

HM10490 Series

65536-Words × 1-Bit Fully Decoded Random Access Memory

DESCRIPTION

The HM10490 is ECL 10K compatible, 65536-words by 1-bit read/write random access memory developed for high speed systems such as scratch pads and control/buffer storage.

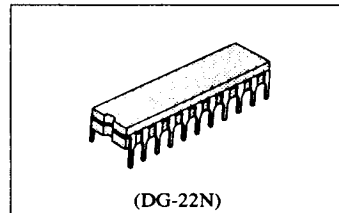
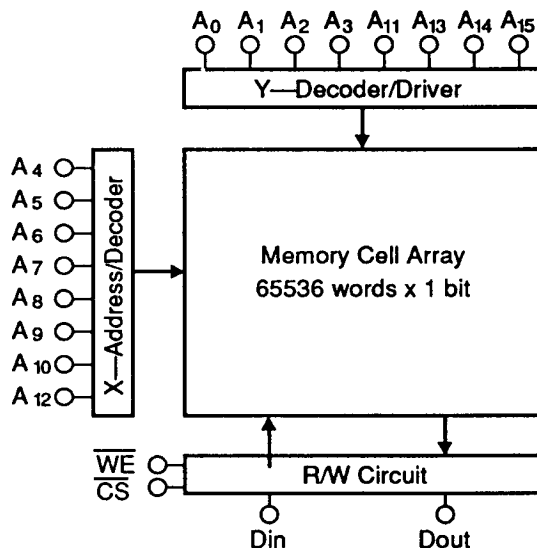
FEATURES

- 65536 × 1 Bit Organization
- Fully Compatible with 10K ECL Level
- Address Access Time10/12ns (max.)
- Write Pulse Width6/8ns (min.)
- Low Power Dissipation570mW (typ.)
- Output Obtainable by Wired-OR (Open Emitter)

ORDERING INFORMATION

Type No.	Access Time	Package
HM10490-10	10ns	300 mil 22 pin Cerdip (DG-22N)
HM10490-12	12ns	

BLOCK DIAGRAM



PIN ARRANGEMENT

Dout	1	22	VCC
A0	2	21	Din
A1	3	20	CS
A2	4	19	WE
A3	5	18	A15
A4	6	17	A14
A5	7	16	A13
A6	8	15	A12
A7	9	14	A11
A8	10	13	A10
VEE	11	12	A9

(Top View)

FUNCTION TABLE

Input			Output	Mode
CS	WE	Din		
H	X	X	L	Not Selected
L	L	L	L	Write "0"
L	L	H	L	Write "1"
L	H	X	D _{out} *	Read

NOTES: X = Irrelevant;
* = Read out noninvert



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

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

NOTE: * = Under bias.

■ DC CHARACTERISTICS ($V_{EE} = \Theta 5.2\text{V}$, $R_L = 50\Omega$ to $\Theta 2.0\text{V}$, $T_a = 0$ to $+75^\circ\text{C}$, air flow exceeding 2m/sec.)

Item	Symbol	Test Condition		Min. (B)	Typ.	Max. (A)	Unit	
Output Voltage	V _{OH}	V _{in} = V _{IHA} or V _{ILB}		0°C	Θ1000	—	Θ840	mV
				+25°C	Θ960	—	Θ810	
				+75°C	Θ900	—	Θ720	
	V _{OL}			0°C	Θ1870	—	Θ1665	
				+25°C	Θ1850	—	Θ1650	
				+75°C	Θ1830	—	Θ1625	
Output Threshold Voltage	V _{OHC}	V _{in} = V _{IHB} or V _{ILA}		0°C	Θ1020	—	—	mV
				+25°C	Θ980	—	—	
				+75°C	Θ920	—	—	
	V _{OLC}			0°C	—	—	Θ1645	
				+25°C	—	—	Θ1630	
				+75°C	—	—	Θ1605	
Input Voltage	V _{IH}	Guaranteed Input Voltage High for All Inputs		0°C	Θ1145	—	Θ840	mV
				+25°C	Θ1105	—	Θ810	
				+75°C	Θ1045	—	Θ720	
	V _{IL}	Guaranteed Input Voltage Low for All Inputs		0°C	Θ1870	—	Θ1490	
				+25°C	Θ1850	—	Θ1475	
				+75°C	Θ1830	—	Θ1450	
Input Current	I _{IH}	V _{in} = V _{IHA}	0 to +75°C	—	—	220	μA	
	I _{IL}	V _{in} = V _{ILB}	0 to +75°C	CS	0.5	—		170
		Others		—	—	—		
Supply Current	I _{EE}	All Inputs and Outputs Open		0°C, 75°C	Θ140	—	—	mA

