
OKI Semiconductor

MR53V3252J**Preliminary**

2,097,152-Word X 16-Bit or 4,194,304-Word X 8-Bit**8Word X 16-Bit or 16Word X 8-Bit/Page Mode MASK ROM**

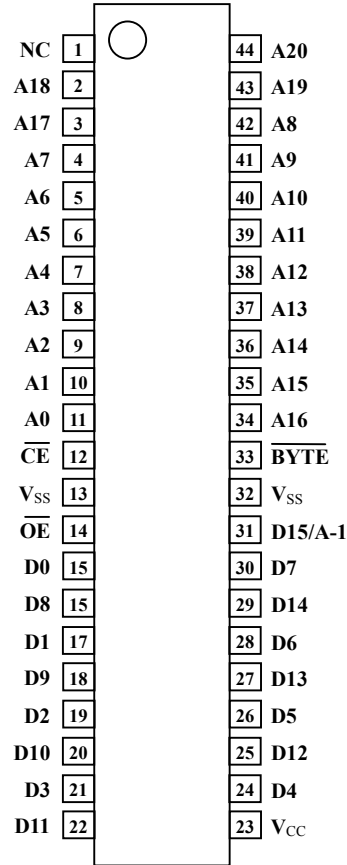
DESCRIPTION

The MR53V3252J is a 32Mbit Read-Only Memory whose configuration can be electrically switched between 2,097,152 word x 16bit and 4,194,304 word x 8bit. The MR53V3252J operates asynchronously, external clocks are not required, making this device easy-to-use. The MR53V3252J is suitable as large-capacity fixed memory for microcomputers and data terminals. It is manufactured using a CMOS silicon gate technology and is offered in 44-pin SOP or 44-pin TSOP packages.

FEATURES

- 2,097,152word x 16bit / 4,194,304 word x 8bit electrically switchable configuration
- 8word x 16-Bit or 16word x 8-bit / Page read mode
- Single +2.7V~3.6V power supply
- Normal Access time 100ns (@Vcc=3.0V~3.6V)
 120ns (@Vcc=2.7V~3.3V)
- Page Access time 30ns (@Vcc=3.0V~3.6V)
 40ns (@Vcc=2.7V~3.3V)
- V_{CC} power supply current 80mA (@Vcc=3.0V~3.6V)
 70mA (@Vcc=2.7V~3.3V)
- V_{CC} standby current 10μA
- Input / Output TTL compatible
- Three-state output
- Packages
 - 44-pin plastic SOP (SOP44-P-600-1.27-K) MR53V3252J-XXMA
 - 44-pin plastic TSOP (TSOPII44-P-400-0.80-K) MR53V3252J-XXTP

