} = 0V	-	-	5	uA
Output Leakage Current	I_{LO}	V_{DD} = 0V	-	-	5	uA
Operating Current	I_C	t_{RC} = 70ns, No load V_{DD} = 2.7V V_{DD} = 3.0V V_{DD} = 3.3V V_{DD} = 3.6V	-	 37 47 57 67	-	 mA
Standby Current	I_{SB}	/CE > V_{DD} - 0.2V	-	-	5	uA

6.2 AC Characteristics

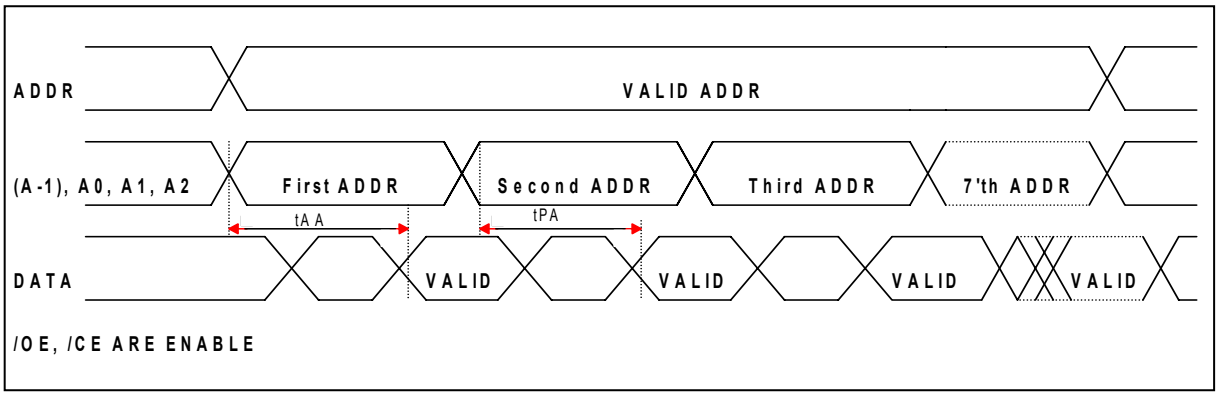
(V_{DD}–V_{SS} = 3.6V, No load, T_A = 25° C)

PARAMETER	SYM.	MIN	TYP	MAX	UNIT
Read Cycle Time	t_{RC}	70	-	-	ns
Address Access Time	t_{AA}	-	-	70	ns
Chip Enable Access Time	t_{ACE}	-	-	70	ns
Page mode Access Time	t_{PA}	-	-	25	ns
Output Enable Time	t_{OE}	-	-	25	ns
Output Hold After Address	to_H	0	-	-	ns
Output High Z Delay	t_{HZ}	-	-	20	ns

Random-mode Access



Page-mode Access



6.3 Absolute Maximum Ratings

PARAMETER	RATING	UNIT
Ambient Operating Temperature	0 to +70	°C
Storage Temperature	-55 to +150	°C

Note: Exposure to conditions beyond the listed value may affect the life and reliability of the device.

7. DOCUMENT REVISION HISTORY

DATE	REVISION	EDITOR	REMARKS
12/19/2004	Ver. A0.9	IN Chu	Preliminary release.
09/23/2005	Ver. A1.0	INChu	Formal release.
09/25/2005	Ver. A1.1	Erik Lin	DC characteristics update.
10/27/2005	Ver. A1.2	Erik Lin	D15/A-1 connecting state.
10/28/2005	Ver. A1.3	I. N. Chu	Pads number modification.
05/02/2006	Ver. A1.4	I. N. Chu	Add tOH timimg.

Important Notice

Winbond products are not designed, intended, authorized or warranted for use as components in systems or equipment intended for surgical implantation, atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, or for other applications intended to support or sustain life. Further more, Winbond products are not intended for applications wherein failure of Winbond products could result or lead to a situation wherein personal injury, death or severe property or environmental damage could occur.

Winbond customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Winbond for any damages resulting from such improper use or sales.

Headquarters
No. 4, Creation Rd. III,
Science-Based Industrial Park,
Hsinchu, Taiwan
TEL: 886-3-5770066
FAX: 886-3-5665577
http://www.winbond.com.tw/

Taipei Office
9F, No.480, Rueiguang Rd.,
Neihu District, Taipei, 114,
Taiwan, R.O.C.
TEL: 886-2-8177-7168
FAX: 886-2-8751-3579

Winbond Electronics Corporation America
2727 North First Street, San Jose,
CA 95134, U.S.A.
TEL: 1-408-9436666
FAX: 1-408-5441798

Winbond Electronics Corporation Japan
7F Daini-ueno BLDG, 3-7-18
Shinyokohama Kohoku-ku,
Yokohama, 222-0033
TEL: 81-45-4781881
FAX: 81-45-4781800

Winbond Electronics (Shanghai) Ltd.
27F, 2299 Yan An W. Rd. Shanghai,
200336 China
TEL: 86-21-62365999
FAX: 86-21-62365998

Winbond Electronics (H.K.) Ltd.
Unit 9-15, 22F, Millennium City,
No. 378 Kwun Tong Rd.,
Kowloon, Hong Kong
TEL: 852-27513100
FAX: 852-27552064