

# HM6116 Series — Maintenance Only

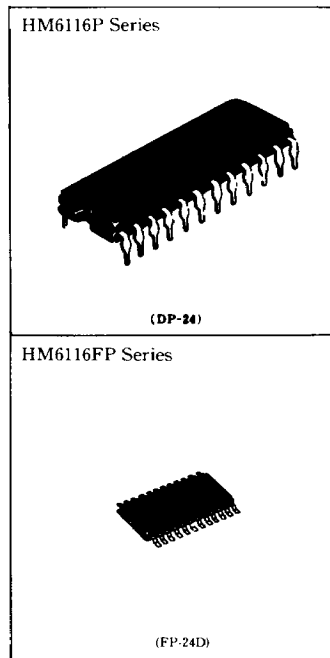
2048-word x 8-bit High Speed CMOS Static RAM

## FEATURES

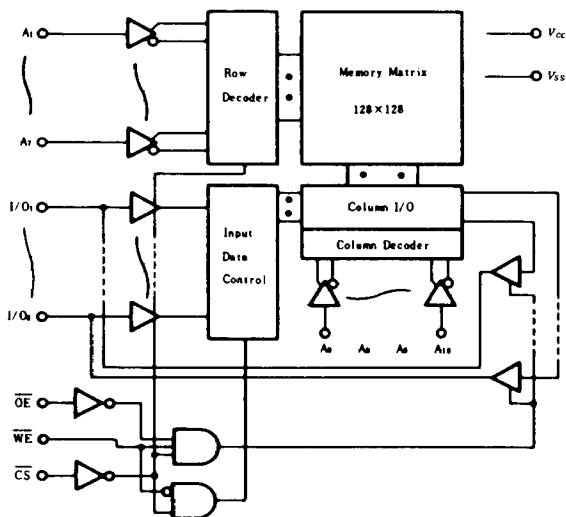
- Single 5V Supply
- High speed: Fast Access Time                    120ns/150ns/200ns (max.)
- Low Power Standby and Low Power Operation
  - Standby:                    100μW (typ.)
  - 10μW (typ.) (L-version)
  - Operation:                200mW (typ.)
  - 175mW (typ.) (L-version)
- Completely Static RAM:    No clock or Timing Strobe Required
- Directly TTL Compatible: All Input and Output
- Pin Out Compatible with Standard 16K EPROM/MASK ROM
- Equal Access and Cycle Time
- Capability of Battery Back Up Operation (L-version)

## ORDERING INFORMATION

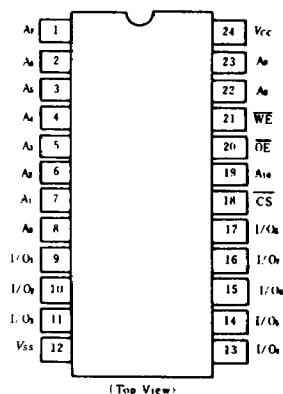
Type No.	Access Time	Package
HM6116P-2	120ns	600mil 24pin Plastic DIP
HM6116P-3	150ns	
HM6116P-4	200ns	
HM6116LP-2	120 ns	24pin Plastic SOP
HM6116LP-3	150 ns	
HM6116LP-4	200 ns	
HM6116FP-2	120 ns	24pin Plastic SOP
HM6116FP-3	150 ns	
HM6116FP-4	200 ns	
HM6116LFP-2	120 ns	24pin Plastic SOP
HM6116LFP-3	150 ns	
HM6116LFP-4	200 ns	



## FUNCTIONAL BLOCK DIAGRAM



## PIN ARRANGEMENT



Note) This device is not available for new application.



### ■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rating	Unit
Voltage on Any Pin Relative to $V_{SS}$	$V_T$	-0.5 <sup>1</sup> to +7.0	V
Operating Temperature	$T_{op}$	0 to +70	°C
Storage Temperature	$T_{stg}$	-55 to +125	°C
Storage Temperature Under Bias	$T_{sb}$	-10 to +85	°C
Power Dissipation	$P_T$	1.0	W

Note) \*1. -3.5V for pulse width  $\leq 50$ ns

### ■ TRUTH TABLE

$\overline{CS}$	$\overline{OE}$	$\overline{WE}$	Mode	$V_{CC}$ Current	I/O Pin	Ref. Cycle
H	x	x	Not Selected	$I_{SB}, I_{SB1}$	High Z	
L	L	H	Read	$I_{CC}$	Dout	Read Cycle (1)~(3)
L	H	L	Write	$I_{CC}$	Din	Write Cycle (1)
L	L	L	Write	$I_{CC}$	Din	Write Cycle (2)

### ■ RECOMMENDED DC OPERATING CONDITIONS ( $T_a=0$ to +70°C)

Item	Symbol	min	typ	max	Unit
Supply Voltage	$V_{CC}$	4.5	5.0	5.5	V
	$V_{SS}$	0	0	0	V
Input Voltage	$V_{IH}$	2.2	3.5	6.0	V
	$V_{IL}$	-0.3 <sup>1</sup>	—	0.8	V

Note) \*1. -3.0V for pulse width  $\leq 50$ ns.

