

FEBRUARY 1975

DIGITAL 8000 SERIES TTL/MEMORY

### DESCRIPTION

The 82S226 (Open Collector Outputs) and the 82S229 (Tri-State Outputs) are Bipolar 1024-Bit Read Only Memories, organized as 256 words by 4 bits per word. They are fully TTL compatible, and include on-chip decoding and two chip enable inputs for ease of memory expansion. They feature either Open Collector or Tri-State outputs for optimization of word expansion in bussed organizations.

Both the 82S226 and 82S229 are also fully compatible with the 82S126/129, Signetics' 1024-Bit Programmable Read Only Memories.

Both 82S226 and 82S229 devices are available in the commercial and military temperature ranges. For the commercial temperature range (0°C to +75°C) specify N82S226/229, B or F. For the military temperature range (-55°C to +125°C) specify S82S226/229, F only.

### FEATURES

- ORGANIZATION – 256 X 4
- ADDRESS ACCESS TIME:  
S82S226/229 – 70ns, MAXIMUM  
N82S226/229 – 50ns, MAXIMUM
- POWER DISSIPATION – 0.5mW/BIT, TYPICAL
- INPUT LOADING:  
S82S226/229 – (-150μA) MAXIMUM  
N82S226/229 – (-100μA) MAXIMUM
- TWO CHIP ENABLE INPUTS
- ON-CHIP ADDRESS DECODING
- OUTPUT OPTIONS:  
82S226 – OPEN COLLECTOR  
82S229 – TRI-STATE
- 16-PIN CERAMIC PACKAGE
- FULLY COMPATIBLE WITH 82S126/129, SIGNETICS' 256 X 4 PROM

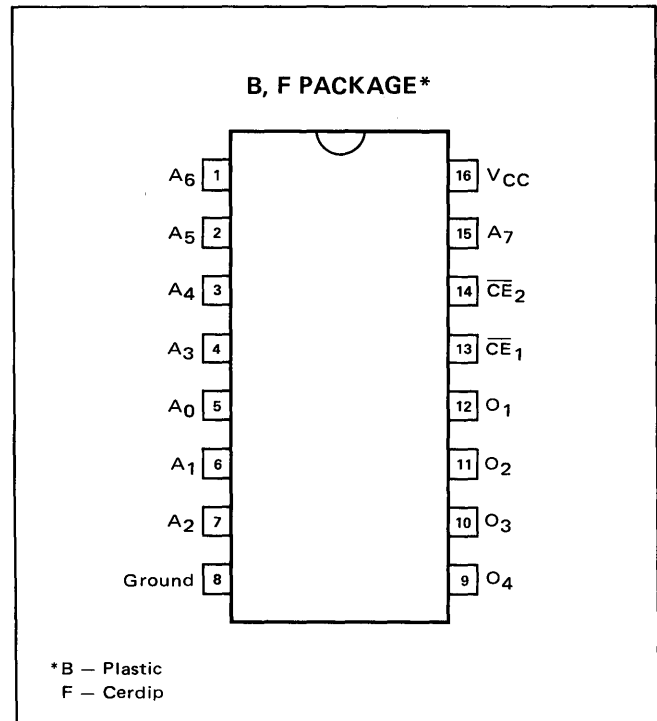
### APPLICATIONS

VOLUME PRODUCTION  
SEQUENTIAL CONTROLLERS  
MICROPROGRAMMING  
HARDWIRED ALGORITHMS  
CONTROL STORE  
RANDOM LOGIC  
CODE CONVERSION

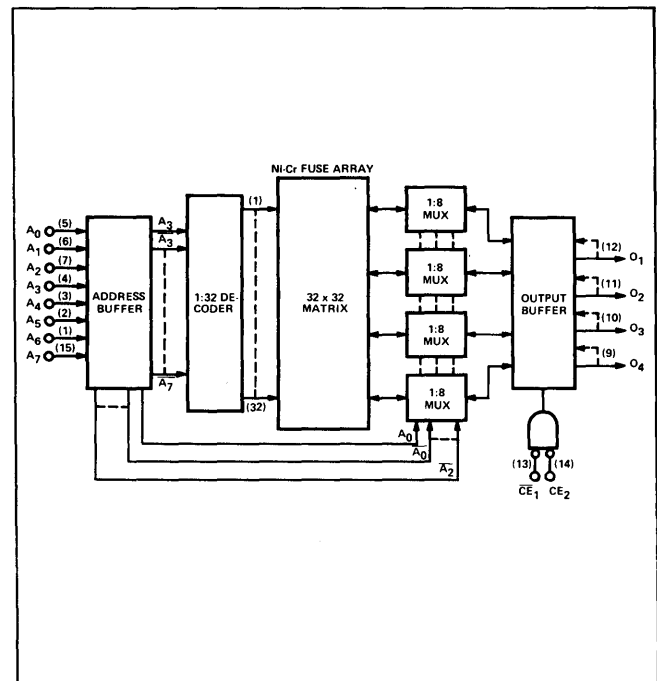
### ORDERING INFORMATION

Customer may specify patterns for the 1024-Bit Read Only Memory by completing the truth table/order blank in Signetics' Digital/Linear/MOS data book.

