

HM100480-15, HM100480F-15

16,384-words × 1-bit Fully Decoded Random Access Memory

The HM100480-15 is ECL 100K compatible, 16,384-words × 1-bit, read/write random access memory developed for high speed systems such as scratch pads and control/buffer storages.

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

The HM100480-15 is encapsulated in cerdip-20 pin and flat-20 pin package, compatible with Fairchild's 100480.

■FEATURES

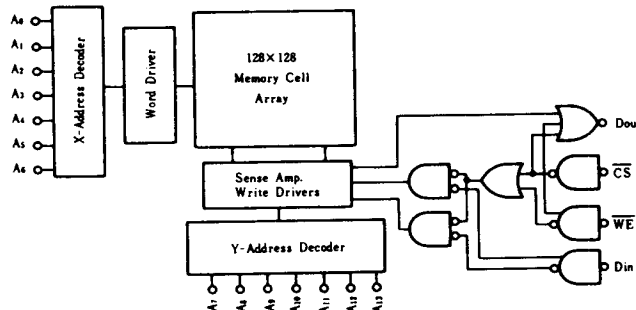
- 16,384-words × 1-bit organization
- Fully compatible with 100K ECL level
- Address access time: 15ns (max)
- Write pulse width: 15ns (min)
- Low power dissipation: 0.06mW/bit
- Output obtainable by wired-OR (open emitter)

■TRUTH TABLE

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

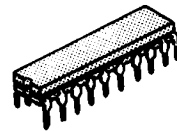


■ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

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

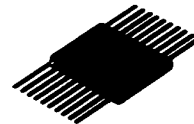
* Under Bias

HM100480-15



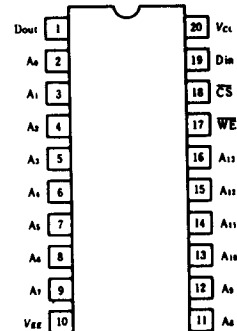
(DG-20N)

HM100480F-15



(FG-20D)

■PIN ARRANGEMENT



(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}	$V_{in} = V_{IH\&A}$ or $V_{IL\&B}$	-1025	-955	-880	mV
	V_{OL}		-1810	-1715	-1620	mV
Output Threshold Voltage	V_{ONC}	$V_{in} = V_{IH\&B}$ or $V_{IL\&A}$	-1035	—	—	mV
	V_{OLC}		—	—	-1610	mV
Input Voltage	V_{IH}	Guaranteed Input Voltage	-1165	—	-880	mV
	V_{IL}	High/Low for All Input	-1810	—	-1475	mV
Input Current	I_{IH}	$V_{in} = V_{IH\&A}$	—	—	220	μA
	I_{IL}	$V_{in} = V_{IL\&B}$	0.5	—	170	μA
		Others			—	
Supply Current	I_{EE}	All Inputs and Outputs Open	-220	—	—	mA

●AC CHARACTERISTICS ($V_{EE} = -4.5V \pm 5\%$, $T_a = 0$ to $+75^\circ C$, air flow exceeding 2m/sec)

1. READ MODE

Item	Symbol	Test Condition	min	typ	max	Unit
Chip Select Access Time	t_{ACS}		2	—	8	ns
Chip Select Recovery Time	t_{RCS}		2	—	8	ns
Address Access Time	t_{AA}		3	12	15	ns

2. WRITE MODE

Item	Symbol	Test Condition	min	typ	max	Unit
Write Pulse Width	t_W	$t_{W\&SA} = 3ns$	15	—	—	ns
Data Setup Time	$t_{W\&SD}$		2	—	—	ns
Data Hold Time	$t_{W\&HD}$		2	—	—	ns
Address Setup Time	$t_{W\&SA}$		3	—	—	ns
Address Hold Time	$t_{W\&HA}$	$t_W = t_{W\&min}$	3	—	—	ns
Chip Select Setup Time	$t_{W\&SCS}$		2	—	—	ns
Chip Select Hold Time	$t_{W\&HCS}$		2	—	—	ns
Write Disable Time	$t_{W\&S}$		—	—	12	ns
Write Recovery Time	$t_{W\&R}$		—	—	17	ns

3. RISE/FALL TIME

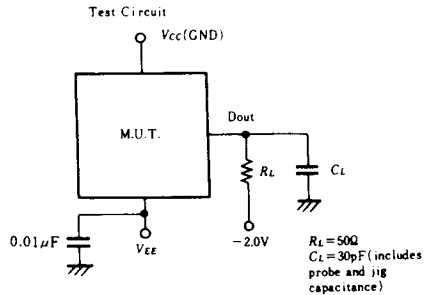
Item	Symbol	Test Condition	min	typ	max	Unit
Output Rise Time	t_r		—	2	—	ns
Output Fall Time	t_f		—	2	—	ns

4. CAPACITANCE

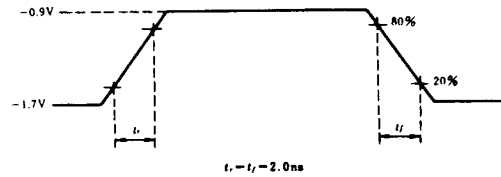
Item	Symbol	Test Condition	min	typ	max	Unit
Input Capacitance	C_{in}		—	3	—	pF
Output Capacitance	C_{out}		—	5	—	pF

■ TEST CIRCUIT AND WAVEFORMS

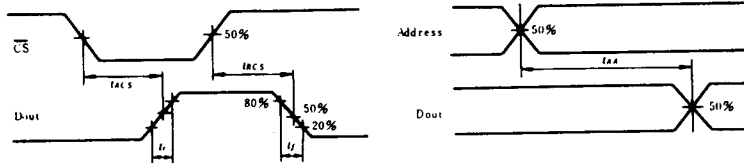
1. LOADING CONDITION



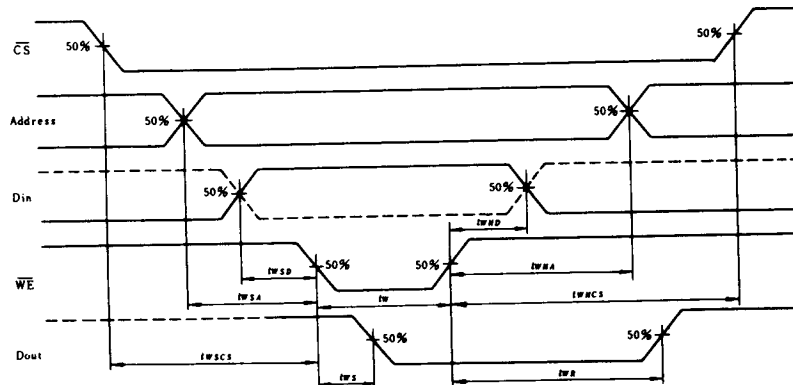
2. INPUT PULSE



3. READ MODE



4. WRITE MODE



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