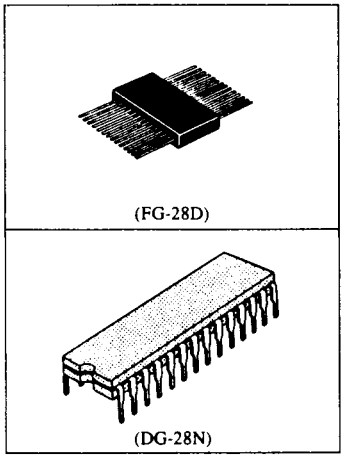
HM10494 Series

16384-word × 4-bit Fully Decoded Random Access Memory

Description

The HM10494 is ECL 10K compatible, 16384-word by 4-bits read/write random access memory developed for high speed systems such as scratch pads and control/buffer storage.



Features

- 16384-word × 4-bit organization
- Fully compatible with 10K ECL level
- Address access time: 10/12 ns (max)
- Write pulse width: 6 ns (min)
- Low power dissipation: 800 mW (typ)
- Output obtainable by wired-OR (open emitter)

Ordering Information

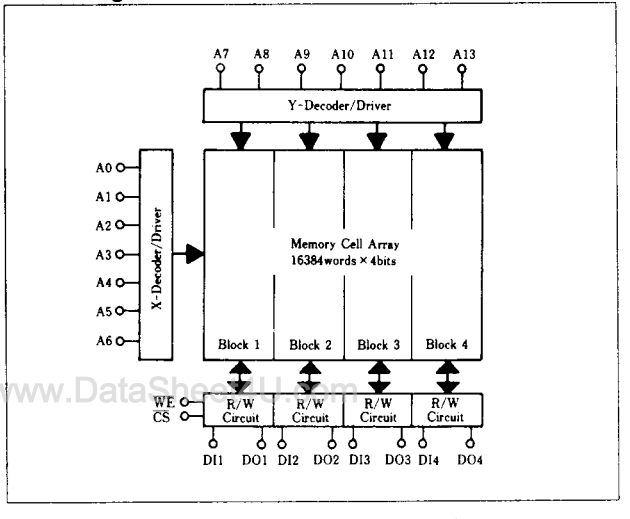
Type No.	Access Time	Package
HM10494-10	10 ns	400 mil 28 pin Cerdip
HM10494-12	12 ns	(DG-28N)
HM10494F-10	10 ns	28 pin Ceramic Flat
HM10494F-12	12 ns	(FG-28D)

Function Table

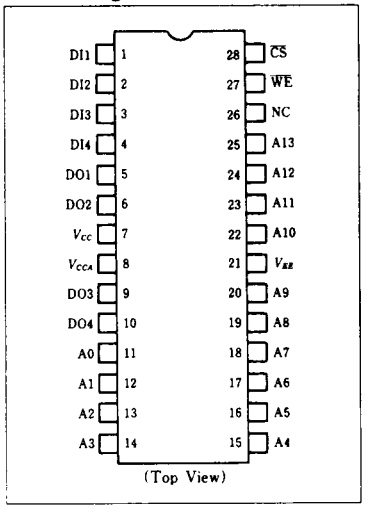
Input			Output	Mode
$\overline{CS}$	$\overline{WE}$	Din		
H	×	×	L	Not Selected
L	L	L	L	Write "0"
L	L	H	L	Write "1"
L	H	×	Dout*1	Read

Notes: ×; Irrelevant *1; Read Out Noninvert

Block Diagram



Pin Arrangement



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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V_{EE} to V_{CC}	+0.5 to −7.0	V
Input Voltage	Vin	+0.5 to V_{EE}	V
Output Current	Iout	−30	mA
Storage Temperature	Tstg	−65 to +150	°C
Storage Temperature	Tstg (Bias)*1	−55 to +125	°C

Note: *1; Under Bias

Electrical Characteristics

DC Characteristics (V_{EE} = −5.2V, R_L = 50Ω to −2.0 V, Ta = 0 to +75°C, air flow exceeding 2 m/sec)

