Preliminary

OKI semiconductor

MSM27512AS

65536 × 8 BIT UV ERASABLE ELECTRICALLY PROGRAMMABLE READ-ONLY MEMORY

GENERAL DESCRIPTION

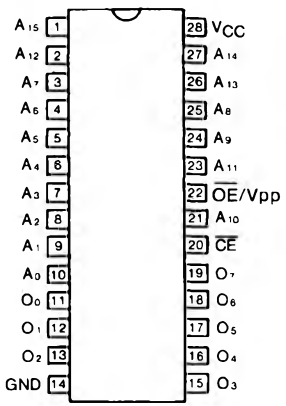
The MSM27512 is a 65536 words × 8 bit ultraviolet erasable and electrically programmable read-only memory. Users can freely prepare the memory content, which can be easily changed, so the MSM27512 is ideal for microprocessor programs, etc. The MSM27512 is manufactured by the N channel double silicon gate MOS technology and is contained in the 28 pin package.

FEATURES

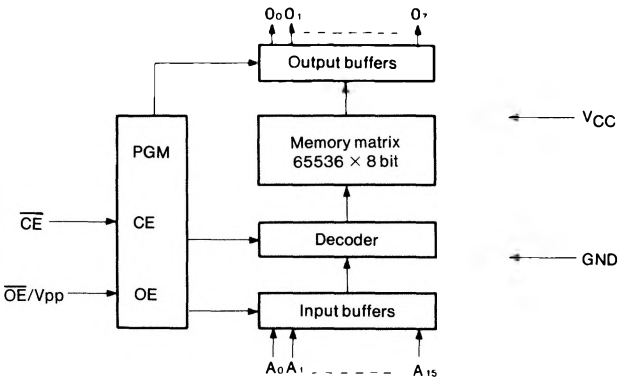
- +5V single power supply
- 65536 words × 8 bit configuration
- Access time:
  - MAX150 ns (MSM27512-15)
  - MAX200 ns (MSM27512-20)
  - MAX250 ns (MSM27512-25)
- Power consumption:
  - MAX525 mW (during operation)
  - MAX184 mW (during stand-by)
- Perfect static operation
- INPUT/OUTPUT TTL level (three state output)

PIN CONFIGURATION

(Top View)



FUNCTIONAL BLOCK DIAGRAM



This specification may be changed without notification.

FUNCTION TABLE

Pins / Mode	$\overline{CE}$ (20)	$\overline{OE}$/Vpp (22)	V_{CC} (28)	Outputs
Read	V_{IL}	V_{IL}	+5V	Dout
Output Disable	V_{IL}	V_{IH}	+5V	High impedance
Stand-by	V_{IH}	–	+5V	High impedance
Program	V_{IL}	Vpp	+6V	D_{IN}
Program Inhibit	V_{IH}	Vpp	+6V	High impedance

–; Can be either V_{IL} or V_{IH}

ABSOLUTE MAXIMUM RATINGS

Temperature Under Bias	Ta	–10°C ~ 80°C
Storage Temperature	Tstg	–55°C ~ 125°C
All Input/Output Voltages	V_{IN}, V_{OUT}	–0.6V ~ 13.5V
V_{CC} Supply Voltage	V_{CC}	–0.3V ~ 7V
Program Voltage	Vpp	–0.6V ~ 13.5V
Power Assembly Voltage	P_D	1.5W

The voltage with respect to GND.

