

HM100474-8, HM100474-10 HM100474F-8, HM100474F-10

1024-word × 4-bit Fully Decoded Random Access Memory

The HM100474 is ECL 100k compatible, 1024-words x 4-bit, read write, random access memory developed for high speed systems such as scratch pads and control/buffer storages.

The fabrication process is the Hitachi's U-groove isolation method.

The HM100474 is encapsulated in cerdip-24 pin and flat 24 pin package, compatible with Fairchild's F100474.

■ FEATURES

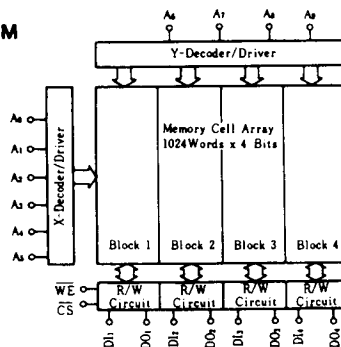
- 1024-word x 4-bit organization
- Fully compatible with 100K ECL level
- Address access time: HM100474-8 8ns (max)
HM100474-10 10ns (max)
- Write pulse width: HM100474-8 5ns (min)
HM100474-10 5ns (min)
- Low power dissipation: 0.3mW/bit
- Output obtainable by wired-OR (open emitter)

■ TRUTH 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*	Read

Notes) × : Irrelevant
* : Read Out Noninvert

■ BLOCK DIAGRAM

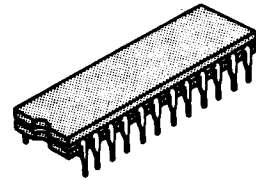


■ ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

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	$T_{stg}(\text{Bias})^*$	-55 to +125	$^\circ\text{C}$

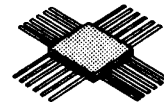
* Under Bias

HM100474-8, HM100474-10



(DG-24A)

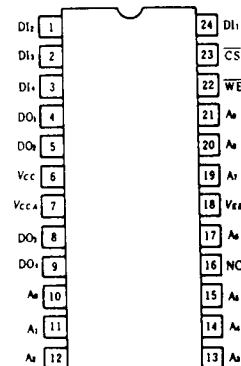
HM100474F-8, HM100474F-10



(FG-24)

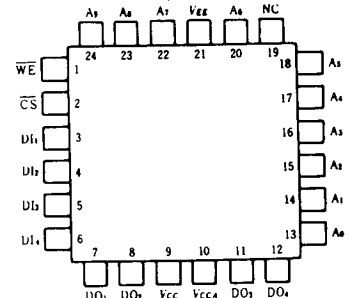
■ PIN ARRANGEMENT

- HM100474-8, HM100474-10



(Top View)

- HM100474F-8, HM100474F-10



(Top View)



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■ ELECTRICAL CHARACTERISTICS

● DC CHARACTERISTICS ($V_{EE} = -4.5V$, $R_L = 50\Omega$ to $-2.0V$, $T_a = 0$ to $+85^\circ C$, air flow exceeding 2m/sec)

Item	Symbol	Test Condition	min(B)	typ	max(A)	Unit
Output Voltage	V_{OH}	$V_{IL} = V_{INA}$ or V_{ILB}	-1025	-955	-880	mV
	V_{OL}		-1810	-1715	-1620	mV
Output Threshold Voltage	V_{OHc}	$V_{IL} = V_{INB}$ or V_{ILA}	-1035	—	—	mV
	V_{OLc}		—	—	-1610	mV
Input Voltage	V_{IH}	Guaranteed Input Voltage High/Low for All Inputs	-1165	—	-880	mV
	V_{IL}		-1810	—	-1475	mV
Input Current	I_{IH}	$V_{IL} = V_{INA}$	—	—	220	μA
	I_{IL}	$V_{IL} = V_{ILB}$	0.5	—	170	μA
		CS Others	-50	—	—	
Supply Current	I_{EE}	All Inputs and Outputs Open	-240	-220	—	mA

