1024 BIT BIPOLAR PROGRAMMABLE ROM (256x4 PROM) (82S26 OPEN COLLECTOR) (82S29 TRI-STATE)

82S26
82S29

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

AVAILABLE SOON | **OBJECTIVE SPECIFICATION**

DESCRIPTION

The 82S26 (open Collector Outputs) and the 82S29 (tri State Outputs) are Bipolar 1024 Bit Read Only Memories organized as 256 words by 4 bits per word. They are Field-Programmable, which means that custom patterns are immediately available by following the simple fusing procedure given in this data sheet. Two chip enable lines are provided and the outputs are bussable to allow for memory expansion capability.

The 82S26 and 82S29 are fully TTL compatible and include on-the-chip decoding. Typical access time is 35ns.

The standard 82S26 and 82S29 are supplied with all outputs at a logical "0". If a programmed unit is required the Truth Table/Order Blank on page 252/253 can be used.

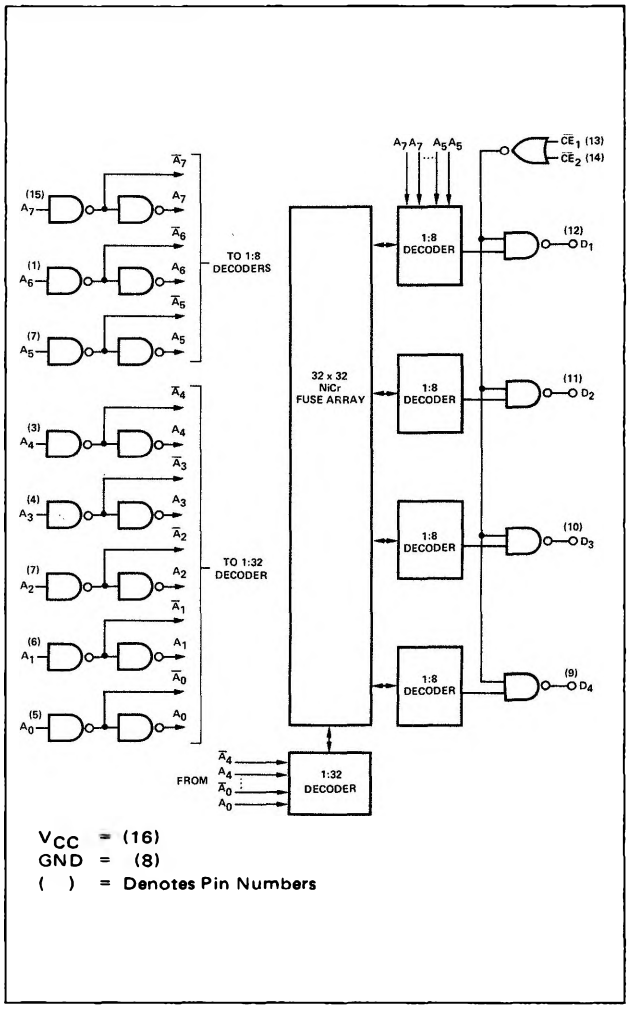
FEATURES

- BUFFERED ADDRESS LINES
- ON THE CHIP DECODING
- TWO CHIP ENABLE LINES
- OPEN COLLECTOR OR TRI STATE OUTPUTS
- DIODE PROTECTED INPUTS
- NO SEPARATE "FUSING" PINS
- UNPROGRAMMED OUTPUTS ARE "0" LEVEL
- BOARD LEVEL PROGRAMMABLE

