OKI Semiconductor

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MR27V802D

524,288-Word x 16-Bit or 1,048,576-Word x 8-Bit
Production Programmed Read Only Memory (P2ROM)

DESCRIPTION

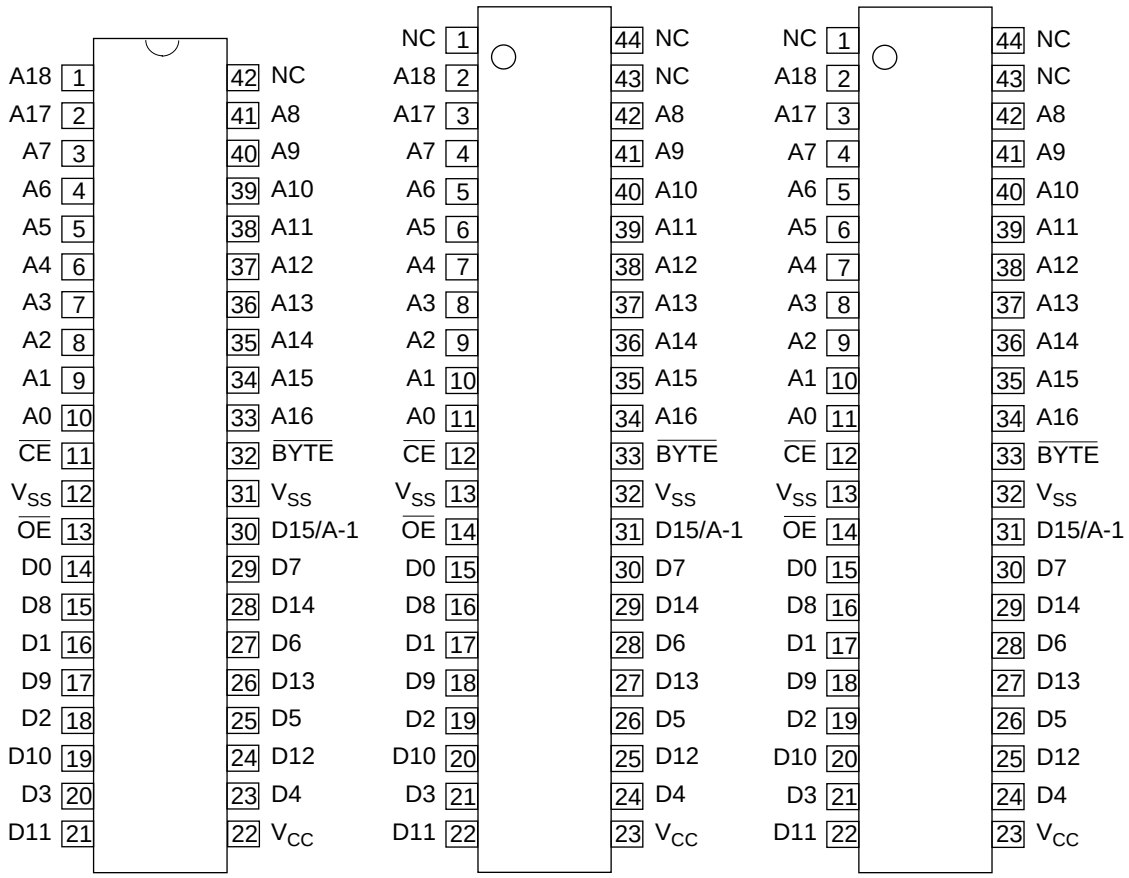
The MR27V802D is a 8Mbit Production Programmed Read-Only Memory (P2ROM) whose configuration can be electrically switched between 524,288 word x 16bit and 1,048,576 word x 8bit. The MR27V802D operates on a single +3V-3.3V power supply and is TTL compatible. Since the MR27V802D operates asynchronously , external clocks are not required , making this device easy-to-use. The MR27V802D is suitable as large-capacity fixed memory for microcomputers and data terminals. It is manufactured using a CMOS double silicon gate technology and is offered in 42-pin DIP, 44-pin SOP or 44-pin TSOP packages.

