

HM100422, HM100422F HM100422CG

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

The HM100422 is ECL 100K compatible, 256-word × 4-bit, read write, random access memory developed for high speed system such as scratch pads and control/buffer storages.

Four active Low Block Select lines are provided to select each block independently.

The fabrication process is the Hitachi's low capacitance, oxide isolation method with double metalization.

The HM100422 is encapsulated in cerdip-24pin package, or 24pin flat package compatible with Fairchild's F100422.

FEATURES

- 256-word × 4-bit organization
- Fully compatible with 100K ECL level
- Address access time: 10ns (max.)
- Minimum write pulse width: 6ns (min.)
- Low power dissipation: 0.8mW/bit
- Output obtainable by wired-OR (open emitter)

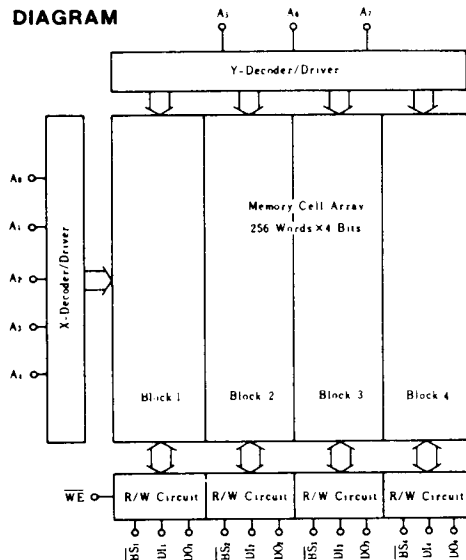
TRUTH TABLE

Input			Output	Mode
BS	WE	Din		
H	x	x	L	Not Selected
L	L	L	L	Write "0"
L	L	H	L	Write "1"
L	H	x	Dout*	Read

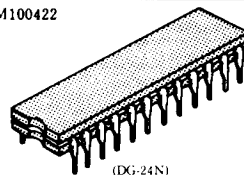
Notes) x : Irrelevant

* : Read Out Noninvert

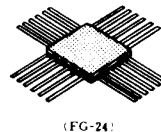
BLOCK DIAGRAM



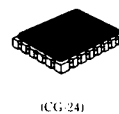
HM100422



HM100422F

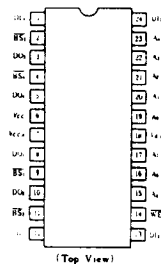


HM100422CG

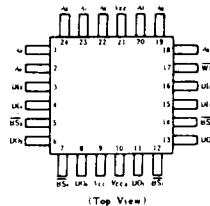


PIN ARRANGEMENT

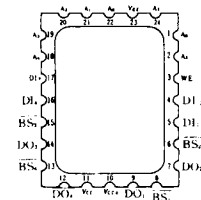
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HM100422F



HM100422CG



■ 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_{i1}	+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

■ ELECTRICAL CHARACTERISTICS

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

Item	Symbol	Test Condition	min(B)	typ	max(A)	Unit
Output Voltage	V_{OH}	$V_{i1} = V_{IH}$ or V_{IL}	-1025	-955	-880	mV
	V_{OL}		-1810	-1715	-1620	mV
Output Threshold Voltage	V_{OHIC}	$V_{i1} = V_{IH}$ or V_{IL}	-1035	—	—	mV
	V_{OLIC}		—	—	-1610	mV
Input Voltage	V_{IH}	Guaranteed Input Voltage	-1165	—	-880	mV
	V_{IL}	High/Low for All Inputs	-1810	—	-1475	mV
Input Current	I_{IH}	$V_{i1} = V_{IH}$	—	—	220	μA
	I_{IL}	$V_{i1} = V_{IL}$	0.5	—	170	μA
		Others	-50	—	—	
Supply Current	I_{EE}	All Inputs and Outputs Open	-200	-165	—	mA

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

1. READ MODE

Item	Symbol	Test Condition	min	typ	max	Unit
Block Select Access Time	t_{ABS}		—	—	6	ns
Block Select Recovery Time	t_{RBS}		—	—	5	ns
Address Access Time	t_{AA}		—	7	10	ns

2. WRITE MODE

Item	Symbol	Test Condition	min	typ	max	Unit
Write Pulse Width	t_w	$t_{WSA} = 2\text{ns}$	6	4.5	—	ns
Data Setup Time	t_{WSD}		2	0	—	ns
Data Hold Time	t_{WHD}		2	0	—	ns
Address Setup Time	t_{WSA}		2	0	—	ns
Address Hold Time	t_{WHA}	$t_w = 6\text{ns}$	2	0	—	ns
Block Select Setup Time	t_{WSBS}		2	0	—	ns
Block Select Hold Time	t_{WHS}		2	0	—	ns
Write Disable Time	t_{WS}		—	4	6	ns
Write Recovery Time	t_{WR}		—	4.5	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_{i1}		—	4	—	pF
Output Capacitance	C_{out}		—	7	—	pF

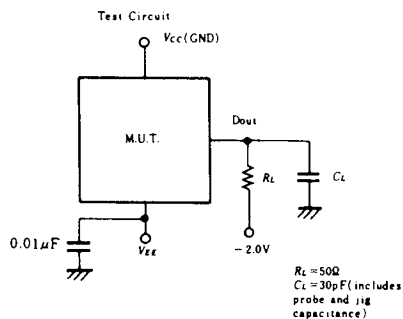


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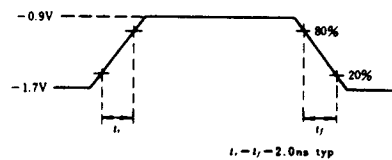
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■ TEST CIRCUIT AND WAVEFORMS

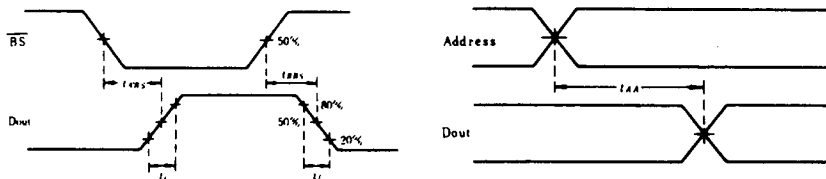
1. LOADING CONDITION



2. INPUT PULSE



3. READ MODE



4. WRITE MODE