● AC CHARACTERISTICS ($V_{EE} = -4.5V \pm 5\%$, $T_a = 0$ to $+85^\circ C$, air flow exceeding 2m/sec)

1. READ MODE

Item	Symbol	Test Condition	HM100474/F-8			HM100474/F-10			Unit
			min	typ	max	min	typ	max	
Chip Select Access Time	t_{ACS}		—	—	6	—	—	6	s
Chip Select Recovery Time	t_{RCS}		—	—	6	—	—	6	ns
Address Access Time	t_{AA}		—	—	8	—	—	10	ns

2. WRITE MODE

Item	Symbol	Test Condition	HM100474/F-8			HM100474/F-10			Unit
			min	typ	max	min	typ	max	
Write Pulse Width	t_W	$t_{WSA} = 2ns$	5	—	—	5	—	—	ns
Data Setup Time	t_{WSD}		1	—	—	2	—	—	ns
Data Hold Time	t_{WHD}		1	—	—	2	—	—	ns
Address Setup Time	t_{WSA}	$t_W = t_{Wmin}$	2	—	—	2	—	—	ns
Address Hold Time	t_{WHA}		1	—	—	2	—	—	ns
Chip Select Setup Time	t_{WSCS}		1	—	—	2	—	—	ns
Chip Select Hold Time	t_{WHCS}		1	—	—	2	—	—	ns
Write Disable Time	t_{WSD}		—	—	6	—	—	6	ns
Write Recovery Time	t_{WR}		—	—	9	—	—	12	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

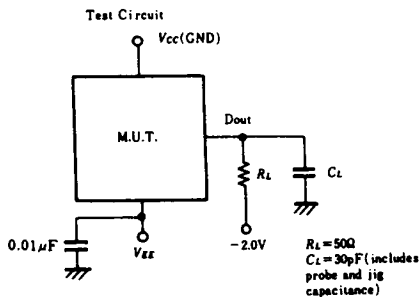
4. CAPACITANCE

Item	Symbol	Test Condition	min	typ	max	Unit
Input Capacitance	C_{in}		—	3	—	pF
Output Capacitance	C_{out}		—	5	—	pF

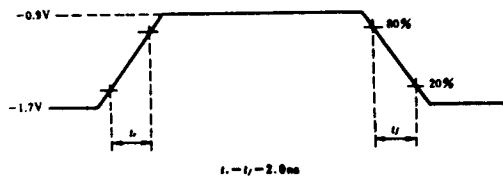


■ TEST CIRCUIT AND WAVEFORMS

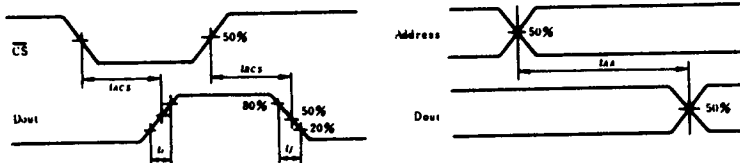
1. LOADING CONDITION



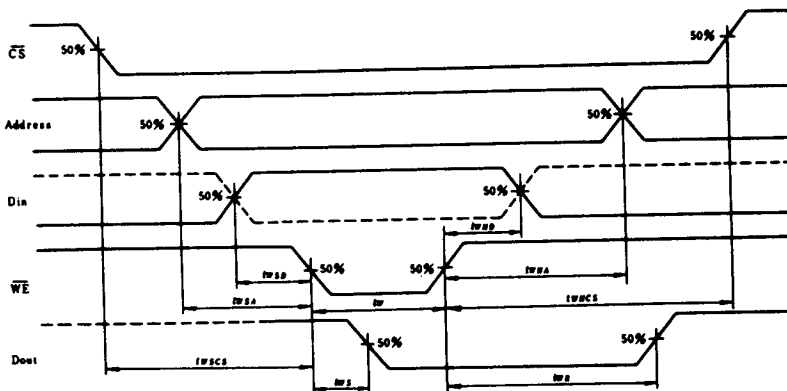
2. INPUT PULSE



3. READ MODE



4. WRITE MODE



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