## DESCRIPTION

The 82S226 and 82S229 include on-chip decoding and 2 chip enable inputs for ease of memory expansion. They feature either open collector or tri-state outputs for optimization of word expansion in bused organizations.

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, F or N, and for the military temperature range (-55°C to +125°C specify S82S226/229, F only.

## FEATURES

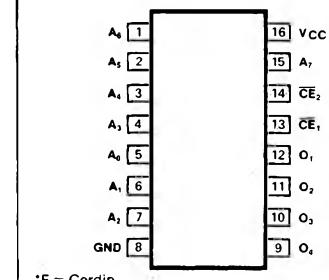
- **Address access time:**
  **N82S226/229: 50ns max**
  **S82S226/229 70ns max**
- **Power dissipation: 0.5mW/bit typ**
- **Input loading:**
  **N82S226/229: -100μA max**
  **S82S226/229: -150μA max**
- **On-chip address decoding**
- **Output options:**
  **82S226: Open collector**
  **82S229: Tri-state**
- **Fully compatible with Signetics 82S126/129 1024-bit PROMs**
- **Fully TTL compatible**

## APPLICATIONS

- **Volume production**
- **Sequential controllers**
- **Microprogramming**
- **Hardwired algorithms**
- **Control store**
- **Random logic**
- **Code conversion**

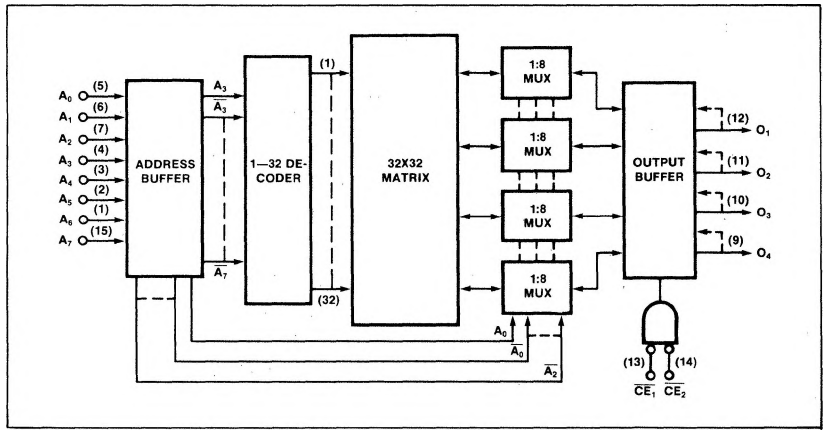
## PIN CONFIGURATION

F,N PACKAGE*




*F = Cerdip
N = Plastic

## BLOCK DIAGRAM




## ABSOLUTE MAXIMUM RATINGS

| PARAMETER | | RATING | UNIT |
|---|---|---|---|
| $V_{CC}$ | Supply voltage | +7 | Vdc |
| $V_{IN}$ | Input voltage | +5.5 | Vdc |
| | Output voltage | | Vdc |
| $V_{OH}$ | High (82S226) | +5.5 | |
| $V_O$ | Off-state (82S229) | +5.5 | |
| | Temperature range | | °C |
| $T_A$ | Operating | | |
| | N82S226/229 | 0 to +75 | |
| | S82S226/229 | -55 to +125 | |
| $T_{STG}$ | Storage | -65 to +150 | |

## DC ELECTRICAL CHARACTERISTICS

N82S226/229: $0°C \le T_A \le +75°C$, $4.75V \le V_{CC} \le 5.25V$
S82S226/229: $-55°C \le T_A \le +125°C$, $4.5V \le V_{CC} \le 5.5V$