FEATURES

- 524,288 word x 16bit / 1,048,576 word x 8bit electrically switchable configuration
- Single +3V-3.3V power supply
- Access time 100ns access time (Vcc=+3V)
  80ns access time (Vcc=+3.3V)
- Input / Output TTL compatible
- Three-state output
- Packages

42-pin plastic DIP (DIP42-P-600-2.54)	(Product name : MR27V802D-xxRA)
44-pin plastic SOP (SOP44-P-600-1.27-K)	(Product name : MR27V802D-xxMA)
44-pin plastic TSOP (TSOP II 44-P-400-0.80-K)	(Product name : MR27V802D-xxTP)

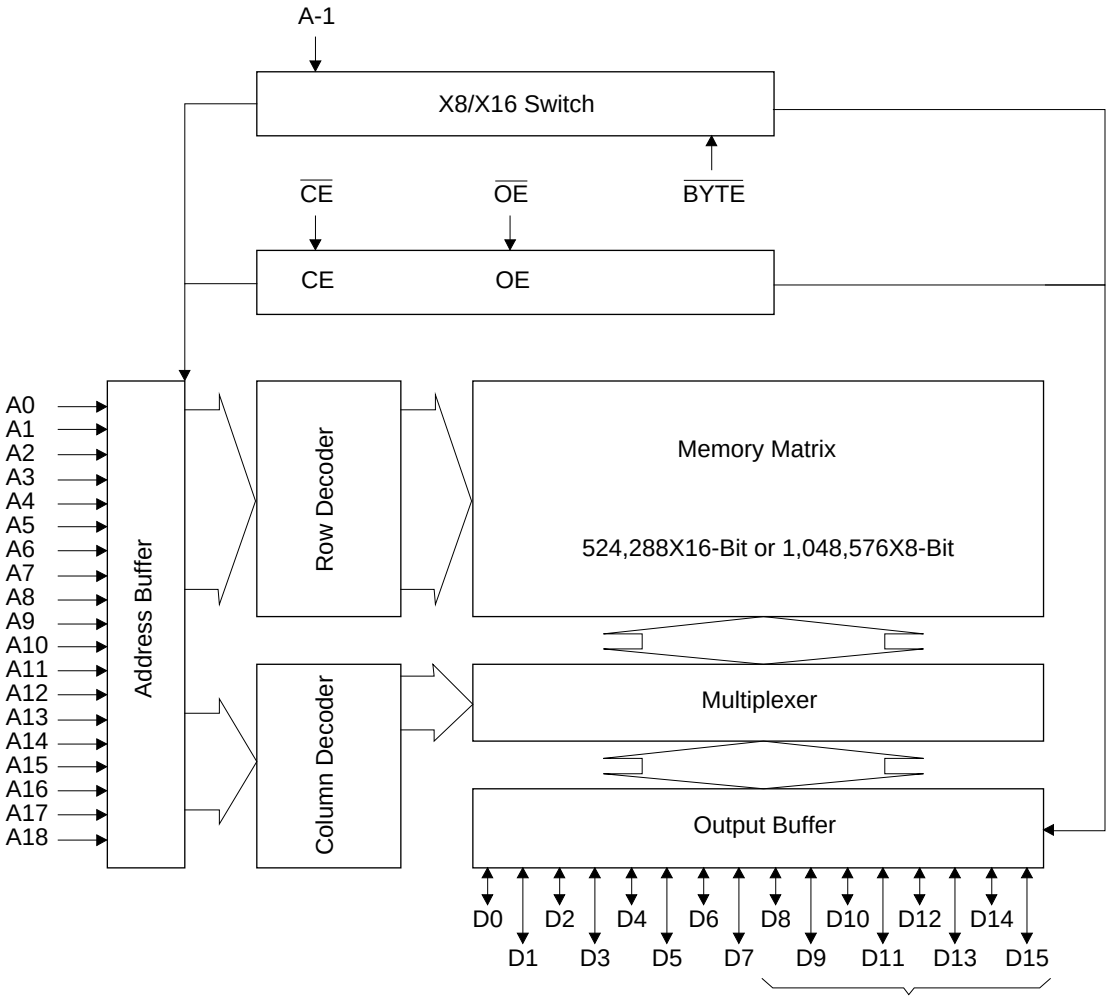
PIN CONFIGURATION (TOP VIEW)



