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Memory Products	

# 82S147 / 82S147A

## 4K-bit TTL bipolar PROM

### DESCRIPTION

The 82S147 and 82S147A are 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 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 can be found on the following page.

The 82S147 and 82S147A 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.

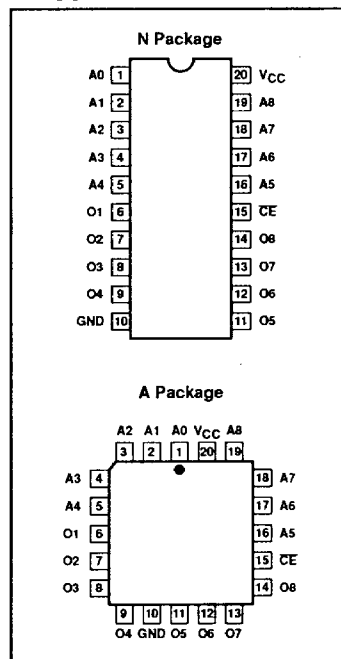
### FEATURES

- Address access time:
  - N82S147: 60ns max
  - N82S147A: 45ns max
- Power dissipation: 625mW/bit typ
- Input loading:  $-100\mu\text{A}$  max
- One Chip Enable input
- On-chip address decoding
- No separate fusing pins
- Fully TTL compatible
- Outputs: 3-State
- Unprogrammed outputs are Low level

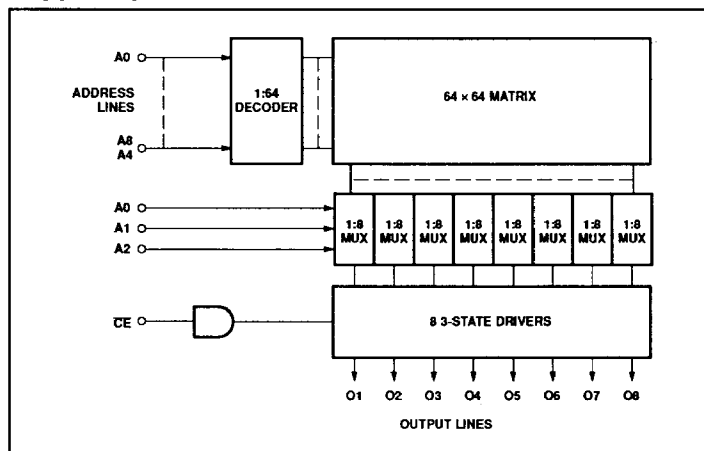
### APPLICATIONS

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

### PIN CONFIGURATIONS



### BLOCK DIAGRAM



**4K-bit TTL bipolar PROM (512 × 8)****82S147 / 82S147A****ORDERING INFORMATION**

DESCRIPTION	ORDER CODE
20-Pin Plastic Dual-In-Line 300mil-wide	N82S147 N, N82S147A N
20-Pin Plastic Leaded Chip Carrier 350mil-square	N82S147 A, N82S147A 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
$T_{stg}$	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> V <sub>IH</sub> V <sub>IC</sub>	Low High Clamp	I <sub>IN</sub> = -12mA	2.0	-0.8	0.8 -1.2	V V V
Output voltage						
V <sub>OL</sub> V <sub>OH</sub>	Low High	CE = Low I <sub>OUT</sub> = 9.6mA I <sub>OUT</sub> = -2mA	2.4		0.45	V V
Input current						
I <sub>IL</sub> I <sub>IH</sub>	Low High	V <sub>IN</sub> = 0.45V V <sub>IN</sub> = 5.5V			-100 40	μA μA
Output current						
I <sub>OZ</sub> I <sub>OS</sub>	Hi-Z state Short circuit <sup>4</sup>	CE = High, V <sub>OUT</sub> = 5.5V CE = High, V <sub>OUT</sub> = 0.5V CE = Low, V <sub>OUT</sub> = 0V	-15		40 -40 -70	μA μA mA
Supply current <sup>5</sup>						
I <sub>CC</sub>		V <sub>CC</sub> = 5.25V		125	155	mA
Capacitance						
C <sub>IN</sub> C <sub>OUT</sub>	Input Output	CE = High, V <sub>CC</sub> = 5.0V V <sub>IN</sub> = 2.0V V <sub>OUT</sub> = 2.0V		5 8		pF pF

**NOTES:**

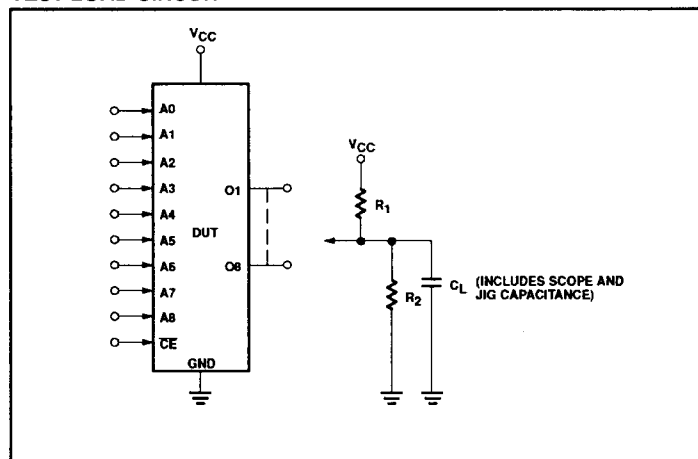
1. All voltages with respect to network ground.
2. Positive current is defined as into the terminal referenced.
3. Typical values are at  $V_{CC} = 5V$ ,  $T_{amb} = +25^\circ C$ .
4. Duration of the short circuit should not exceed 1 second.
5. Measured with all inputs grounded and all outputs open.

**4K-bit TTL bipolar PROM (512 × 8)****82S147 / 82S147A****AC ELECTRICAL CHARACTERISTICS**
 $R_1 = 270\Omega$ ,  $R_2 = 600\Omega$ ,  $C_L = 30\text{pF}$ ,  $0^\circ\text{C} \leq T_{\text{amb}} \leq +75^\circ\text{C}$ ,  $4.75\text{V} \leq V_{\text{CC}} \leq 5.25\text{V}$ 

SYMBOL	PARAMETER	TO	FROM	N82S147			N82S147A			UNIT
				Min	Typ <sup>1</sup>	Max	Min	Typ <sup>1</sup>	Max	
Access time <sup>2</sup>										
t <sub>AA</sub>		Output	Address		45	60		40	45	ns
t <sub>CE</sub>		Output	Chip Enable		20	35		20	30	ns
Disable time <sup>3</sup>										
t <sub>CD</sub>		Output	Chip Disable		20	35		20	30	ns

**NOTES:**

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

**TEST LOAD CIRCUIT****VOLTAGE WAVEFORMS**