

4K-bit TTL bipolar PROM (512 x 8)

82S147
82S147A

FEATURES

- Address access time: 75ns max
- Input loading: -150µA max
- One chip enable input
- 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

DESCRIPTION

The 82S147 and 82S147A are field-programmable, which means that custom patterns are immediately available by following the Philips 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 82S147 and 82S147A include on-chip decoding and one chip enable input for ease of memory expansion, and feature 3-State outputs for optimization of word expansion in bused organizations.

ORDERING INFORMATION

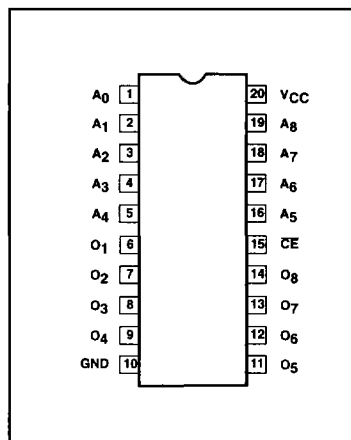
| DESCRIPTION | ORDER CODE | PACKAGE DESIGNATOR* |
|----------------------------------|-------------------------|---------------------|
| 20-pin Ceramic DIP (300mil-wide) | 82S147/BRA, 82S147A/BRA | GDIP1-T20 |

* MIL-STD 1835 or Appendix A of 1995 Military Data Handbook

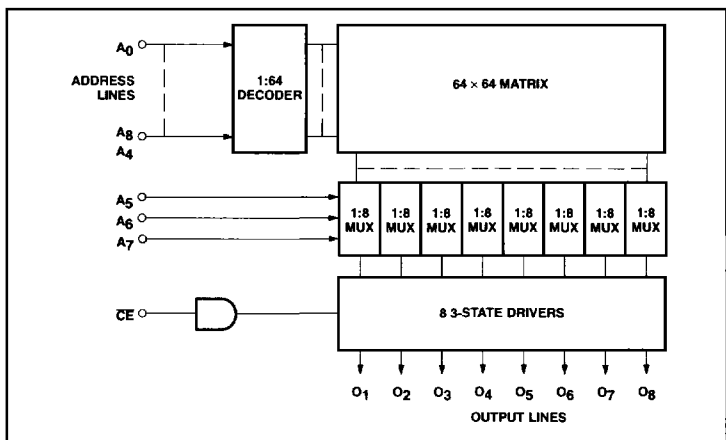
ABSOLUTE MAXIMUM RATINGS

| SYMBOL | PARAMETER | RATING | UNIT |
|------------------|-----------------------------|-------------|-----------------|
| V _{CC} | Supply voltage | +7 | V _{DC} |
| V _I | Input voltage | +5.5 | V _{DC} |
| V _O | Output voltage Off-State | +5.5 | V _{DC} |
| T _A | Operating temperature range | -55 to +125 | °C |
| T _{STG} | Storage temperature range | -65 to +150 | °C |

PIN CONFIGURATION



BLOCK DIAGRAM



4K-bit TTL bipolar PROM (512 x 8)

82S147
82S147A**DC ELECTRICAL CHARACTERISTICS** $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$, $4.5\text{V} \leq V_{\text{CC}} \leq 5.5\text{V}$

