

1,048,576-words x 1-Bit Random Access Memory

■ DESCRIPTION

The Hitachi HM100510 is ECL 100k compatible, 1,048,576 words by 1 bit read/write random access memory developed for high speed systems.

■ FEATURES

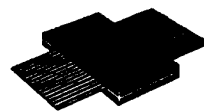
- 1,048,576-words x 1 bit organization
- Fully compatible with 100k ECL level
- 0.8 μ m Hi-BiCMOS process
- Address access time: 15 ns (max.)
- Write pulse width: 9 ns (min.)
- Low power dissipation: 700 mW (typ.)
- Output obtainable by wired-OR (open emitter)

■ ORDERING INFORMATION

Type No.	Access Time	Package
HM100510F-15	15 ns	28 pin Ceramic Flat (30 mil Lead Pitch) (FG-28DB)

■ PIN DESCRIPTION

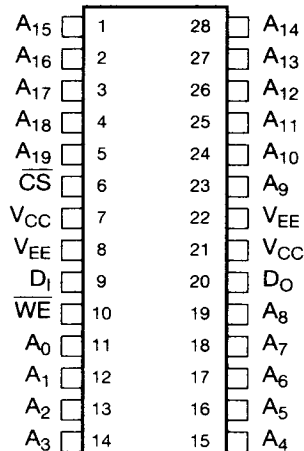
Pin Name	Function
A0-A19	Address Input
DI	Data Input
DO	Data Output
WE	Write Enable
CS	Chip Select
VCC	Ground
VEE	Supply Voltage



(FG-28DB)

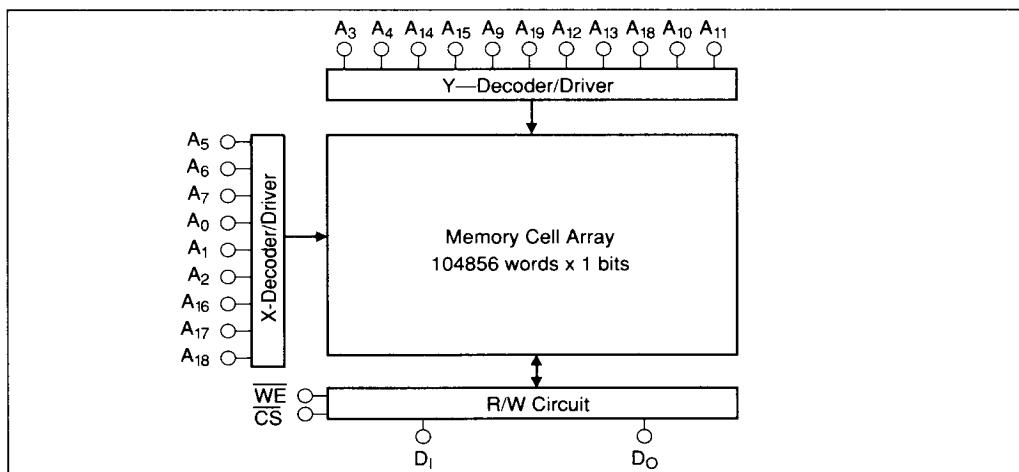
■ PIN ARRANGEMENT

HM100510 Series



(Top View)

■ BLOCK DIAGRAM



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■ FUNCTION TABLE

Input			Output	Mode
$\overline{CS}$	$\overline{WE}$	D_{in}		
H	X ¹	X ¹	L	Not Selected
L	L	L	L	Write "0"
L	L	H	L	Write "1"
L	H	X ¹	Dout ²	Read

Notes: 1. Irrelevant
2. Read Out Noninvert

■ ABSOLUTE MAXIMUM RATING ($T_a = 25^\circ\text{C}$)

Item	Symbol	Rating	Unit
Supply Voltage	V_{EE} to V_{CC}	+0.5 to -7.0	V
Input Voltage	V_{in}	+0.5 to V_{EE}	V
Output Current	I_{out}	-30	mA
Storage Temperature	T_{stg}	-65 to +150	$^\circ\text{C}$
Storage Temperature	T_{stg} (bias) ¹	-55 to +125	$^\circ\text{C}$

Note: 1. Under bias ($V_{EE} = -6.0\text{V min.}$)

■ ELECTRICAL CHARACTERISTICS

• DC Characteristics ($V_{EE} = -4.5\text{V}$, $R_L = 50\Omega$ to -2.0V , $T_C = 0$ to $+85^\circ\text{C}$)

Item	Symbol	Min (B)	Typ	Max (A)	Unit	Test Condition
Output Voltage	V_{OH}	-1025	-955	-880	mV	$V_{in} = V_{IHA}$ or V_{ILB}
	V_{OL}	-1810	-1715	-1620	mV	
Output Threshold Voltage	V_{OHC}	-1035	—	—	mV	$V_{in} = V_{IHB}$ or V_{ILA}
	V_{OLC}	—	—	-1610	mV	
Input Voltage	V_{IH}	-1165	—	-880	mV	Guaranteed Input Voltage High/Low for All Inputs
	V_{IL}	-1810	—	-1475	mV	
Input Current	I_{IH}	—	—	220	μA	$V_{in} = V_{IHA}$
	I_{IL}	0.5	—	170	μA	$V_{in} = V_{ILB} (\overline{CS})$
		-50	—	—	μA	$V_{in} = V_{ILB}$ (Others)
Supply Current	I_{EE}	-180	—	—	mA	All Outputs Open

■ AC CHARACTERISTICS ($V_{EE} = -4.5\text{V} \pm 5\%$, $T_C = 0$ to $+85^\circ\text{C}$)

• Read Mode

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Chip Select Access Time	t_{ACS}	—	—	10	ns	
Chip Select Recovery Time	t_{RCS}	—	—	10	ns	
Address Access Time	t_{AA}	—	—	15	ns	



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• Write Mode

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Write Pulse Width	tw	9	—	—	ns	tWSA = tWSA min
Data Setup Time	tWSD	3	—	—	ns	
Data Hold	tWHD	3	—	—	ns	
Address Setup Time	tWSA	3	—	—	ns	tW = tW min
Address Hold Time	tWHA	3	—	—	ns	
Chip Select Setup Time	tWSCS	3	—	—	ns	
Chip Select Hold Time	tWHCS	3	—	—	ns	
Write Disable Time	tWS	—	—	15	ns	
Write Recovery Time	tWR	—	—	18	ns	

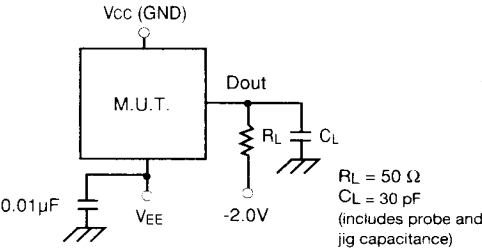
• Rise/Fall Time

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Output Rise Time	tr	—	1.5	—	ns	
Output Fall Time	tf	—	1.5	—	ns	

• Capacitance

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Input Capacitance	Cin	—	3	—	pF	
Output Capacitance	COUT	—	5	—	pF	

■ AC TEST CONDITION



■ INPUT PULSE

