

MSM2764AS

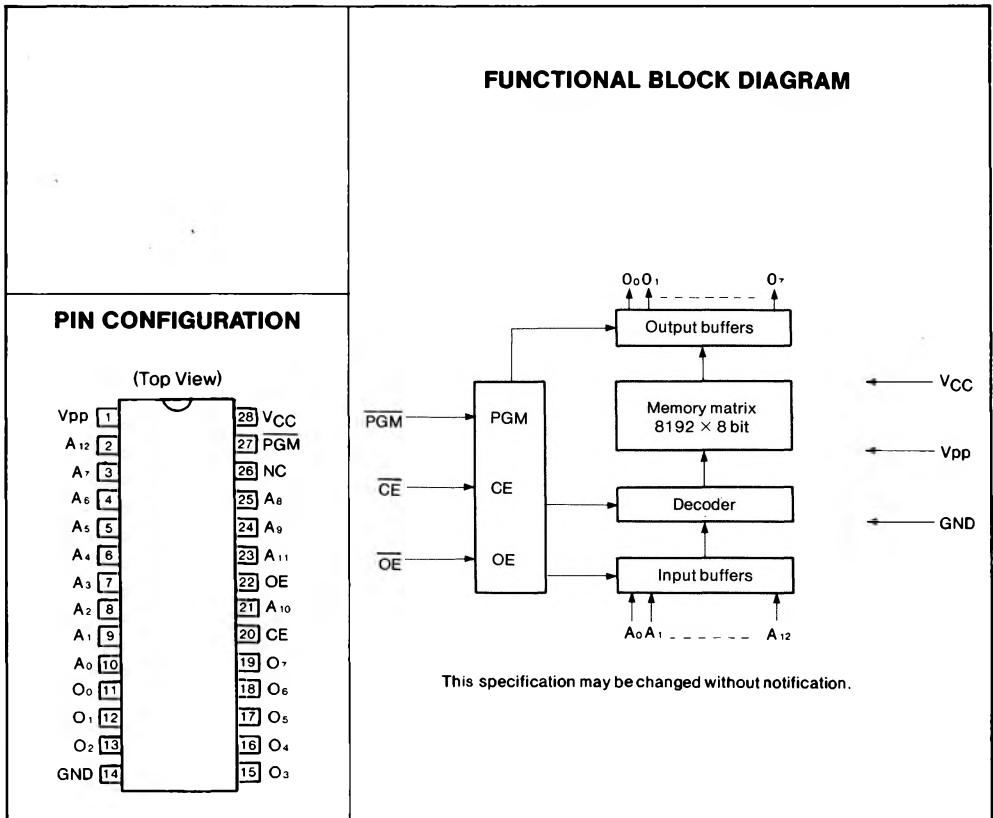
**8192 × 8 BIT UV ERASABLE ELECTRICALLY PROGRAMMABLE
READ-ONLY MEMORY**

GENERAL DESCRIPTION

The MSM2764 is a 8192 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 MSM2764 is ideal for microprocessor programs, etc. The MSM2764 is manufactured by the N channel double silicon gate MOS technology and is contained in the 28 pin package.

FEATURES

- +5V single power supply
- 8192 words × 8 bit configuration
- Access time:
 - MAX200 ns (MSM2764-20)
 - MAX250 ns (MSM2764-25)
 - MAX300 ns (MSM2764-30)
- Power consumption:
 - MAX525 mW (during operation)
 - MAX184 mW (during stand-by)
- Perfect static operation
- INPUT/OUTPUT TTL level (three state output)



FUNCTION TABLE

Mode	Pins					
	\overline{CE} (20)	\overline{OE} (22)	\overline{PGM} (27)	V _{pp} (1)	V _{CC} (28)	Outputs
Read	V _{IL}	V _{IL}	V _{IH}	+5V	+5V	Dout
Output Disable	V _{IL}	V _{IH}	V _{IH}	+5V	+5V	High impedance
Stand-by	V _{IH}	—	—	+5V	+5V	High impedance
Program	V _{IL}	—	V _{IL}	+21V	+6V	D _{IN}
Program Verify	V _{IL}	V _{IL}	V _{IH}	+21V	+6V	Dout
Program Inhibit	V _{IH}	—	—	+21V	+6V	High impedance