| SYMBOL | PARAMETER | TEST CONDITIONS ^{1, 2} | LIMITS | | | UNIT | |
|--------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------|--------------------------------------------------------------------------------------------------|---------------|---------------|
| | | | Min | Typ ⁵ | Max | | |
| Input voltage | | | | | | | |
| V_{IL} | Low | $V_{\text{CC}} = 4.5\text{V}$, $I_{\text{I}} = -18\text{mA}$ | 2.0 | | 0.8 | V | |
| V_{IH} | High | | | | -0.8 | V | |
| V_{IK} | Clamp | | | | -1.2 | V | |
| Output voltage | | | | | | | |
| V_{OL} | Low | $V_{\text{CC}} = 4.5\text{V}$, $\overline{\text{CE}} = \text{Low}$ $I_{\text{O}} = 9.6\text{mA}$ | 2.4 | | 0.5 | V | |
| V_{OH} | High | | | | $I_{\text{O}} = -2\text{mA}$ | V | |
| Input current | | | | | | | |
| I_{IL} | Low | $V_{\text{CC}} = 5.5\text{V}$ $V_{\text{I}} = 0.45\text{V}$ | | | -150 | μA | |
| I_{IH} | High | | | | $V_{\text{I}} = 5.5\text{V}$ | 40 | μA |
| Output current | | | | | | | |
| I_{OZ} | Hi-Z state | $V_{\text{CC}} = 5.5\text{V}$ $\overline{\text{CE}} = \text{High}$, $V_{\text{O}} = 5.5\text{V}$ $\overline{\text{CE}} = \text{High}$, $V_{\text{O}} = 0.5\text{V}$ | | | 40 | μA | |
| I_{OS} | Short circuit ³ | | | | $V_{\text{CC}} = 5.5\text{V}$, $\overline{\text{CE}} = \text{Low}$, $V_{\text{O}} = 0\text{V}$ | -15 | -85 |
| Supply current | | | | | | | |
| I_{CC} | | $\overline{\text{CE}} = \text{High}$, $V_{\text{CC}} = 5.5\text{V}$ | | | 125 | 160 | mA |
| Capacitance⁶ | | | | | | | |
| C_{IN} | Input | $\overline{\text{CE}} = \text{High}$, $V_{\text{CC}} = 5.0\text{V}$ $V_{\text{I}} = 2.0\text{V}$ | | | 5 | 10 | pF |
| C_{OUT} | Output | | | | $V_{\text{O}} = 2.0\text{V}$ | 8 | 13 |

AC ELECTRICAL CHARACTERISTICS $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$, $4.5\text{V} \leq V_{\text{CC}} \leq 5.5\text{V}$

| SYMBOL | PARAMETER | TO | FROM | 82S147 | | | 82S147A | | | UNIT |
|-----------------|--------------------------|--------|--------------|--------|------------------|-----|---------|------------------|-----|------|
| | | | | Min | Typ ⁵ | Max | Min | Typ ⁵ | Max | |
| t_{AA} | Access time ⁴ | Output | Address | | 45 | 75 | | 45 | 55 | ns |
| t_{CE} | Access time ⁴ | Output | Chip Enable | | 20 | 45 | | 20 | 30 | ns |
| t_{CD} | Disable time | Output | Chip Disable | | 20 | 45 | | 20 | 30 | ns |

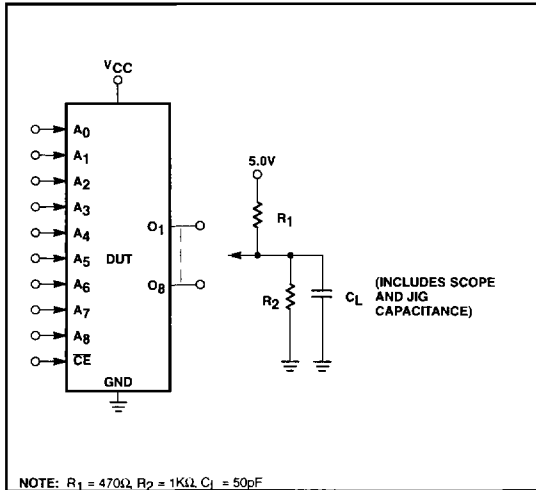
NOTES:

- All voltage values are with respect to network ground terminal.
- Positive current is defined as into the terminal referenced.
- Duration of short circuit should not exceed 1 second.
- Tested at an address cycle time of $1\mu\text{s}$.
- Typical values are at $V_{\text{CC}} = 5\text{V}$, $T_A = +25^{\circ}\text{C}$.
- Guaranteed, but not tested.

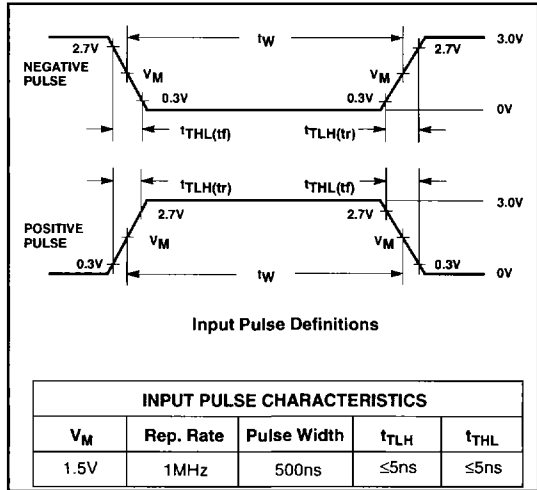
4K-bit TTL bipolar PROM (512 x 8)

82S147
82S147A

TEST LOAD CIRCUITS



VOLTAGE WAVEFORMS



TIMING DIAGRAMS