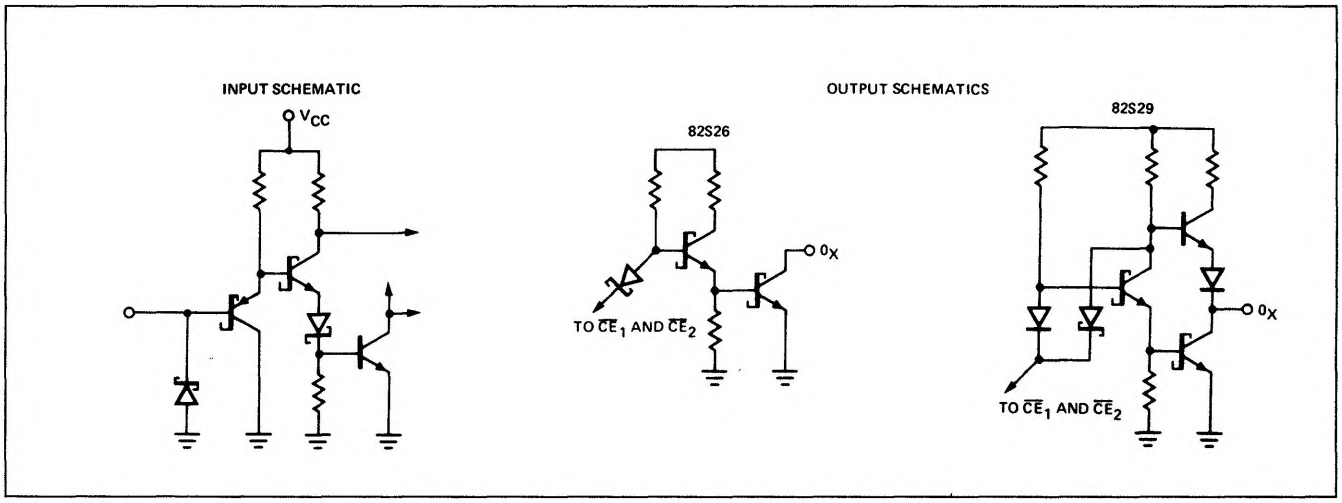
APPLICATIONS

PROTOTYPING
VOLUME PRODUCTION
MICROPROGRAMMING
HARDWIRE ALGORITHMS
CONTROL STORE

BLOCK DIAGRAM



INPUT/OUTPUT SCHEMATIC DIAGRAMS



OBJECTIVE ELECTRICAL CHARACTERISTICS (Over Recommended Operating Temperature and Voltage)

CHARACTERISTICS	LIMITS				TEST CONDITIONS
	MIN.	TYP.	MAX.	UNITS	
"0" Output Voltage			0.5	V	I_{out} = 16mA
"1" Output Leakage (82S26)			40	μA	$\overline{CE_1}$ or $\overline{CE_2}$ = "1", V_{out} = 2.6V
(82S29)			100	μA	$\overline{CE_1}$ = $\overline{CE_2}$ = "0", V_{out} = 2.6V
(82S29)	–40		+40	μA	$\overline{CE_1}$ or $\overline{CE_2}$ = "1", V_{out} = 0.5 to 2.4V
"1" Output Current (82S29)	–2.0			mA	$\overline{CE_1}$ = $\overline{CE_2}$ = "0", V_{out} = 2.4V
"0" Input Current			–250	μA	V_{in} = 0.5V
"1" Input Current			50	μA	V_{in} = 2.7V
Input Threshold Voltage					
"0" Level	.85			V	
"1" Level			2.0	V	

(T_A = 25°C and V_{CC} = 5.0V)

CHARACTERISTICS	LIMITS				TEST CONDITIONS
	MIN	TYP	MAX	UNITS	
Input Clamp Voltage	–1.0			V	I_{in} = 5.0mA
Power Consumption		105/525		mA/mW	V_{CC} = 5.00V
Propagation Delay					
Address to Output			60	ns	
$\overline{\text{Chip Enable}}$ to Output			50	ns	

1. Positive current is defined as into the terminal referenced.
2. Manufacturer reserves the right to make design and process changes and improvements.
3. Applied voltage must not exceed 6.0V except while programming.
   Input currents must not exceed ±30 mA.
   Output currents must not exceed ±50mA except while programming.
4. Specifications are tentative. Final specifications will be available by May 1972.

PROGRAMMING PROCEDURE

The 82S26 and 82S29 may be programmed by using the Curtis Electro Devices or Spectrum Dynamics Programmers. Each perform the procedures outlined.

