

|                 |                       |
|-----------------|-----------------------|
| Document No.    | 853-0032              |
| ECN No.         | 96054                 |
| Date of Issue   | March 14, 1989        |
| Status          | Product Specification |
| Memory Products |                       |

# 82S135

## 2K-bit TTL bipolar PROM

### DESCRIPTION

The 82S135 is field programmable, which means that custom patterns are immediately available by following the Signetics Generic I fusing procedure. The standard devices are supplied with all outputs at logical Low. Outputs are programmed to a logic High level at any specified address by fusing the Ni-Cr link matrix.

The 82S135 includes on-chip decoding and two Chip Enable inputs for ease of memory expansion, and features 3-State outputs for optimization of word expansion in bused organizations.

Ordering information can be found on the following page.

The 82S135 devices are also processed to military requirements for operation over the military temperature range. For specifications and ordering information consult the Signetics Military Data Handbook.

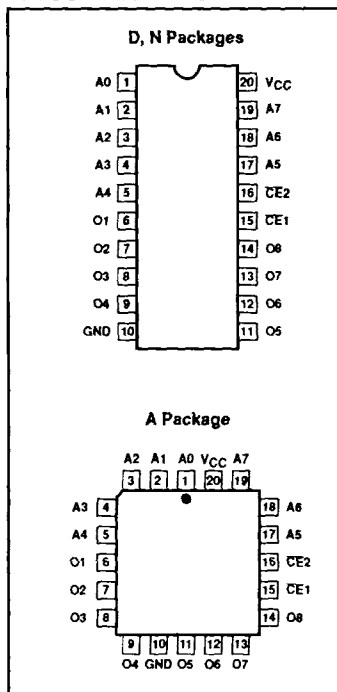
### FEATURES

- Address access time: 45ns max
- Power dissipation: 329 $\mu$ W/bit typ
- Input loading:  $\sim 100\mu$ A max
- Two Chip Enable inputs
- On-chip address decoding
- No separate fusing pins
- Fully TTL compatible
- Outputs: 3-State
- Unprogrammed outputs are Low level

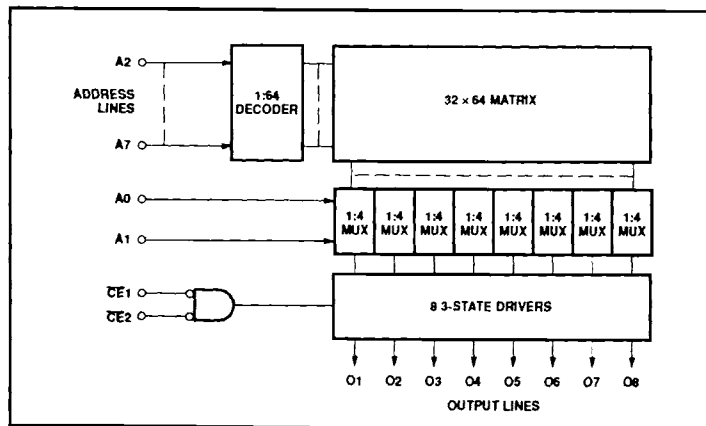
### APPLICATIONS

- Prototyping/volume production
- Sequential controllers
- Microprogramming
- Hardwired algorithms
- Control store
- Random logic
- Code conversion

### PIN CONFIGURATIONS



### BLOCK DIAGRAM



**2K-bit TTL bipolar PROM (256 × 8)****82S135****ORDERING INFORMATION**

| DESCRIPTION                                         | ORDER CODE |
|-----------------------------------------------------|------------|
| 20-Pin Plastic Dual-In-Line<br>300mil-wide          | N82S135 N  |
| 20-Pin Plastic Small Outline<br>300mil-wide         | N82S135 D  |
| 20-Pin Plastic Leaded Chip Carrier<br>350mil-square | N82S135 A  |

**ABSOLUTE MAXIMUM RATINGS**

| SYMBOL    | PARAMETER                   | RATING      | UNIT     |
|-----------|-----------------------------|-------------|----------|
| $V_{CC}$  | Supply voltage              | +7.0        | $V_{DC}$ |
| $V_{IN}$  | Input voltage               | +5.5        | $V_{DC}$ |
| $V_O$     | Output voltage Off-State    | +5.5        | $V_{DC}$ |
| $T_{amb}$ | Operating temperature range | 0 to +75    | °C       |
| $T_{slg}$ | Storage temperature range   | -65 to +150 | °C       |