Item	Symbol	Min (B)	Typ	Max (A)	Unit	Test Conditions	
Output Voltage	V_{OH}	−1000	—	−840	mV	Vin = V_{IHA} or V_{ILB}	0°C
		−960	—	−810			+25°C
		−900	—	−720			+75°C
	V_{OL}	−1870	—	−1665			0°C
		−1850	—	−1650			+25°C
		−1830	—	−1625			+75°C
Output Threshold Voltage	V_{OHC}	−1020	—	—	mV	Vin = V_{IHB} or V_{ILA}	0°C
		−980	—	—			+25°C
		−920	—	—			+75°C
	V_{OLC}	—	—	−1645			0°C
		—	—	−1630			+25°C
		—	—	−1605			+75°C
Input Voltage	V_{IH}	−1145	—	−840	mV	Guaranteed Input Voltage High for All Inputs	0°C
		−1105	—	−810			+25°C
		−1045	—	−720			+75°C
	V_{IL}	−1870	—	−1490		Guaranteed Input Voltage Low for All Inputs	0°C
		−1850	—	−1475			+25°C
		−1830	—	−1450			+75°C
Input Current	I_{IH}	—	—	220	μA	Vin = V_{IHA}	0 to +75°C
	I_{IL}	0.5	—	170		Vin = V_{ILB} $\overline{CS}$	0 to +75°C
		−50	—	—		Vin = V_{ILB} Others	0 to +75°C
Supply Current	I_{EE}	−180	—	—	mA	All Inputs and Outputs Open	Ta = 0°C
		−180	—	—			Ta = 75°C

AC Characteristics (V_{EE} = −5.2 V ± 5%, Ta = 0 to +75°C, air flow exceeding 2 m/sec)

Read Mode

Item	Symbol	HM10494-10			HM10494-12			Unit	Test Conditions
		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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Write Mode

Item	Symbol	HM10494-10			HM10494-12			Unit	Test Conditions
		Min	Typ	Max	Min	Typ	Max		
Write Pulse Width	t_W	6	—	—	8	—	—	ns	$t_{WSA} = t_{WSA}$ min
Data Setup Time	t_{WSD}	2	—	—	2	—	—	ns	
Data Hold Time	t_{WHD}	2	—	—	2	—	—	ns	
Address Setup Time	t_{WSA}	2	—	—	2	—	—	ns	$t_W = t_W$ min
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	

Rise/Fall Time

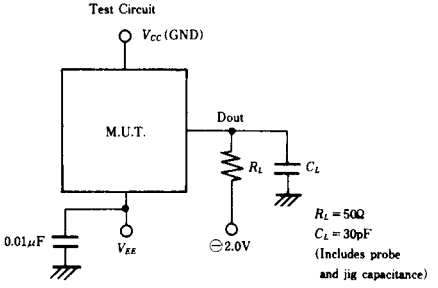
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Output Rise Time	tr	—	2	—	ns	
Output Fall Time	tf	—	2	—	ns	

Capacitance

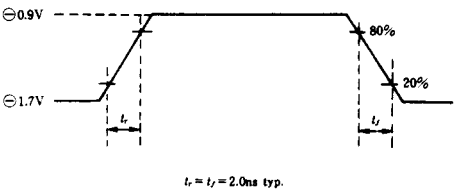
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Input Capacitance	Cin	—	3	—	pF	
Output Capacitance	Cout	—	5	—	pF	

Test Circuit and Waveforms

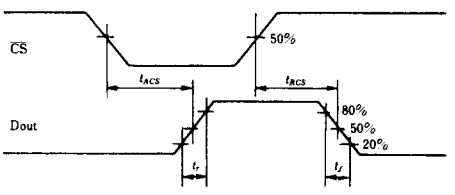
Loading Condition

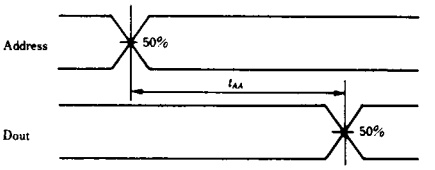


Input Pulse



Read Mode





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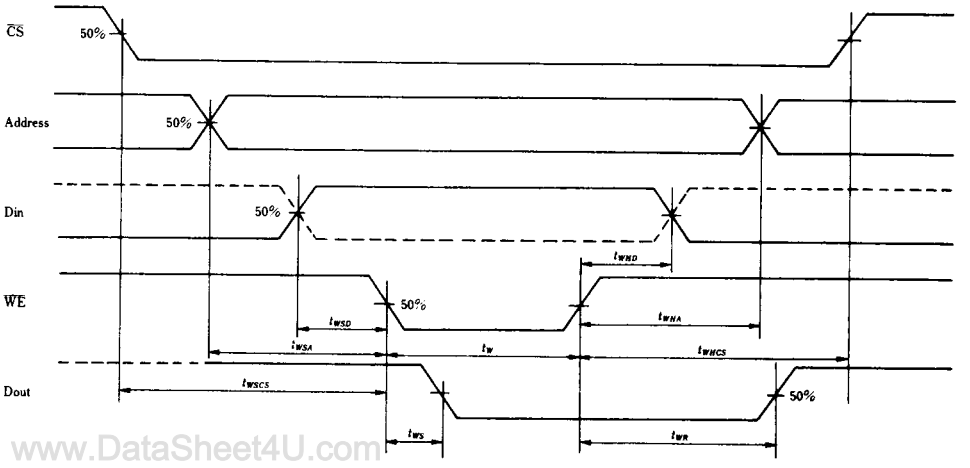

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