The 82S26 and 82S29 standard parts, are shipped with all outputs at Logical "0". To write a logical "1" proceed as follows:

A. Simple Programming Procedure using "bench" equipment.

1. Connect pin 8 (Gnd) to ground. Enable the device by connecting $\overline{CE_1}$, (pin 13) and $\overline{CE_2}$ (pin 14) to a logical "0".
2. Raise V_{CC} (pin 16) to 12.5V ±0.5V. (Note: I_{CC} will be approximately 300mA during the programming procedure.)
3. Address the word to be programmed through A_0 through A_6 using 0V to 0.5V as logical "0" and 2.4V to 5.0V as logical "1".
4. Force 64 ±3mA into the output to be programmed to a "1". (Note: LIMIT THE OUTPUT VOLTAGE TO 20.0V MAX. PROGRAM ONE OUTPUT AT A TIME.)

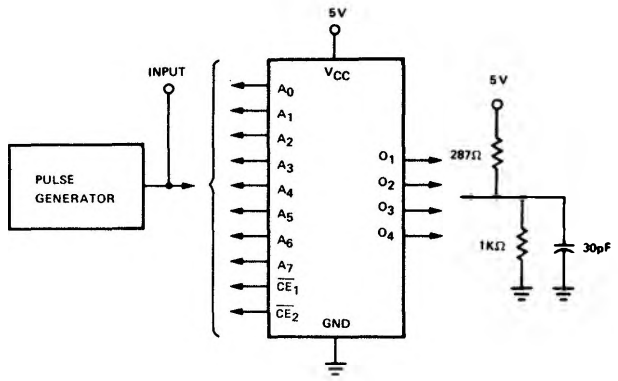
   NOTE: V_{CC} and output programming pulse width should be 50ms (1.0 sec max.).

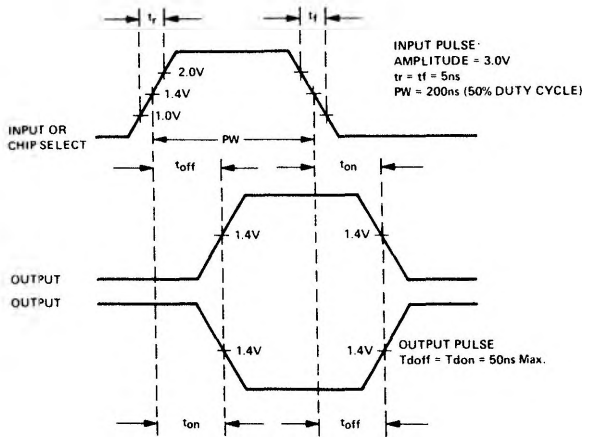
5. Remove the programming current from the output and remove V_{CC}. (Do not exceed a 25% power on duty cycle during programming.)
6. Repeat steps 2 through 5 until the addressed word is completely programmed.
7. Repeat steps 2 through 6 until the device is completely programmed.

B. Fast Programming Procedure

1. Steps 1 through 3 same as above in slow procedures.
4. Force 64 ±3mA into the output, limited to 20.0V max, to be programmed to a "1" and monitor the voltage at the output pin. When the output voltage rises above 19.5V the bit is programmed. (Note: Unprogrammed outputs will be 18.7V or less. Typical Programming time is 10 millisec/bit.)
5. Remove the current source and apply it to the next output, in the same word, to be programmed. (Note: Full power may be applied to the device for 1.0 sec continuously. Therefore, bits may be programmed until 1.0 sec has been accumulated. At that time, remove all power for 4.0 seconds, then continue programming.)
6. Repeat steps 4 and 5 until the entire word is programmed.
7. Repeat steps 2 through 6 until the device is fully programmed. The typical 82S26 or 82S29 can be programmed in less than one-half minute using the above procedure.

AC TEST FIGURE AND WAVEFORM





Ground Pins 13 and 14 when testing address-Output delays