■ AC CHARACTERISTICS ($V_{EE} = \Theta 5.2\text{V} \pm 5\%$, $T_a = 0$ to $+75^\circ\text{C}$, air flow exceeding 2m/sec.)

1. Read Mode

Item	Symbol	Test Condition	HM10490-10			HM10490-12			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Chip Select Access Time	t_{ACS}		—	—	6	—	—	8	ns
Chip Select Recovery Time	t_{RCS}		—	—	6	—	—	8	ns
Address Access Time	t_{AA}		—	—	10	—	—	12	ns



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2. Write Mode

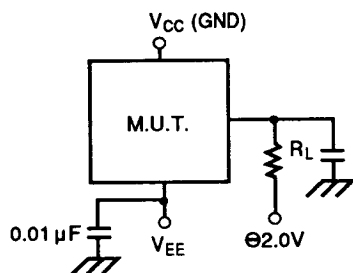
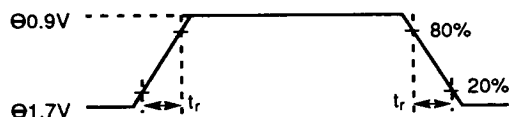
Item	Symbol	Test Condition	Min.	Typ.	Max.	Min.	Typ.	Max.	Unit
Write Pulse Width	t_W	$t_{WSA} = t_{WSA \text{ min.}}$	6	—	—	8	—	—	ns
Data Setup Time	t_{WSD}		2	—	—	2	—	—	ns
Data Hold Time	t_{WHD}		2	—	—	2	—	—	ns
Address Setup Time	t_{WSA}		2	—	—	2	—	—	ns
Address Hold Time	t_{WHA}	$t_W = t_W \text{ min.}$	2	—	—	2	—	—	ns
Chip Select Setup Time	t_{WSCS}		2	—	—	2	—	—	ns
Chip Select Hold Time	t_{WHCS}		2	—	—	2	—	—	ns
Write Disable Time	t_{WS}		—	—	6	—	—	8	ns
Write Recovery Time	t_{WR}		—	—	12	—	—	14	ns

3. Rise/Fall Time

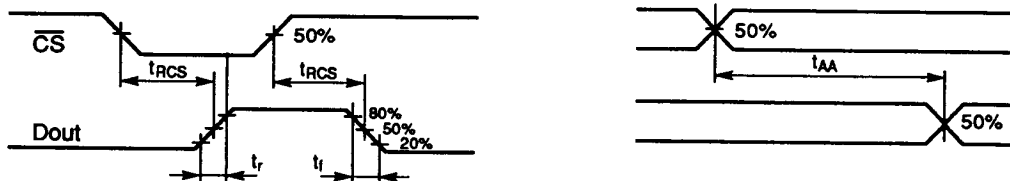
Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Rise Time	t_r		—	2	—	ns
Output Fall Time	t_f		—	2	—	ns

4. Capacitance

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Capacitance	C_{in}		—	3	—	pF
Output Capacitance	C_{out}		—	5	—	pF

■ TEST CIRCUIT AND WAVEFORMS**1. Loading Condition****2. Input Pulse**

3. Read Mode



4. Write Mode