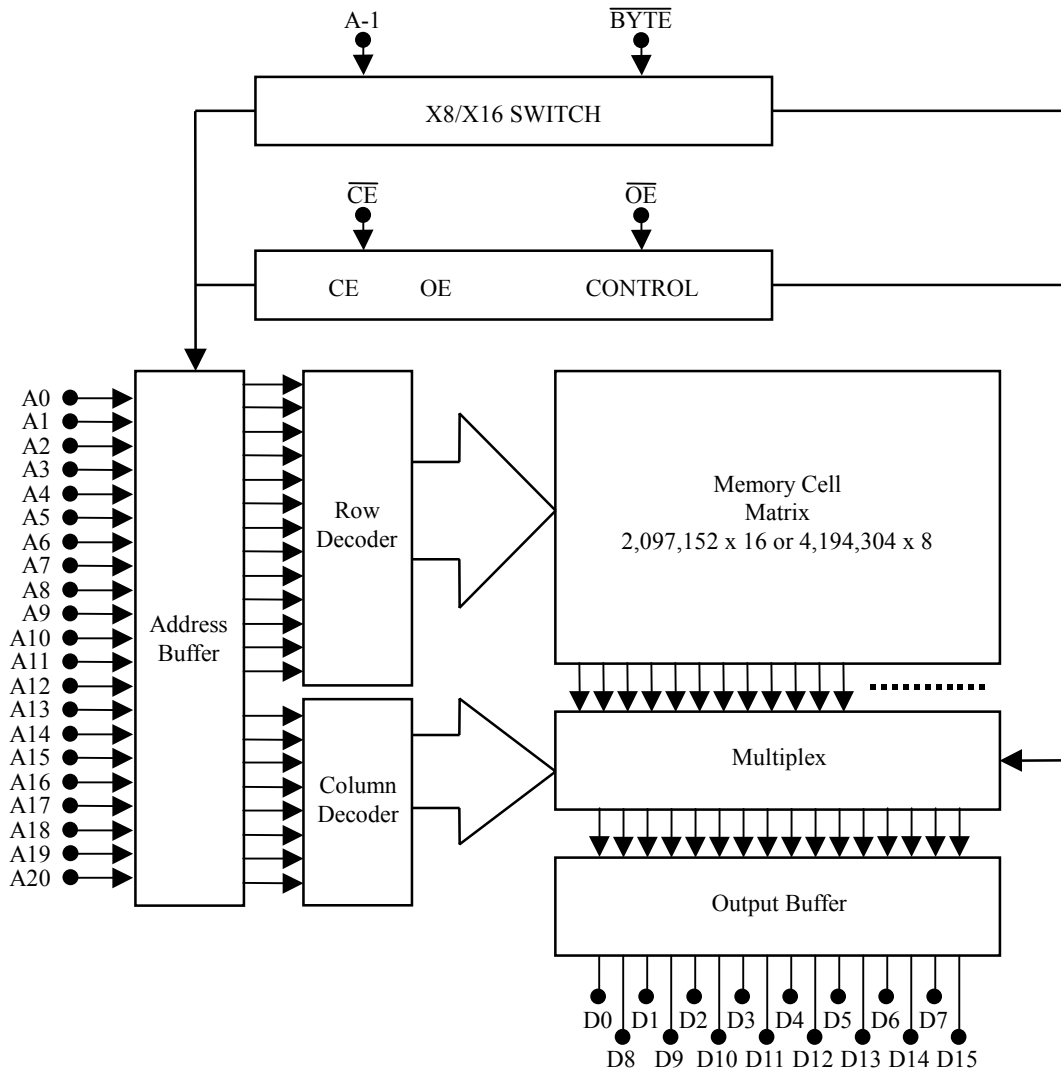
PIN CONFIGURATION (TOP VIEW)



**44-Pin SOP
44-Pin TSOPII**

PIN NAMES	FUNCTIONS
D15/A-1	Data output / Address input
A0~A20	Address input
D0~D14	Data output
\overline{CE}	Chip enable
\overline{OE}	Output enable
\overline{BYTE}	Mode switch
V_{CC}	Power supply voltage
V_{SS}	GND
NC	Non connection

BLOCK DIAGRAM



FUNCTION TABLE

MODE	\overline{CE}	\overline{OE}	\overline{BYTE}	D0~D7	D8~D14	A-1/D15
STAND BY	H	X	X	Hi-Z	Hi-Z	L/H
OUTPUT DISABLE	L	H	H			
OUTPUT DISABLE	L	H	L			
READ(16-BIT)	L	L	H	D_{OUT}		
READ(8-BIT)	L	L	L	D_{OUT}	Hi-Z	L/H

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Value	Unit
Operating temperature under bias	T _{OPR}	-	0 ~ 70	°C
Storage temperature	T _{STG}	-	-55 ~ 125	°C
Input voltage	V _I	Relative to V _{SS}	-0.5 ~ V _{CC} +0.5	V
Output voltage	V _O		-0.5 ~ V _{CC} +0.5	V
Power supply voltage	V _{CC}		-0.5 ~ 5	V
Power dissipation per package	P _D	-	1.0	W

RECOMMENDED OPERATING CONDITIONS FOR READ

(Ta=0 ~ 70°C)

Parameter	Symbol	Condition	Min.	Typ.	Min.	Unit
V _{CC} power supply voltage	V _{CC}	V _{CC} =2.7V ~ 3.6V	2.7	-	3.6	°C
Input "H" level	V _{IH}		2.2	-	V _{CC} +0.5	°C
Input "L" level	V _{IL}		-0.5	-	0.8	V

Voltage is relative to V_{SS}

PIN Capacitance

(V_{CC}=3.3V, Ta=25°C, f=1MHz)

