



### Features

- 70ns MAXIMUM ADDRESS ACCESS TIME
- "THREE STATE" OR OPEN COLLECTOR OUTPUTS
- SIMPLE, HIGH SPEED PROGRAMMING PROCEDURE USING SINGLE PULSES, ASSURES FAST PROGRAMMING AND SUPERIOR RELIABILITY
- INPUTS AND OUTPUT TTL COMPATIBLE
- FAST ACCESS TIME — GUARANTEED FOR WORST CASE N<sup>2</sup> SEQUENCING OVER COMMERCIAL AND MILITARY TEMPERATURE AND VOLTAGE RANGES.
- INDUSTRY'S HIGHEST PROGRAMMING YIELD
- PIN COMPATIBLE WITH INDUSTRY STANDARD PROMs AND ROMs

### Description

The HM-7620/21 are fully decoded high speed Schottky TTL 2048-Bit Field Programmable ROMs in a 512 word by 4 bit/word format with open collector (HM-7620) or "three state" (HM-7621) outputs. These PROMs are available in 16 pin D.I.P. (ceramic or epoxy) and a 16 pin flatpack.

All bits are manufactured storing a logical "1" (positive logic) and can be selectively programmed for a logical "0" in any bit position.

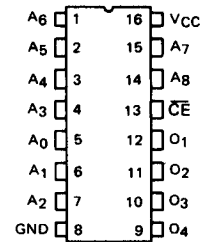
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The HM-7620/21 contain test rows and columns which are in addition to the storage array to assure high programmability and guarantee parametric and A.C. performance. The fuses in these test rows and columns are blown prior to shipment.

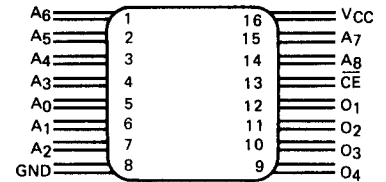
Nickel-chromium fuse technology is used on these and all other Harris Bipolar PROMs.

### Pinouts

TOP VIEW — DIP



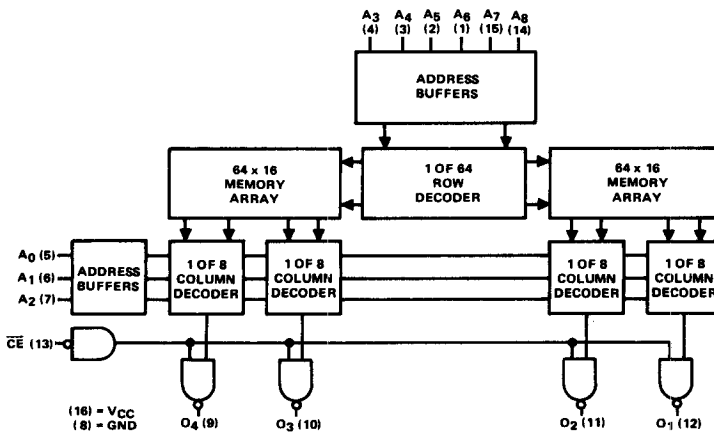
TOP VIEW — FLATPACK



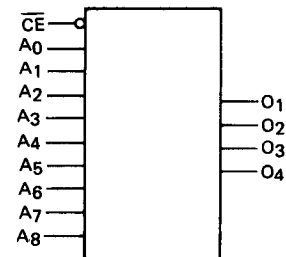
#### PIN NAMES

- A0 — A8 Address Inputs
- CE Chip Enable Input
- O1 — O4 Data Outputs

### Functional Diagram



### Logic Symbol



## Specifications HM-7620/21

### ABSOLUTE MAXIMUM RATINGS

Output or Supply Voltage (Operating)	-0.3 to +7.0V	Storage Temperature	-65°C to +150°C
Address/Enable Input Voltage	5.5V	Operating Temperature (Ambient)	-55°C to +125°C
Address/Enable Input Current	-20mA	Maximum Junction Temperature	+175°C
Output Sink Current	100mA		

**CAUTION:** Stresses above those listed under the "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and functional operation of the device at these or at any other conditions above those indicated in the operational sections of this specification is not implied. (While programming, follow the programming specifications.)

### D.C. ELECTRICAL CHARACTERISTICS (Operating)

HM-7620/21-5 ( $V_{CC} = 5.0V \pm 5\%$ ,  $T_A = 0^\circ C$  to  $+75^\circ C$ )  
 HM-7620/21-2 ( $V_{CC} = 5.0V \pm 10\%$ ,  $T_A = -55^\circ C$  to  $+125^\circ C$ )  
 Typical measurements are at  $T_A = 25^\circ C$ ,  $V_{CC} = +5V$

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
I <sub>IH</sub> I <sub>IL</sub>	Address/Enable "1" Input Current "0"	—	—	+40 -250	μA μA	V <sub>IH</sub> = V <sub>CC</sub> Max. V <sub>IL</sub> = 0.45V
V <sub>IH</sub> V <sub>IL</sub>	Input Threshold "1" Voltage "0"	2.0 —	1.5 1.5	— 0.8	V V	V <sub>CC</sub> = V <sub>CC</sub> Min. V <sub>CC</sub> = V <sub>CC</sub> Max.
V <sub>OH</sub> V <sub>OL</sub>	Output Voltage "1" "0"	2.4* —	3.2* 0.35	— 0.45	V V	I <sub>OH</sub> = -2.0mA, V <sub>CC</sub> = V <sub>CC</sub> Min. I <sub>OL</sub> = +16mA, V <sub>CC</sub> = V <sub>CC</sub> Min.
I <sub>OHE</sub> I <sub>OLE</sub>	Output Disable "1" Current "0"	— —	— —	+100 -100	μA μA	V <sub>OH</sub> , V <sub>CC</sub> = V <sub>CC</sub> Max. V <sub>OL</sub> = 0.3V, V <sub>CC</sub> = V <sub>CC</sub> Max.
V <sub>CL</sub>	Input Clamp Voltage	—	—	-1.2	V	I <sub>IN</sub> = -18mA
I <sub>OS</sub>	Output Short Circuit Current	-15*	—	-100*	mA	V <sub>CC</sub> = V <sub>CC</sub> Max., V <sub>OUT</sub> = 0.0V One Output Only for a Max. of 1 Second.
I <sub>CC</sub>	Power Supply Current	—	90	130	mA	V <sub>CC</sub> = V <sub>CC</sub> Max. All Inputs Grounded

NOTE: Positive current defined as into device terminals  
 \* "Three State" only

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### A.C. ELECTRICAL CHARACTERISTICS (Operating)

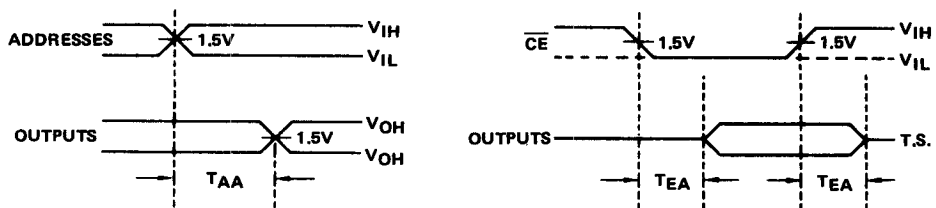
SYMBOL	PARAMETER	HM-7620/21-5 5V ±5% 0°C to +75°C			HM-7620/21-2 5V ±10% -55°C to +125°C			UNITS
		MIN	TYP	MAX*	MIN	TYP	MAX*	
TAA	Address Access Time	—	45	70	—	—	85	ns
TEA	Chip Enable Access Time	—	15	25	—	—	30	ns

\*A.C. limits guaranteed for worst case N2 sequencing with maximum test frequency of 5MHz.

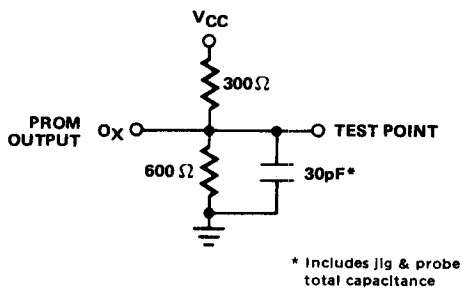
CAPACITANCE:  $T_A = 25^\circ C$

SYMBOL	PARAMETER	MAXIMUM	UNITS	TEST CONDITIONS
C <sub>INA</sub> , C <sub>INCE</sub>	Input Capacitance	12	pF	V <sub>CC</sub> = 5V, V <sub>IN</sub> = 2.0V, f = 1MHz
C <sub>OUT</sub>	Output Capacitance	12	pF	V <sub>CC</sub> = 5V, V <sub>OUT</sub> = 2.0V, f = 1MHz

## SWITCHING TIME DEFINITIONS

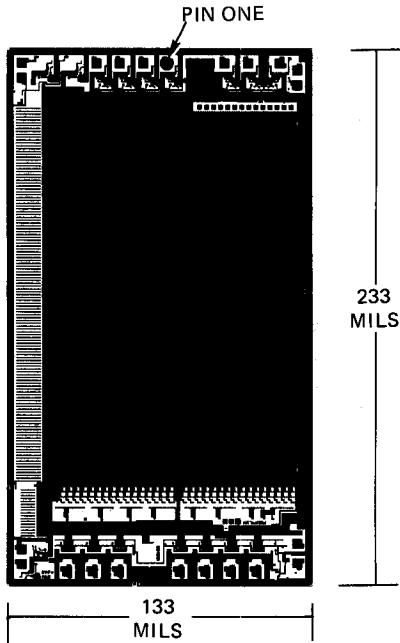


### A. C. TEST LOAD



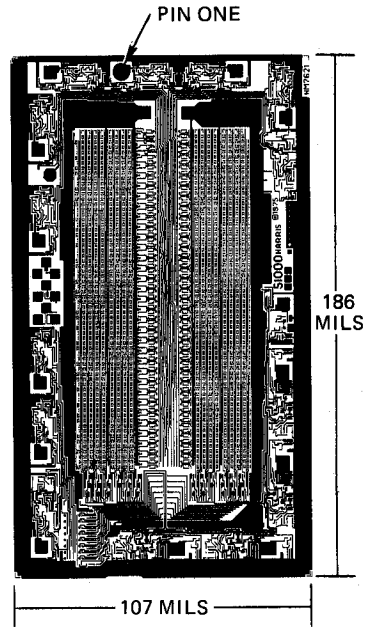
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HM-76160, HM-76161



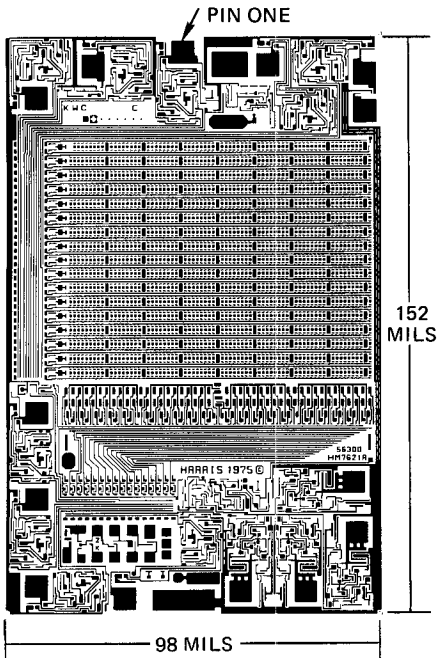
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HM-7620, HM-7621



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HM-7620A, HM-7621A



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HM-7640, HM-7641