| PARAMETER | | TEST CONDITIONS[1] | N82S226/229 | | | S82S226/229 | | | UNIT |
|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ[2] | Max | Min | Typ[2] | Max | |
| | Input voltage | | | | | | | | V |
| $V_{IL}$ | Low | | | | .85 | | | .80 | |
| $V_{IH}$ | High | | 2.0 | | | 2.0 | | | |
| $V_{IC}$ | Clamp | $I_{IN}$ = -18mA | | -0.8 | -1.2 | | -0.8 | -1.2 | |
| | Output voltage | | | | | | | | V |
| $V_{OL}$ | Low | $I_{OUT}$ = 16mA | | | 0.45 | | | 0.5 | |
| $V_{OH}$ | High (82S229) | $\overline{CE_1}$ = $\overline{CE_2}$ = Low, $I_{OUT}$ = -2mA, High stored | 2.4 | | | 2.4 | | | |
| | Input current | | | | | | | | μA |
| $I_{IL}$ | Low | $V_{IN}$ = 0.45V | | | -100 | | | -150 | |
| $I_{IH}$ | High | $V_{IN}$ = 5.5V | | | 40 | | | 50 | |
| | Output current | | | | | | | | |
| $I_{OLK}$ | Leakage (82S226) | $\overline{CE_1}$ or $\overline{CE_2}$ = High, $V_{OUT}$ = 5.5V | | | 40 | | | 60 | μA |
| $I_{O(OFF)}$ | Hi-Z state (82S229) | $\overline{CE_1}$ or $\overline{CE_2}$ = High, $V_{OUT}$ = 5.5V | | | 40 | | | 60 | μA |
| | | $\overline{CE_1}$ or $\overline{CE_2}$ = High, $V_{OUT}$ = 0.5V | | | -40 | | | -60 | |
| $I_{OS}$ | Short circuit (82S229) | $V_{OUT}$ = 0V | -20 | | -70 | -15 | | -85 | mA |
| $I_{CC}$ | $V_{CC}$ supply current | | | 105 | 120 | | 105 | 125 | mA |
| | Capacitance | $V_{CC}$ = 5.0V | | | | | | | pF |
| $C_{IN}$ | Input | $V_{IN}$ = 2.0V | | 5 | | | 5 | | |
| $C_{OUT}$ | Output | $V_{OUT}$ = 2.0V | | 8 | | | 8 | | |

## AC ELECTRICAL CHARACTERISTICS

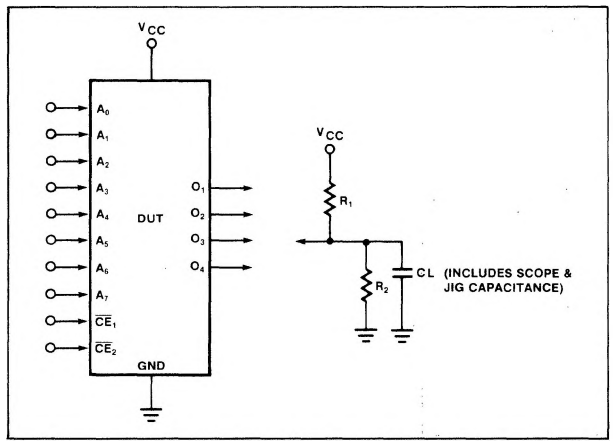
$R_1 = 270\Omega$, $R_2 = 600\Omega$, $C_L$ = 30pF
N82S226/229: $0°C \le T_A \le +75°C$, $4.75V \le V_{CC} \le 5.25V$
S82S226/229: $-55°C \le T_A \le +125°C$, $4.5V \le V_{CC} \le 5.5V$

| PARAMETER | TO | FROM | N82S226/229 | | | S82S226/229 | | | UNIT |
|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ[2] | Max | Min | Typ[2] | Max | |
| Access time | | | | | | | | | ns |
| $T_{AA}$ | Output | Address | | 35 | 50 | | 35 | 70 | |
| $T_{CE}$ | Output | Chip enable | | 15 | 25 | | 15 | 35 | |
| Disable time | | | | | | | | | ns |
| $T_{CD}$ | Output | Chip disable | | 15 | 25 | | 15 | 35 | |

NOTES

1. Positive current is defined as into the terminal referenced.
2. Typical values are at $V_{CC}$ = 5.0V, $T_A$ = +25°C.

## TEST LOAD CIRCUIT




## VOLTAGE WAVEFORM