Parameter	Symbol	Condition	Min.	Typ.	Min.	Unit
Input	C _{IN}	V _I =0V	-	-	12	pF
Output	C _{OUT}	V _O =0V	-	-	15	pF

ELECTRICAL CHARACTERISTICS

DC Characteristics 1

(V_{CC}=2.7V~3.3V, Ta=0~70°C)

Parameter	Symbol	Condition	Min.	Typ.	Min.	Unit
Input leakage current	C _{IN}	V _I =0V~V _{CC}	-	-	10	μA
Output leakage current	C _{OUT}	V _O =0V~V _{CC}	-	-	10	μA
V _{CC} power supply current (Standby)	I _{CCSC}	$\overline{CE}=V_{CC}$	-	-	10	μA
	I _{CCST}	$\overline{CE}=V_{IH}$	-	-	1	mA
V _{CC} power supply current (Active)	I _{CCA}	$\overline{CE}=V_{IL}, \overline{OE}=V_{IH}$ tc= 120ns	-	-	70	mA
Input "H" level	V _{IH}	-	2.0	-	V _{CC} +0.5	V
Input "L" level	V _{IL}	-	-0.5	-	0.8	V
Output "H" level	V _{OH}	I _{OH} =-200 μA	V _{CC} -0.4	-	-	V
Output "L" level	V _{OL}	I _{OL} =1mA	-	-	0.4	V

Voltage is relative to V_{SS}

DC Characteristics 2

(V_{CC}=3.0V~3.6V, Ta=0~70°C)

Parameter	Symbol	Condition	Min.	Typ.	Min.	Unit
Input leakage current	C _{IN}	V _I =0V~V _{CC}	-	-	10	μA
Output leakage current	C _{OUT}	V _O =0V~V _{CC}	-	-	10	μA
V _{CC} power supply current (Standby)	I _{CCSC}	$\overline{CE}=V_{CC}$	-	-	10	μA
	I _{CCST}	$\overline{CE}=V_{IH}$	-	-	1	mA
V _{CC} power supply current (Active)	I _{CCA}	$\overline{CE}=V_{IL}, \overline{OE}=V_{IH}$ tc= 100ns	-	-	80	mA
Input "H" level	V _{IH}	-	2.0	-	V _{CC} +0.5	V
Input "L" level	V _{IL}	-	-0.5	-	0.8	V
Output "H" level	V _{OH}	I _{OH} =-200 μA	V _{CC} -0.4	-	-	V
Output "L" level	V _{OL}	I _{OL} =1mA	-	-	0.4	V

Voltage is relative to V_{SS}

AC Characteristics 1

(V_{CC}=2.7V~3.3V, T_a=0~70°C)

Parameter	Symbol	Condition	Min.	Min.	Unit
Address access cycle time	T _C	-	120	-	ns
Address access time	T _{ACC}	$\overline{\text{CE}}=\overline{\text{OE}}=V_{\text{IL}}$	-	120	ns
Page set up time	T _{PSET}	NOTE.1	120	-	ns
Page access cycle time	T _{PC}	-	40	-	ns
Page access time	T _{PAC}	-	-	40	ns
$\overline{\text{CE}}$ access time	T _{CE}	$\overline{\text{OE}}=V_{\text{IL}}$	-	120	ns
$\overline{\text{OE}}$ access time	T _{OE}	$\overline{\text{CE}}=V_{\text{IL}}$	-	40	ns
Output disable time	T _{CHZ}	$\overline{\text{OE}}=V_{\text{IL}}$	0	35	ns
	T _{OHZ}	$\overline{\text{CE}}=V_{\text{IL}}$	0	30	ns
Output hold time	T _{OH}	$\overline{\text{CE}}=\overline{\text{OE}}=V_{\text{IL}}$	0	-	ns

AC Characteristics 2

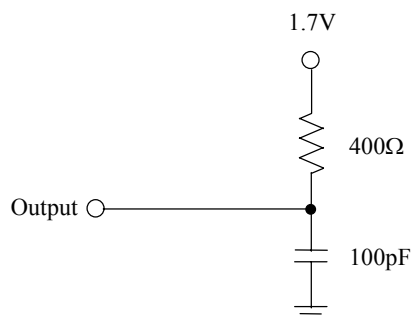
(V_{CC}=3.0V~3.6V, T_a=0~70°C)

