

# 4096 BIT BIPOLAR ROM (1024x4 ROM)

# 8228

THIS PRODUCT AVAILABLE IN 0°C TO 75°C TEMPERATURE RANGE ONLY

DIGITAL 8000 SERIES TTL/MSI

## DESCRIPTION

The 8228 is a 4096 Bit Bipolar Read Only Memory organized as 1024 words by 4 bits per word. Available in a 16 pin dual in-line package, the 8228 can provide very high bit packing density by replacing four standard 256X4 ROMS.

The 8228 is fully TTL compatible and includes on-the-chip decoding. Typical access time is 50ns with a power consumption of only .125mW per bit.

The standard 8228 ROM pattern is the USASCII Row Character Generator code; however, custom patterns are also available. The standard pattern is specified as the N8228I - CD162, while custom circuits are identified as N8228I - CXXX. A truth table/order blank is included on page 254 for ordering custom patterns.

See page 242 for CD162 Pattern and USASCII Row Character Generator.

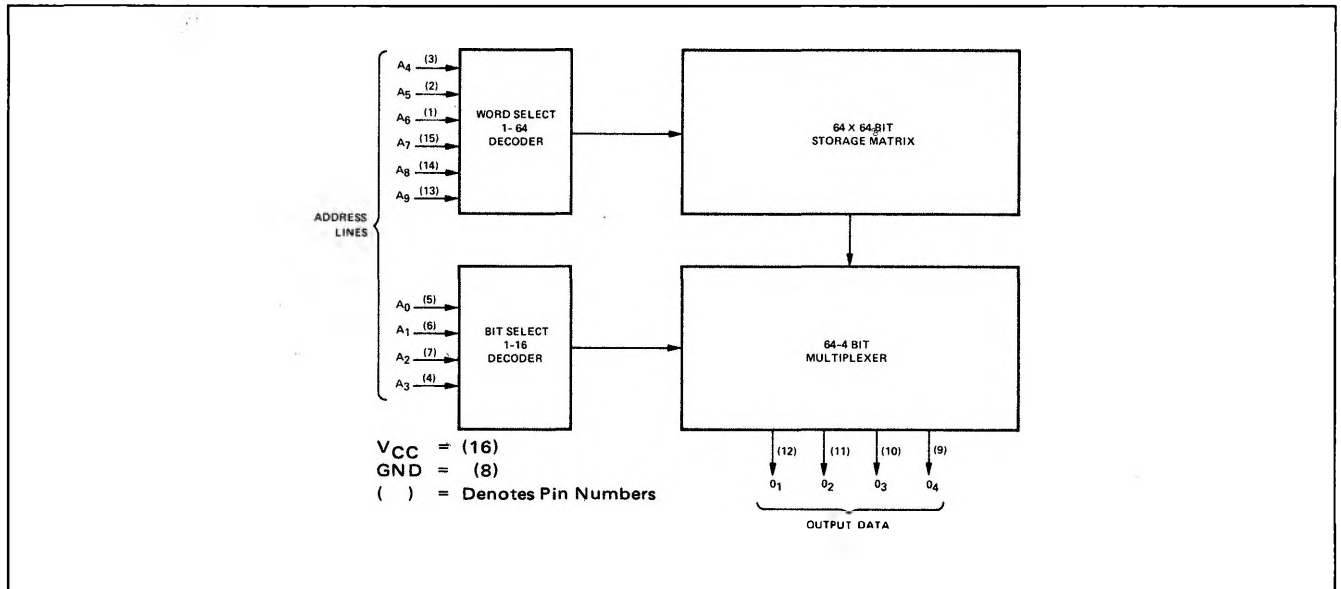
## FEATURES

- BUFFERED ADDRESS LINES
- ON THE CHIP DECODING
- TOTEM POLE OUTPUTS
- DIODE PROTECTED INPUTS
- 16 PIN PACKAGE (1/3 SIZE OF 24 PIN PACKAGE)

## APPLICATIONS

MICROPROGRAMMING  
HARDWIRED ALGORITHMS  
CHARACTER RECOGNITION  
CHARACTER GENERATION  
CONTROL STORE

## BLOCK DIAGRAM



## ELECTRICAL CHARACTERISTICS (Over Recommended Operating Temperature And Voltage)

CHARACTERISTICS	LIMITS				TEST CONDITIONS	NOTES
	MIN.	TYP.	MAX.	UNITS		
"0" Output Voltage			0.5	V	I <sub>out</sub> = 11.2 mA I <sub>out</sub> = -1.0 mA V <sub>in</sub> = 0.5V V <sub>in</sub> = 5.25V	
"1" Output Voltage	2.7			V		
"0" Input Current		-10	-200	μA		
"1" Input Current		1	25	μA		
Input Threshold Voltage						
"0" Level	.85			V		
"1" Level			2.0	V		
Propagation Delay		50	90	ns		

# SIGNETICS DIGITAL 8000 SERIES TTL/MSI – 8228

## ELECTRICAL CHARACTERISTICS (Cont'd)

CHARACTERISTICS	LIMITS				TEST CONDITIONS	NOTES
	MIN.	TYP.	MAX.	UNITS		
Input Clamp Voltage	-1.0			V	$I_{in} = 5.0\text{mA}$ $O_1$ to $O_3 = "0"$	
Power Consumption		100	140	mA		
Output Short Circuit Current	-20		-70	mA		

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ and $V_{CC} = 5.0\text{V}$ )

CHARACTERISTICS	LIMITS				TEST CONDITIONS	NOTES
	MIN.	TYP.	MAX.	UNITS		
Access Time—Address to Output		50	75	ns		5

### NOTES:

1. Positive current is defined as into the terminal referenced.
2. No more than one output should be grounded at the same time.
3. Manufacturer reserves the right to make design and process changes and improvements.
4. Applied voltages must not exceed 5.5V  
Input currents must not exceed  $\pm 30\text{mA}$   
Output currents must not exceed  $\pm 100\text{mA}$   
Storage temperature must be between  $-60^\circ\text{C}$  to  $+150^\circ\text{C}$
5. Rise and fall time for this test must be less than 5ns. Input amplitudes are 2.8V and all measurements are made at 1.5V.

## AC TEST FIGURE AND WAVEFORM