ELECTRICAL CHARACTERISTICS

<READ OPERATION>

RECOMMENDED OPERATION CONDITION

Parameter	Symbol	Limit			Operating Temperature	Remarks	Symbol
		Min.	Typ.	Max.			
V_{CC} Power Supply Voltage	V_{CC}	4.75	5.0	5.25	0°C ~ 70°C	V_{CC}=5V±5%	V
"H" Level Input Voltage	V_{IH}	2.00	–	6.25			V
"L" Level Input Voltage	V_{IL}	–0.1	–	0.8			V

The voltage with respect to GND

DC CHARACTERISTICS

(V_{CC} = 5V±5%, Ta = 0°C ~ 70°C)

Parameter	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Input Leakage Current	I_{LI}	V_{IN} = 5.25V	–	–	10	μA
Output Leakage Current	I_{LO}	V_{OUT} = 5.25V	–	–	10	μA
V_{CC} Power Current (Stand-by)	I_{CC1}	$\overline{CE}$ = V_{IH}	–	–	35	mA
V_{CC} Power Current (Operation)	I_{CC2}	$\overline{CE}$ = V_{IL}	–	–	100	mA
Input Voltage "H" Level	V_{IH}	–	2.0	–	V_{CC}+1	V
Input Voltage "L" Level	V_{IL}	–	–0.1	–	0.8	V
Output Voltage "H" Level	V_{OH}	I_{OH} = –400 μA	2.4	–	–	V
Output Voltage "L" Level	V_{OL}	I_{OL} = 2.1 mA	–	–	0.45	V

AC CHARACTERISTICS

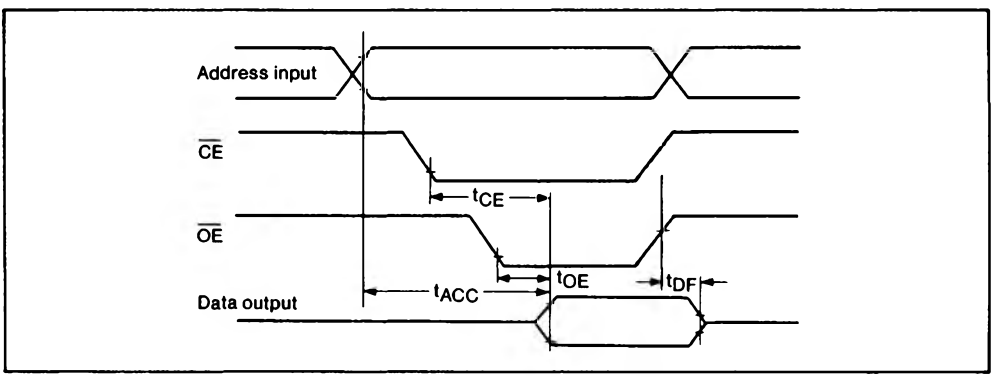
(V_{CC} = 5V±5%, Ta = 0°C ~ 70°C)

Parameter	Symbol	Conditions	27512-15		27512-20		27512-25		Unit
			Min.	Max.	Min.	Max.	Min.	Max.	
Address Access Time	t_{ACC}	$\overline{CE}$ = $\overline{OE}$/Vpp = V_{IL}	–	150	–	200	–	250	ns
$\overline{CE}$ Access Time	t_{CE}	$\overline{OE}$/Vpp = V_{IL}	–	150	–	200	–	250	ns
$\overline{OE}$ Access Time	t_{OE}	$\overline{CE}$ = V_{IL}	–	70	–	75	–	100	ns
Output Disable Time	t_{DF}	$\overline{CE}$ = V_{IL}	0	50	0	55	0	60	ns

Measurement condition

- Input pulse level ..... 0.45V and 2.4V
- Input timing reference level ..... 0.8V and 2.0V
- Output load ..... 1TTL GATE + 100pF
- Output timing reference level ..... 0.8V and 2.0V

TIME CHART



DC CHARACTERISTICS

(V_{CC} = 6V±5%, Vpp = 12.5V±0.5V, Ta = 25°C±5°C)

