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.

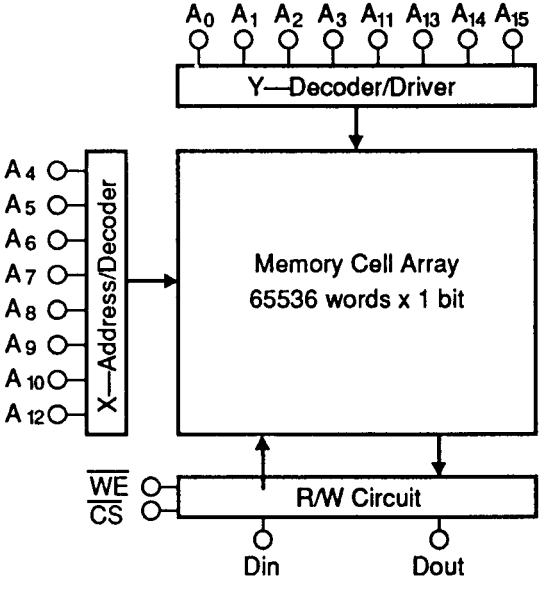
■ FEATURES

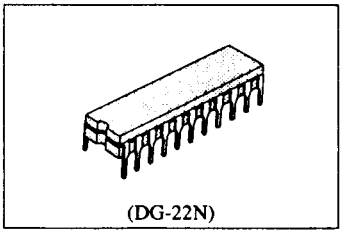
- 65536 × 1 Bit Organization
- Fully Compatible with 10K ECL Level
- Address Access Time . . . . . .10/12ns (max.)
- Write Pulse Width . . . . . .6/8ns (min.)
- Low Power Dissipation . . . . . .570mW (typ.)
- Output Obtainable by Wired-OR (Open Emitter)

■ ORDERING INFORMATION

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

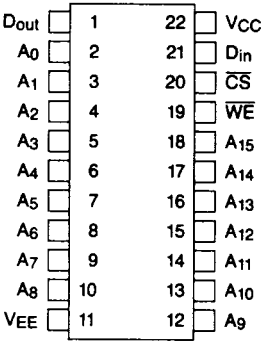
■ BLOCK DIAGRAM





(DG-22N)

■ PIN ARRANGEMENT



(Top View)

■ FUNCTION TABLE

Input			Output	Mode
$\overline{CS}$	$\overline{WE}$	D_{in}		
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

■ ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V_{EE} to V_{CC}	+0.5 to Θ7.0	V
Input Voltage	V_{in}	+0.5 to V_{EE}	V
Output Current	I_{out}	Θ30	mA
Storage Temperature	T_{stg}	Θ65 to +150	°C
Storage Temperature	$T_{stg(bias)}$*	Θ55 to +125	°C

NOTE: * = Under bias.

■ DC CHARACTERISTICS (V_{EE} = Θ5.2V, R_L = 50Ω to Θ2.0V, T_a = 0 to +75°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} $\overline{CS}$	0 to +75°C	0.5	—	170	
		V_{in} = V_{ILB} Others		Θ50	—	—	
Supply Current	I_{EE}	All Inputs and Outputs Open	0°C, 75°C	Θ140	—	—	mA

■ AC CHARACTERISTICS (V_{EE} = Θ5.2V ± 5%, T_a = 0 to +75°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	$t_{WSA} = t_{WSA}$ 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}	$t_W = t_W$ min.	2	—	—	2	—	—	ns
Address Hold Time	t_{WHA}		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

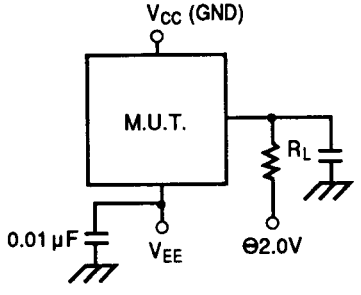
Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Rise Time	t_r		—	2	—	ns
Output Fall Time	t_f		—	2	—	ns

4. Capacitance

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

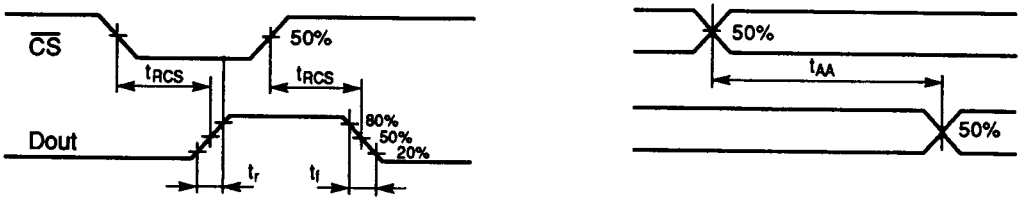
■ TEST CIRCUIT AND WAVEFORMS

1. Loading Condition



2. Input Pulse

3. Read Mode



4. Write Mode