**DC ELECTRICAL CHARACTERISTICS**0°C ≤  $T_{amb}$  ≤ +75°C, 4.75V ≤  $V_{CC}$  ≤ 5.25V

| SYMBOL                      | PARAMETER                  | TEST CONDITIONS <sup>1,2</sup>                       | LIMITS |                  |      | UNIT |
|-----------------------------|----------------------------|------------------------------------------------------|--------|------------------|------|------|
|                             |                            |                                                      | Min    | Typ <sup>3</sup> | Max  |      |
| Input voltage               |                            |                                                      |        |                  |      |      |
| V <sub>IL</sub>             | Low                        | V <sub>CC</sub> = 4.75V                              | 2.0    |                  | 0.8  | V    |
| V <sub>IH</sub>             | High                       | V <sub>CC</sub> = 5.25V                              |        |                  | V    |      |
| V <sub>IC</sub>             | Clamp                      | I <sub>IN</sub> = -12mA                              |        |                  | -1.2 | V    |
| Output voltage              |                            |                                                      |        |                  |      |      |
| V <sub>OL</sub>             | Low                        | I <sub>OUT</sub> = 9.6mA                             | 2.4    |                  | 0.5  | V    |
| V <sub>OH</sub>             | High                       | CE1, CE2 = Low, I <sub>OUT</sub> = -2mA, High stored |        |                  | V    |      |
| Input current               |                            |                                                      |        |                  |      |      |
| I <sub>IL</sub>             | Low                        | V <sub>IN</sub> = 0.45V                              |        |                  | -100 | μA   |
| I <sub>IH</sub>             | High                       | V <sub>IN</sub> = 5.5V                               |        |                  | 40   | μA   |
| Output current              |                            |                                                      |        |                  |      |      |
| I <sub>OZ</sub>             | Hi-Z state                 | CE1, CE2 = High, V <sub>OUT</sub> = 0.5V             | -15    |                  | -40  | μA   |
|                             |                            | CE1, CE2 = High, V <sub>OUT</sub> = 5.5V             |        |                  | 40   | μA   |
| I <sub>OS</sub>             | Short circuit <sup>4</sup> | CE1, CE2 = Low, V <sub>OUT</sub> = 0V, High stored   |        |                  | -75  | mA   |
| Supply current <sup>5</sup> |                            |                                                      |        |                  |      |      |
| I <sub>CC</sub>             |                            | V <sub>CC</sub> = 5.25V                              |        | 135              | 150  | mA   |
| Capacitance                 |                            |                                                      |        |                  |      |      |
| C <sub>IN</sub>             | Input                      | V <sub>CC</sub> = 5.0V, CE = High                    |        | 5                |      | pF   |
| C <sub>OUT</sub>            | Output                     | V <sub>IN</sub> = 2.0V<br>V <sub>OUT</sub> = 2.0V    |        | 8                |      | pF   |

**NOTES:**

1. Positive current is defined as into the terminal referenced.
2. All voltages with respect to network ground.
3. Typical values are at  $V_{CC} = 5V, T_{amb} = +25°C$ .
4. Duration of short circuit should not exceed 1 second.
5. Measured with all inputs grounded and all outputs open.

2K-bit TTL bipolar PROM (256 × 8)

82S135

AC ELECTRICAL CHARACTERISTICS

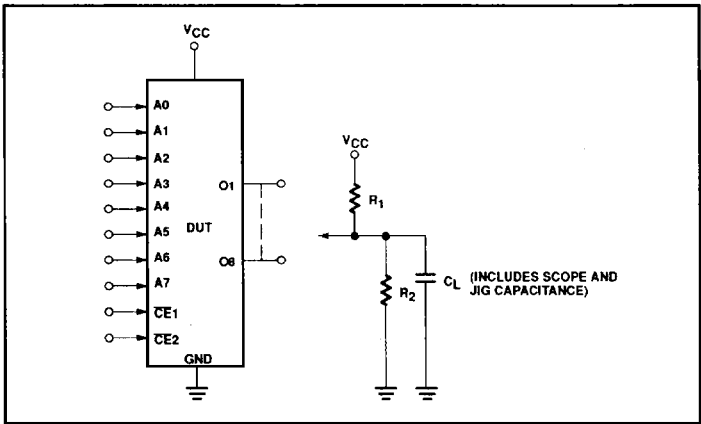
$R_1 = 470\Omega$ ,  $R_2 = 1k\Omega$ ,  $C_L = 30pF$ ,  $0^\circ C \leq T_{amb} \leq +75^\circ C$ ,  $4.75V \leq V_{CC} \leq 5.25V$

| SYMBOL                    | PARAMETER | TO     | FROM         | LIMITS |                  |     | UNIT |
|---------------------------|-----------|--------|--------------|--------|------------------|-----|------|
|                           |           |        |              | Min    | Typ <sup>1</sup> | Max |      |
| Access time <sup>2</sup>  |           |        |              |        |                  |     |      |
| t <sub>AA</sub>           |           | Output | Address      |        | 40               | 45  | ns   |
| t <sub>CE</sub>           |           | Output | Chip Enable  |        | 20               | 25  | ns   |
| Disable time <sup>3</sup> |           |        |              |        |                  |     |      |
| t <sub>CD</sub>           |           | Output | Chip Disable |        | 20               | 25  | ns   |

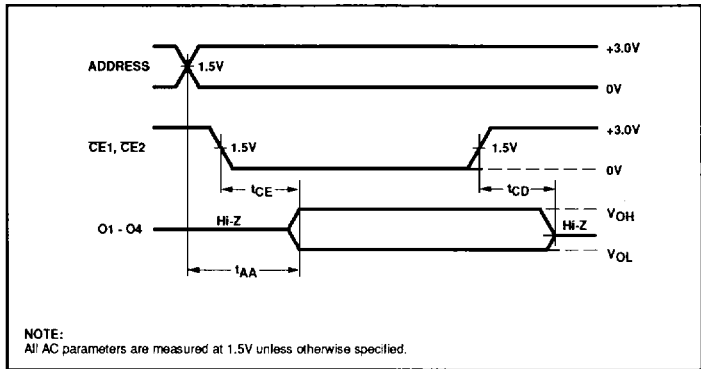
NOTES:

1. Typical values are at  $V_{CC} = 5V$ ,  $T_{amb} = +25^\circ C$ .
2. Tested at an address cycle time of  $1\mu s$ .
3. Measured at a delta of 0.5V from Logic Level with  $R_1 = 750\Omega$ ,  $R_2 = 750\Omega$ ,  $C_L = 5pF$ .

TEST LOAD CIRCUIT



VOLTAGE WAVEFORMS



NOTE:  
All AC parameters are measured at 1.5V unless otherwise specified.