42-pin DIP　　44-pin SOP　　44-pin TSOP (II)

PIN NAMES	FUNCTIONS
D15/A-1	Data output / Address input
A0-A18	Address input
D0-D14	Data output
$\overline{CE}$	Chip enable
$\overline{OE}$	Output enable
V_{CC}	Power supply voltage
V_{SS}	GND
$\overline{BYTE}$	Mode switch
NC	Non connection

BLOCK DIAGRAM



In 8-bit output mode, these pins are three-stated and pin D15 functions as the A-1 address pin.

FUNCTION TABLE

MODE	$\overline{CE}$	$\overline{OE}$	$\overline{BYTE}$	V_{CC}	D0 - D7	D8 - D14	D15/A-1
READ (16-Bit)	L	L	H	3.0V to 3.3V	D_{OUT}		
READ (8-Bit)	L	L	L		D_{OUT}	Hi-Z	L/H
OUTPUT DISABLE	L	H	H		Hi-Z		
			L				*
STAND-BY	H	*	H		Hi-Z		
			L				*

*: Don't Care

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Value	Unit
Operating temperature under bias	T_{opr}	-	0 to 70	°C
Storage temperature	T_{stg}		-55 to 125	°C
Input voltage	V_I	relative to V_{SS}	-0.5 to V_{CC}+ 0.5	V
Output voltage	V_O		-0.5 to V_{CC} +0.5	V
Power supply voltage	V_{CC}		-0.5 to 5	V
Power dissipation per package	P_D	-	1.0	W

RECOMMENDED OPERATING CONDITIONS

(Ta=0 to 70°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
V_{CC} power supply voltage	V_{CC}	V_{CC}=2.7V-3.6V	2.7	-	3.6	V
Input "H" level	V_{IH}		2.2	-	V_{CC}+0.5*	V
Input "L" level	V_{IL}		-0.5**	-	0.6	V

Voltage is relative to Vss

* : Vcc+1.5V (Max.) when pulse width of overshoot is less than 10nS.

** : -1.5V (Min.) when pulse width of undershoot is less than 10nS.

ELECTRICAL CHARACTERISTICS (Read operation)

DC Characteristics 1

(V_{CC}=3V±0.3V, Ta=0 to 70°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input leakage current	I_{LI}	V_I=0 to Vcc	-	-	10	µA
Output leakage current	I_{LO}	V_O=0 to Vcc	-	-	10	µA
V_{CC} power supply current (Standby)	I_{CCSC}	$\overline{CE}$=V_{CC}	-	-	50	µA
	I_{CCST}	$\overline{CE}$=V_{IH}	-	-	1	mA
V_{CC} power supply current (Read)	I_{CCA}	$\overline{CE}$=V_{IL},$\overline{OE}$=V_{IH} tc=100ns	-	-	35	mA
Input "H" level	V_{IH}	-	2.2	-	V_{CC}+0.5*	V
Input "L" level	V_{IL}	-	-0.5**	-	0.6	V
Output "H" level	V_{OH}	I_{OH}=-400uA	2.4	-	-	V
Output "L" level	V_{OL}	I_{OL}=2.1mA	-	-	0.4	V

Voltage is relative to Vss

* : Vcc+1.5V (Max.) when pulse width of overshoot is less than 10nS.

** : -1.5V (Min.) when pulse width of undershoot is less than 10nS.

DC Characteristics 2

(V_{CC}=3.3V±0.3V, Ta=0 to 70°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input leakage current	I_{LI}	V_I=0 to Vcc	-	-	10	µA
Output leakage current	I_{LO}	V_O=0 to Vcc	-	-	10	µA
V_{CC} power supply current (Standby)	I_{CCSC}	$\overline{CE}$=V_{CC}	-	-	50	µA
	I_{CCST}	$\overline{CE}$=V_{IH}	-	-	1	mA
V_{CC} power supply current (Read)	I_{CCA}	$\overline{CE}$=V_{IL},$\overline{OE}$=V_{IH} tc=80ns	-	-	40	mA
Input "H" level	V_{IH}	-	2.2	-	V_{CC}+0.5*	V
Input "L" level	V_{IL}	-	-0.5**	-	0.6	V
Output "H" level	V_{OH}	I_{OH}=-400uA	2.4	-	-	V
Output "L" level	V_{OL}	I_{OL}=2.1mA	-	-	0.4	V

Voltage is relative to Vss

* : Vcc+1.5V (Max.) when pulse width of overshoot is less than 10nS.