Parameter	Symbol	Condition	Min.	Min.	Unit
Address access cycle time	T _C	-	100	-	ns
Address access time	T _{ACC}	$\overline{\text{CE}}=\overline{\text{OE}}=V_{\text{IL}}$	-	100	ns
Page set up time	T _{PSET}	NOTE.1	100	-	ns
Page access cycle time	T _{PC}	-	30	-	ns
Page access time	T _{PAC}	-	-	30	ns
$\overline{\text{CE}}$ access time	T _{CE}	$\overline{\text{OE}}=V_{\text{IL}}$	-	100	ns
$\overline{\text{OE}}$ access time	T _{OE}	$\overline{\text{CE}}=V_{\text{IL}}$	-	30	ns
Output disable time	T _{CHZ}	$\overline{\text{OE}}=V_{\text{IL}}$	0	30	ns
	T _{OHZ}	$\overline{\text{CE}}=V_{\text{IL}}$	0	25	ns
Output hold time	T _{OH}	$\overline{\text{CE}}=\overline{\text{OE}}=V_{\text{IL}}$	0	-	ns

NOTE.1 T_{PSET} is defined as the end of either CE falling edge or address transition in random access term until the first page address transition.

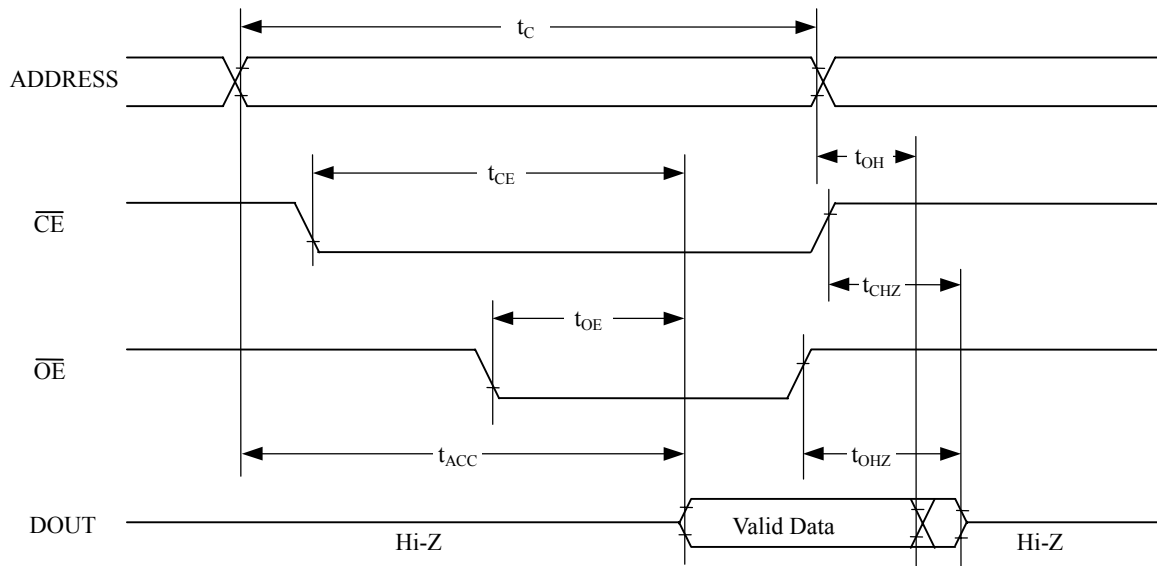
Measurement condition

- Input signal level 0V/3V
- Input timing reference level 0.8V/2.0V
- Output load 100pF
- Output timing reference level 0.8V/2.0V