### ■ DC AND OPERATING CHARACTERISTICS ( $V_{CC}=5V \pm 10\%$ , $V_{SS}=0V$ , $T_a=0$ to +70°C)

Item	Symbol	Test Conditions	HM6116-2			HM6116-3/-4			Unit
			min	typ* <sup>1</sup>	max	min	typ* <sup>1</sup>	max	
Input Leakage Current	$ I_{LI} $	$V_{CC}=5.5V$ , $V_{IN}=V_{SS}$ to $V_{CC}$	—	—	10	—	—	10	$\mu A$
			—	—	2* <sup>3</sup>	—	—	2* <sup>3</sup>	
Output Leakage Current	$ I_{LO} $	$\overline{CS}=V_{IH}$ or $\overline{OE}=V_{IH}$ , $V_{I/O}=V_{SS}$ to $V_{CC}$	—	—	10	—	—	10	$\mu A$
			—	—	2* <sup>3</sup>	—	—	2* <sup>3</sup>	
Operating Power Supply Current	$I_{CC}$	$\overline{CS}=V_{IL}$ , $I_{I/O}=0mA$	—	.40	80	—	35	70	mA
			—	35* <sup>3</sup>	70* <sup>3</sup>	—	30* <sup>3</sup>	60* <sup>3</sup>	
Average Operating Current	$I_{CC1}$ * <sup>2</sup>	$V_{IH}=3.5V$ , $V_{IL}=0.6V$ , $I_{I/O}=0mA$	—	35	—	—	30	—	mA
			—	30* <sup>3</sup>	—	—	25* <sup>3</sup>	—	
Standby Power Supply Current	$I_{SB}$	$\overline{CS}=V_{IH}$	—	5	15	—	5	15	mA
			—	4* <sup>3</sup>	12* <sup>3</sup>	—	4* <sup>3</sup>	12* <sup>3</sup>	
Output Voltage	$V_{OL}$	$\overline{CS} \geq V_{CC} - 0.2V$ , $0V \leq V_{IN} \leq 0.2V$ or $V_{CC} - 0.2V \leq V_{IN}$	—	0.02	2	—	0.02	2	$\mu A$
			—	2* <sup>3</sup>	50* <sup>3</sup>	—	2* <sup>3</sup>	50* <sup>3</sup>	
Output Voltage	$V_{OH}$	$I_{OL}=4mA$	—	—	0.4	—	—	—	V
			—	—	—	—	—	0.4	
			2.4	—	—	2.4	—	—	

Notes) \*1.  $V_{CC}=5V$ ,  $T_a=25^\circ C$

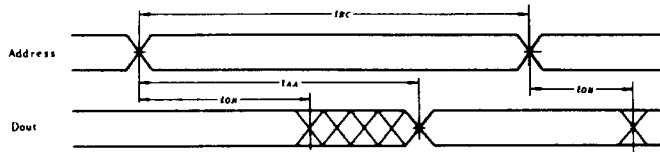
\*2. Reference Only

\*3. This characteristics are guaranteed only for L-version.

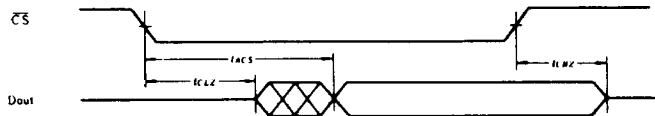




● READ CYCLE (2) <sup>(1)(2)(4)</sup>



● READ CYCLE (3) <sup>(1)(2)(4)</sup>



- NOTES:
1.  $\overline{WE}$  is High for Read Cycle.
  2. Device is continuously selected,  $\overline{CS} = V_{IL}$ .
  3. Address Valid prior to or coincident with  $\overline{CS}$  transition Low.
  4.  $\overline{OE} = V_{IL}$ .

● WRITE CYCLE (1)