** : -1.5V (Min.) when pulse width of undershoot is less than 10nS.

AC Characteristics 1

(V_{CC}=3V±0.3V, Ta=0 to 70°C)

Parameter	Symbol	Condition	Min.	Max.	Unit
Address cycle time	T_C	-	100	-	ns
Address access time	T_{ACC}	$\overline{CE}$=$\overline{OE}$=V_{IL}	-	100	ns
$\overline{CE}$ access time	T_{CE}	$\overline{OE}$=V_{IL}	-	100	ns
$\overline{OE}$ access time	T_{OE}	$\overline{CE}$=V_{IL}	-	50	ns
Output disable time	T_{CHZ}	$\overline{OE}$=V_{IL}	0	30	ns
	T_{OHZ}	$\overline{CE}$=V_{IL}	0	25	ns
Output hold time	T_{OH}	$\overline{CE}$=$\overline{OE}$=V_{IL}	0	-	ns

Measurement conditions

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

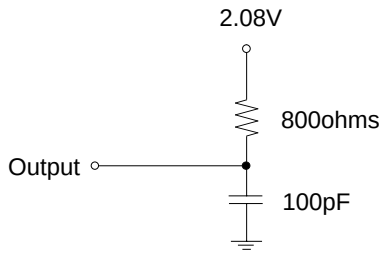
AC Characteristics 2

(V_{CC}=3.3V±0.3V, Ta=0 to 70°C)

Parameter	Symbol	Condition	Min.	Max.	Unit
Address cycle time	T_C	-	80	-	ns
Address access time	T_{ACC}	$\overline{CE}$=$\overline{OE}$=V_{IL}	-	80	ns
$\overline{CE}$ access time	T_{CE}	$\overline{OE}$=V_{IL}	-	80	ns
$\overline{OE}$ access time	T_{OE}	$\overline{CE}$=V_{IL}	-	40	ns
Output disable time	T_{CHZ}	$\overline{OE}$=V_{IL}	0	30	ns
	T_{OHZ}	$\overline{CE}$=V_{IL}	0	25	ns
Output hold time	T_{OH}	$\overline{CE}$=$\overline{OE}$=V_{IL}	0	-	ns

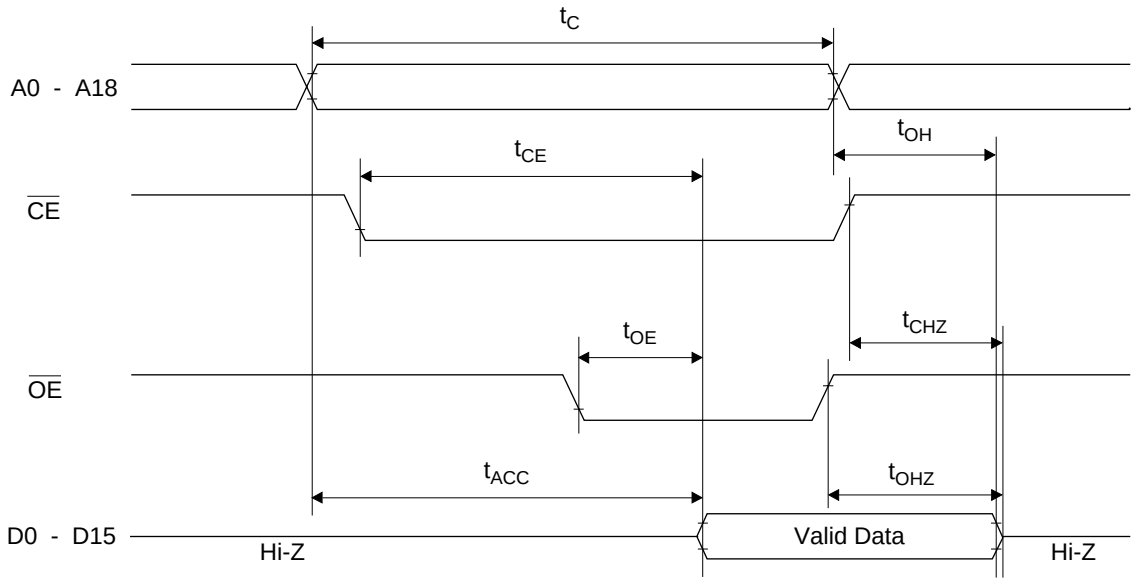
Measurement conditions

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

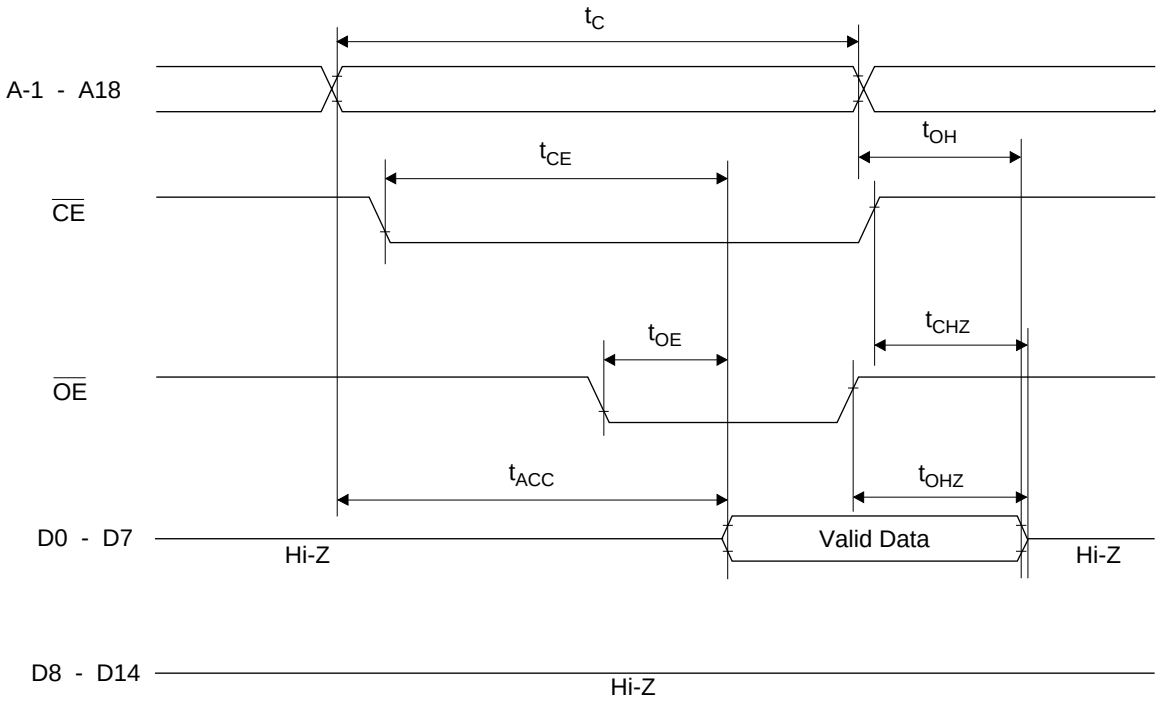


TIMING CHART (READ CYCLE)

16-Bit Read Mode ($\overline{BYTE}$=V_{IH})



8-Bit Read Mode ($\overline{BYTE}$=V_{IL})



PIN Capacitance

(V_{CC}=3.3V, Ta=25°C, f=1MHz)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input	C_{IN1}	V_I=0V	-	-	8 (10)	pF
$\overline{BYTE}$	C_{IN2}		-	-	120	
Output	C_{OUT}	V_O=0V	-	-	10 (12)	

( ) : DIP only