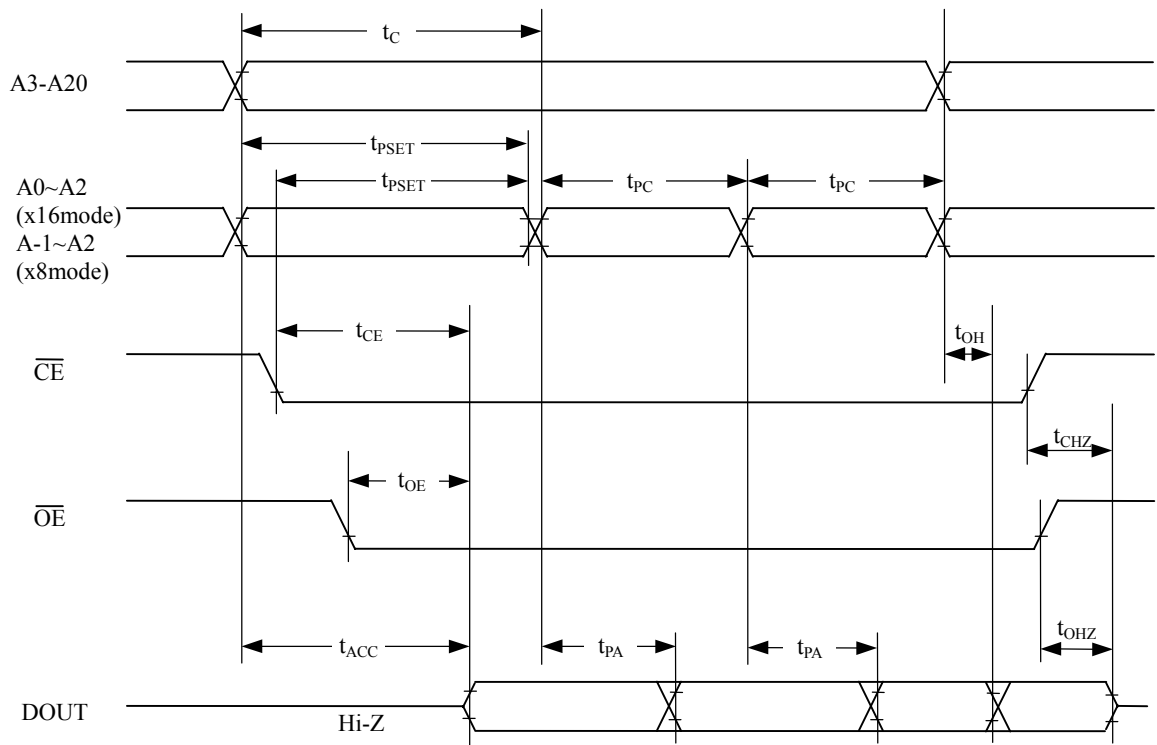


TIMING CHART

NORMAL MODE READ CYCLE



PAGE MODE READ CYCLE



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Marketing Communications Team (RB)

OKI

People To People Technology

ADDRESSES & SEMICONDUCTOR WEB SITES

OKI Electric Industry Co., Ltd.,

Device Business Group,
10-3, Shibaura, 4-chome,
Minato-ku, Tokyo 108, Japan,
Tel.: +81-(0)3-5445-6327,
Fax.: +81-(0)3-5445-6328,
<http://www.oki.co.jp/semi/>

OKI Semiconductor Group,

785 North Mary Avenue,
Sunnyvale, CA 94086, U.S.A.,
Tel.: +1-408-720-1900,
Fax.: +1-408-720-1918,
<http://www.okisemi.com/>

OKI Electric Europe GmbH,

Head Office Europe,
Hellersbergstrasse 2,
D-41460 Neuss, Germany,
Tel: +49-2131-15960,
Fax: +49-2131-103539,
<http://www.oki-europe.de/>

OKI Electronics (Hong Kong) Ltd.,

Suite 1901-1&19, Tower 3,
China Hong Kong City,
33 Canton Road, Tsimshatsui,
Kowloon, Hong Kong,
Tel.: +852-2-736-2336,
Fax.: +852-2-736-2395

OKI Semiconductor (Asia) Pte. Ltd.,

78 Shenton Way 09-01,
Singapore 0207,
Tel.: +65-221-3722,
Fax.: +65-323-5376

OKI Semiconductor (Asia) Pte. Ltd.,

Taipei Branch,
7th Fl. No.260, Tun Hwa North Road,
Taipei, Taiwan, R.O.C.,
Sumitomo-Flysun Building,
Tel.: +886-2-2719-2561,
Fax.: +886-2-2715-2892
<http://www.oki.net.tw/>

For further information, please contact: