

#### Features

- 50ns MAXIMUM ADDRESS ACCESS TIME
- "THREE STATE" OUTPUTS WITH ONE ACTIVE LOW CHIP ENABLE
- FAST ACCESS TIME — GUARANTEED FOR WORST CASE N<sup>2</sup> SEQUENCING OVER COMMERCIAL AND MILITARY TEMPERATURE AND VOLTAGE RANGES
- INDUSTRY STANDARD 0.300 INCH 16 PIN PACKAGE
- PRODUCED ON MIL-M-38510 QUALIFIED WAFER FAB LINE
- SIMPLE HIGH SPEED PROGRAMMING PROCEDURE — ONE PULSE/BIT TYPICALLY ASSURES FAST PROGRAMMING AND SUPERIOR RELIABILITY

#### Description

The HM-7602/03 is a fully decoded high speed Schottky TTL 256/Bit Field Programmable ROM in a 32 word by 8 bit/word format with open collector (HM-7602) or "Three State" (HM-7603) outputs. These PROMs are available in a 16 pin D.I.P. (ceramic or power plastic).

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

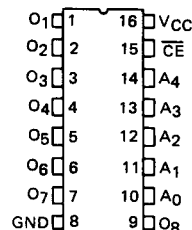
Nickel-chromium fuse technology is used on this and all other Harris Bipolar PROMs.

The HM-7602/03 contains test rows 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 are blown prior to shipment.

There is one chip enable input on the HM-7602/03.  $\overline{CE}$  low enables the chip.

#### Pinout

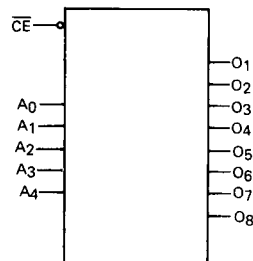
TOP VIEW — DIP



#### PIN NAMES

A0 — A4 Address Inputs  
O1 — O8 Data Outputs  
 $\overline{CE}$  Chip Enable Input

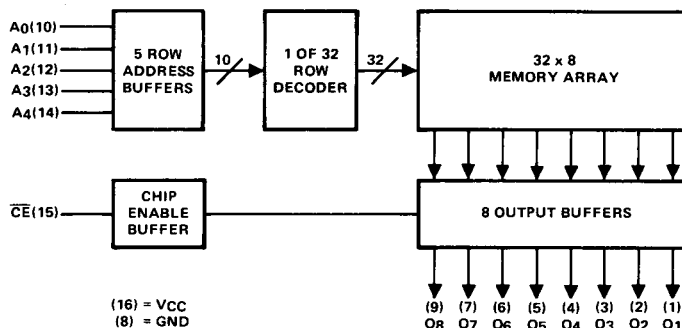
#### Logic Symbol



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BIPOLAR  
MEMORY

#### Functional Diagram



## Specifications HM-7602/03

### 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-7602/03-5 ( $V_{CC} = 5.0V \pm 5\%$ ,  $T_A = 0^\circ C$  to  $+75^\circ C$ )  
 HM-7602/03-2/-8 ( $V_{CC} = 5.0V \pm 10\%$ ,  $T_A = -55^\circ C$  to  $+125^\circ C$ )  
 Typical measurements are at  $T_A = 25^\circ C$ ,  $V_{CC} = +5V$   
 NOTE: Positive current defined as into device terminals.

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{IH}$ $I_{IL}$	Address/Enable Input Current	"1" "0"	— -50.0	+40 -250	$\mu A$ $\mu A$	$V_{IH} = V_{CC} \text{ Max.}$ $V_{IL} = 0.45V$
$V_{IH}$ $V_{IL}$	Input Threshold Voltage	"1" "0"	2.0* —	1.5 0.8*	V V	$V_{CC} = V_{CC} \text{ Min.}$ $V_{CC} = V_{CC} \text{ Max.}$
$V_{OH}$ $V_{OL}$	Output Voltage	"1" "0"	2.4** —	3.2** 0.35	V V	$I_{OH} = -2.0mA$ , $V_{CC} = V_{CC} \text{ Min.}$ $I_{OL} = +16mA$ , $V_{CC} = V_{CC} \text{ Min.}$
$I_{OHE}$ $I_{OLE}$	Output Disable Current	"1" "0"	— —	+100 -100	$\mu A$ $\mu A$	$V_{OH}$ , $V_{CC} = V_{CC} \text{ Max.}$ $V_{OL} = 0.3V$ , $V_{CC} = V_{CC} \text{ Max.}$
$V_{CL}$	Input Clamp Voltage	—	—	-1.2	V	$I_{IN} = -18mA$
$I_{OS}$	Output Short Circuit Current	-15**	—	-100**	mA	$V_{CC} = V_{CC} \text{ Max.}$ , $V_{OUT} = 0.0V$ One Output Only for a Max. of 1 Second.
$I_{CC}$	Power Supply Current	—	90	130	mA	$V_{CC} = V_{CC} \text{ Max.}$ All Inputs Grounded

\* These are absolute voltages with respect to ground pin and include all overshoots due to system and/or tester noise. Do not attempt to test these values without suitable equipment.

\*\* "Three-State" only.

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

Typical measurements are at  $T_A = +25^\circ C$ ,  $V_{CC} = +5V$

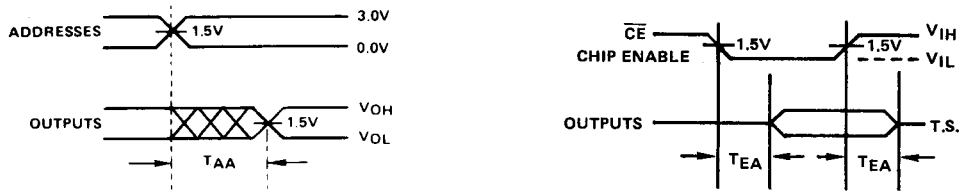
SYMBOL	PARAMETER	HM-7602/03-5 5V $\pm 5\%$ 0°C to +75°C		HM-7602/03-2/-8 5V $\pm 10\%$ -55°C to +125°C		UNITS
		TYPICAL	MAXIMUM*	TYPICAL	MAXIMUM*	
$T_{AA}$	Address Access Time	30	50	—	60	ns
$T_{EA}$	Chip Enable Access Time	20	35	—	50	ns

\*A.C. limits guaranteed for worst case N<sup>2</sup> sequencing with maximum test frequency of 5MHz.

**CAPACITANCE:**  $T_A = 25^\circ C$

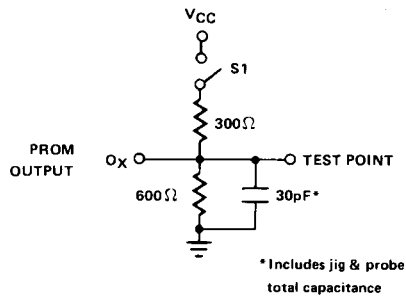
SYMBOL	PARAMETER	TYPICAL	UNITS	TEST CONDITIONS
$C_{INA}$ , $C_{INCE}$	Input Capacitance	12	pF	$V_{CC} = 5V$ , $V_{IN} = 2.0V$ , $f = 1MHz$
$C_{OUT}$	Output Capacitance	12	pF	$V_{CC} = 5V$ , $V_{OUT} = 2.0V$ , $f = 1MHz$

# HM-7602/03 SWITCHING TIME DEFINITIONS



NOTE: As is common to all memory devices, output levels can be undefined during the address access period (TAA); however, the outputs are guaranteed to reach stable levels by TAA. It is not recommended that outputs from this class of devices be used to drive edge triggered inputs on subsequent devices (counters, flip-flops, etc.) without proper intermediate synchronization.

## A.C. TEST LOAD



*This is the A.C. Test Load which Harris Semiconductor uses in its automatic test equipment, and it is recommended that users of Harris bipolar devices use the same or an equivalent load in performing A.C. testing.*