—; Can be either V_{IL} or V_{IH}

ABSOLUTE MAXIMUM RATINGS

Temperature Under Bias	T _a	−10°C ~ 80°C
Storage Temperature	T _{stg}	−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	V _{pp}	−0.6V ~ 23V
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±0.25V V _{pp} =V _{CC} ±0.6V	V
V _{pp} Voltage	V _{pp}	4.15	5.0	5.85			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

($V_{CC} = 5V \pm 5\%$, $V_{pp} = V_{CC} \pm 0.6V$, $T_a = 0^\circ C \sim 70^\circ C$)

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
Program Power Current	I_{pp1}	$V_{pp} = V_{CC} \pm 0.6V$	–	–	5	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}	$I_{OH} = -400 \mu A$	2.4	–	–	V
Output Voltage "L" Level	V_{OL}	$I_{OL} = 2.1 mA$	–	–	0.45	V

AC CHARACTERISTICS

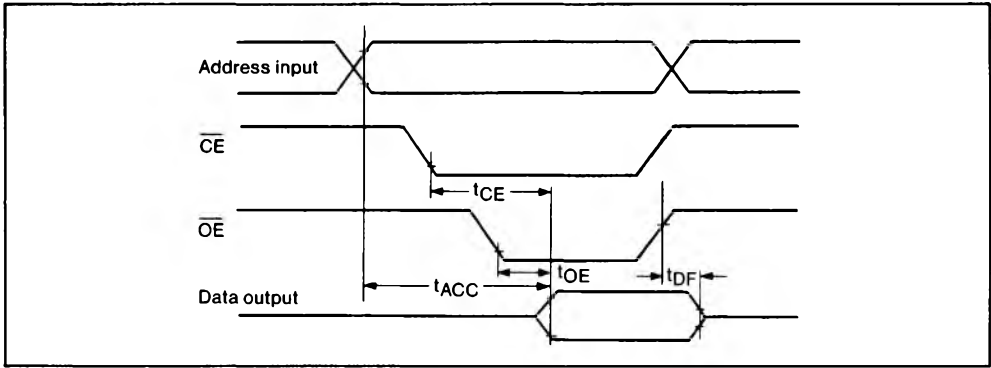
($V_{CC} = 5V \pm 5\%$, $V_{pp} = V_{CC} \pm 0.6V$, $T_a = 0^\circ C \sim 70^\circ C$)

Parameter	Symbol	Conditions	2764-20		2764-25		2764-30		Unit
			Min.	Max.	Min.	Max.	Min.	Max.	
Address Access Time	t_{ACC}	$\overline{CE} = \overline{OE} = V_{IL}$, $\overline{PGM} = V_{IH}$	–	200	–	250	–	300	ns
CE Access Time	t_{CE}	$\overline{OE} = V_{IL}$, $\overline{PGM} = V_{IH}$	–	200	–	250	–	300	ns
OE Access Time	t_{OE}	$\overline{CE} = V_{IL}$, $\overline{PGM} = V_{IH}$	–	70	–	100	–	120	ns
Output Disable Time	t_{DF}	$\overline{CE} = V_{IL}$, $\overline{PGM} = V_{IH}$	0	60	0	85	0	105	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



<PROGRAMMING OPERATION>

DC CHARACTERISTICS

($V_{CC} = 6V \pm 0.25V$, $V_{pp} = 21V \pm 0.5V$, $T_a = 25^\circ C \pm 5^\circ C$)