### PIN CONFIGURATION



### BLOCK DIAGRAM



**ABSOLUTE MAXIMUM RATINGS**

PARAMETER		RATING	UNIT
V <sub>CC</sub>	Power Supply Voltage	+7	Vdc
V <sub>IN</sub>	Input Voltage	+5.5	Vdc
V <sub>OH</sub>	High Level Output Voltage (82S226)	+5.5	Vdc
V <sub>O</sub>	Off-State Output Voltage (82S229)	+5.5	Vdc
T <sub>A</sub>	Operating Temperature Range (N82S226/229)	0° to +75°	°C
	(S82S226/229)	-55° to +125°	°C
T <sub>stg</sub>	Storage Temperature Range	-65° to +150°	°C

**ELECTRICAL CHARACTERISTICS** S82S226/229 -55°C ≤ T<sub>A</sub> ≤ +125°C, 4.5V ≤ V<sub>CC</sub> ≤ 5.5  
N82S226/229 0°C ≤ T<sub>A</sub> ≤ +75°C, 4.75V ≤ V<sub>CC</sub> ≤ 5.25

PARAMETER	TEST CONDITIONS <sup>1</sup>	S82S226/229			N82S226/229			UNIT
		MIN	TYP <sup>2</sup>	MAX	MIN	TYP <sup>2</sup>	MAX	
V <sub>IL</sub>	Low Level Input Voltage			.80			.85	V
V <sub>IH</sub>	High Level Input Voltage	2.0			2.0			V
V <sub>IC</sub>	Input Clamp Voltage		I <sub>IN</sub> = -18mA	-1.2		-0.8	-1.2	V
V <sub>OL</sub>	Low Level Output Voltage		I <sub>OUT</sub> = 16mA	0.5			0.5	V
V <sub>OH</sub>	High Level Output Voltage (82S229)	2.4	CE <sub>1</sub> = CE <sub>2</sub> = "0", I <sub>OUT</sub> = -2mA, "1" STORED		2.4			V
I <sub>OLK</sub>	Output Leakage Current (82S226)		CE <sub>1</sub> or CE <sub>2</sub> = "1", V <sub>OUT</sub> = 5.5V	60			40	μA
I <sub>O(OFF)</sub>	Hi-Z State Output Current (82S229)		CE <sub>1</sub> or CE <sub>2</sub> = "1", V <sub>OUT</sub> = 5.5V	60			40	μA
			CE <sub>1</sub> or CE <sub>2</sub> = "1", V <sub>OUT</sub> = 0.5V	-60			-40	μA
I <sub>IL</sub>	Low Level Input Current		V <sub>IN</sub> = 0.45V	-150			-100	μA
I <sub>IH</sub>	High Level Input Current		V <sub>IN</sub> = 5.5V	50			40	μA
I <sub>OS</sub>	Output Short Circuit Current (82S229)	-15	V <sub>OUT</sub> = 0V	-85	-20		-70	mA
I <sub>CC</sub>	V <sub>CC</sub> Supply Current			105	125	105	120	mA
C <sub>IN</sub>	Input Capacitance		V <sub>CC</sub> = 5.0V, V <sub>IN</sub> = 2.0V	5		5		pF
C <sub>OUT</sub>	Output Capacitance		V <sub>CC</sub> = 5.0V, V <sub>OUT</sub> = 2.0V	8		8		pF

**SWITCHING CHARACTERISTICS** S82S226/229 -55°C ≤ T<sub>A</sub> ≤ +125°C, 4.5V ≤ V<sub>CC</sub> ≤ 5.5V  
N82S226/229 0°C ≤ T<sub>A</sub> ≤ +75°C, 4.75V ≤ V<sub>CC</sub> ≤ 5.25V

PARAMETER	TEST CONDITIONS	S82S226/229			N82S226/229			UNIT
		MIN	TYP <sup>2</sup>	MAX	MIN	TYP <sup>2</sup>	MAX	
<b>Propagation Delay</b>								
T <sub>AA</sub>	Address to Output		35	70		35	50	ns
T <sub>CD</sub>	Chip Disable to Output	C <sub>L</sub> = 30pF	15	35		15	20	ns
T <sub>CE</sub>	Chip Enable to Output	R <sub>1</sub> = 270Ω R <sub>2</sub> = 600Ω	15	35		15	20	ns

NOTES:  
1. Positive current is defined as into the terminal referenced.  
2. Typical values are at V<sub>CC</sub> = 5.0V, T<sub>A</sub> = +25°C.

AC TEST FIGURE AND WAVEFORM