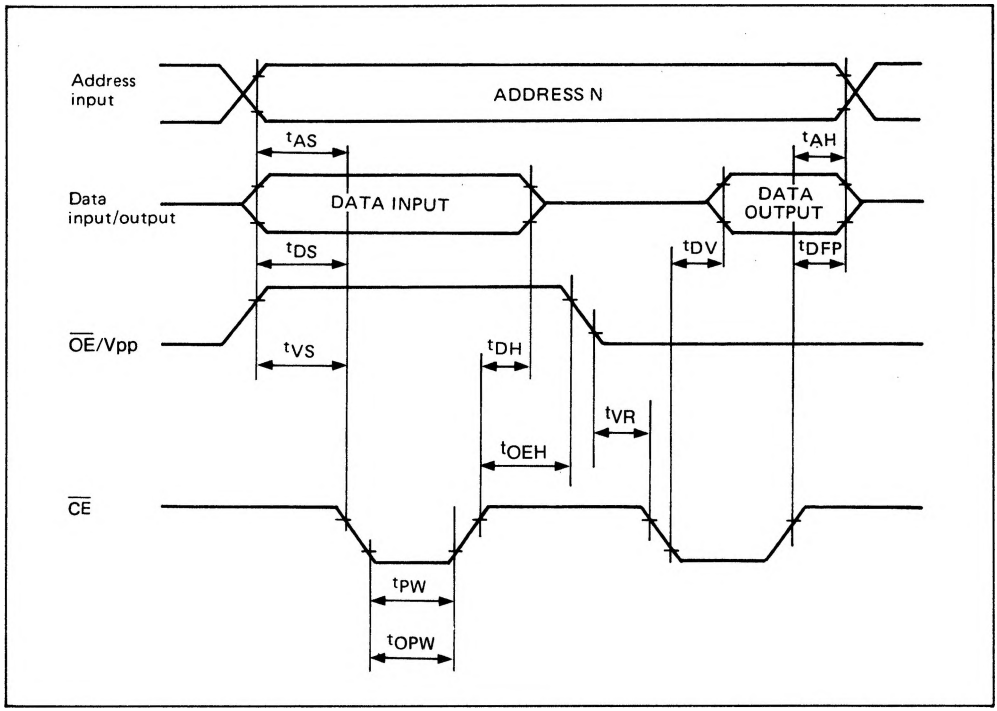
Parameter	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Input Leakage Current	I_{LI}	V_{IN} = 5.25V	–	–	10	μA
Vpp Power Current	Ipp	$\overline{CE}$ = V_{IL}	–	–	50	mA
V_{CC} Power Current	I_{CC}	–	–	–	100	mA
Input Voltage "H" Level	V_{IH}	–	2.0	–	V_{CC}+1	V
Input Voltage "L" Level	V_{IL}	–	−0.1	–	0.8	V
Output Voltage "H" Level	V_{OH}	I_{OH} = −400 μA	2.4	–	–	V
Output Voltage "L" Level	V_{OL}	I_{OL} = 2.1 mA	–	–	0.45	V

AC CHARACTERISTICS

(V_{CC} = 6V±0.25V, Vpp = 12.5V±0.5V, Ta = 25°C±5°C)

Parameter	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Address Set-up Time	t_{AS}	–	2	–	–	μs
Data Set-up Time	t_{DS}	–	2	–	–	μs
Address Hold Time	t_{AH}	–	0	–	–	μs
Data Hold Time	t_{DH}	–	2	–	–	μs
$\overline{CE}$ Enable to Output Float Delay	t_{DFP}	–	0	–	130	ns
Vpp Power Set-up Time	t_{VS}	–	2	–	–	μs
$\overline{CE}$ Initial Program Pulse Width	t_{PW}	–	0.95	1.0	1.05	ms
$\overline{CE}$ Overprogram Pulse Width	t_{OPW}	–	2.85	–	78.75	ms
$\overline{OE}$/Vpp Hold Time	t_{OEH}	–	2	–	–	μs
Data Valid from $\overline{CE}$	t_{DV}	–	–	–	1	μs
$\overline{OE}$/Vpp Recovery Time	t_{VR}	–	2	–	–	μs

TIME CHART



CAPACITANCE

(Ta = 25°C, f = 1 MHz)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit.
Input Capacitance	C_{IN}	V_{IN} = 0V	–	4	6	pF
Output Capacitance	C_{OUT}	V_{OUT} = 0V	–	8	12	pF