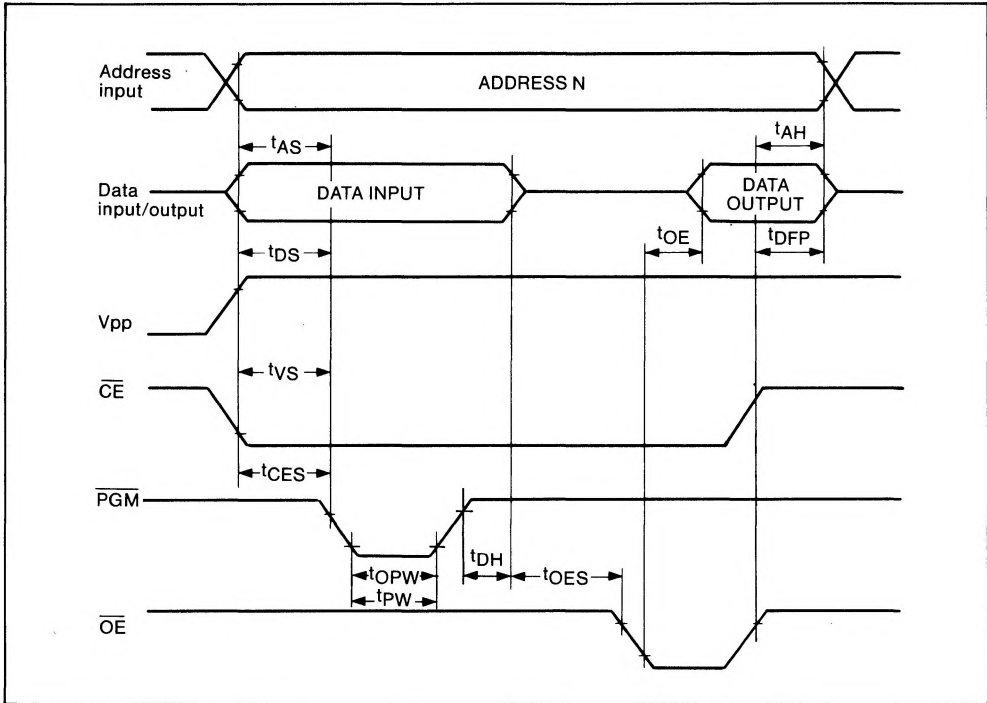
Parameter	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Input Leakage Current	I_{LI}	$V_{IN} = 5.25V$	–	–	10	μA
Vpp Power Current	I_{pp}	$\overline{CE} = \overline{PGM} = V_{IL}$	–	–	30	mA
V_{CC} Power Current	I_{CC}	–	–	–	100	mA
Input Voltage “H” Level	V_{IH}	–	2.0	–	$V_{CC}+1$	V
Input Voltage “L” Level	V_{IL}	–	–0.1	–	0.8	V
Output Voltage “H” Level	V_{OH}	$I_{OH} = -400 \mu A$	2.4	–	–	V
Output Voltage “L” Level	V_{OL}	$I_{OL} = 2.1 mA$	–	–	0.45	V

AC CHARACTERISTICS

($V_{CC} = 6V \pm 0.25V$, $V_{pp} = 21V \pm 0.5V$, $T_a = 25^\circ C \pm 5^\circ C$)

Parameter	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Address Set-up Time	t_{AS}	–	2	–	–	μs
\overline{OE} Set-up Time	t_{OES}	–	2	–	–	μs
Data Set-up Time	t_{DS}	–	2	–	–	μs
Address Hold Time	t_{AH}	–	0	–	–	μs
Data Hold Time	t_{DH}	–	2	–	–	μs
Output Enable to Output Float Delay	t_{DFP}	–	0	–	130	ns
Vpp Power Set-up Time	t_{VS}	–	2	–	–	μs
\overline{PGM} Initial Program Pulse Width	t_{PW}	–	0.95	1.0	1.05	ms
\overline{PGM} Overprogram Pulse Width	t_{OPW}	–	3.8	–	63	ms
\overline{CE} Set-up Time	t_{CES}	–	2	–	–	μs
Data Valid from \overline{OE}	t_{OE}	–	–	–	150	ns

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