

## 82S191, 82S191A 16K-Bit TTL Bipolar PROM

### Military Bipolar Memory Products

### Product Specification

#### DESCRIPTION

The 82S191 and 82S191A are field programmable, which means that custom patterns are immediately available by following the Signetics Generic I fusing procedure. The 82S191 and 82S191A are supplied with all outputs at a logical Low. Outputs are programmed to a logic High level at any specified address by fusing the Ni-Cr link matrix.

This device includes on-chip decoding and 3 chip enable inputs for ease of memory expansion. It features 3-State outputs for optimization of word expansion in bused organizations.

#### FEATURES

- Address access time:
  - 82S191: 100ns max
  - 82S191A: 55ns max
- Input loading: -150 $\mu$ A max
- Three chip enable inputs
- On-chip address decoding
- No separate fusing pins
- Unprogrammed outputs are Low level
- Fully TTL compatible
- Outputs: 3-State

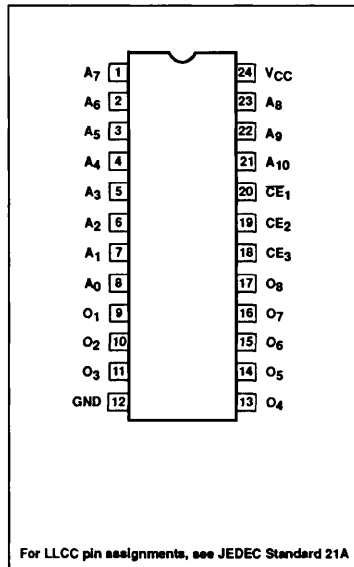
#### APPLICATIONS

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

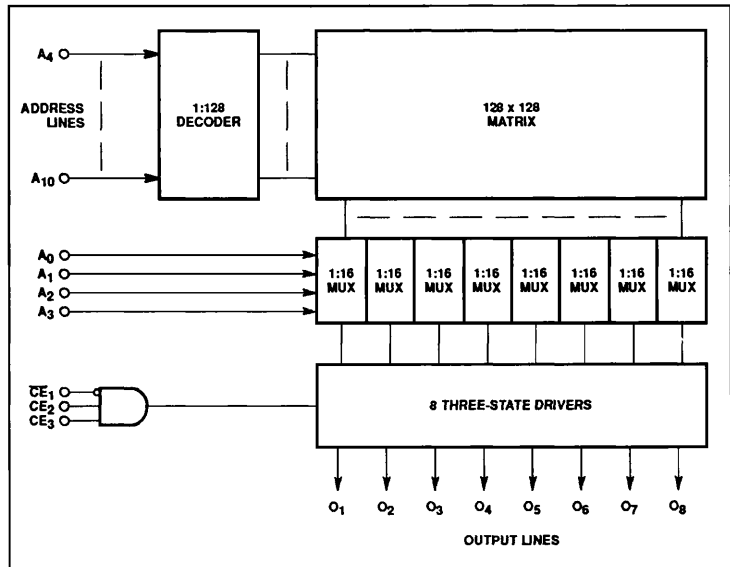
#### ORDERING INFORMATION

DESCRIPTION	ORDER CODE
24-pin Ceramic Dual-In-Line 600mil-wide	82S191/BJA, 82S191A/BJA
24-pin Ceramic Dual-In-Line 300mil-wide	82S191/BLA, 82S191A/BLA
24-pin Ceramic Flat Package	82S191/BKA, 82S191A/BKA
28-pin Ceramic LLCC	82S191/B3A, 82S191A/B3A

#### PIN CONFIGURATION



#### BLOCK DIAGRAM



## 16K-Bit TTL Bipolar PROM (2048 × 8)

## 82S191, 82S191A

ABSOLUTE MAXIMUM RATINGS<sup>8</sup>

SYMBOL	PARAMETER	RATING	UNIT
V <sub>CC</sub>	Supply voltage	+7	V <sub>DC</sub>
V <sub>I</sub>	Input voltage	+5.5	V <sub>DC</sub>
V <sub>O</sub>	Output voltage Off-State	+5.5	V <sub>DC</sub>
T <sub>A</sub>	Operating temperature range	-55 to +125	°C
T <sub>STG</sub>	Storage temperature range	-65 to +150	°C

## RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	RATINGS			UNIT
		Min	Nom	Max	
V <sub>CC</sub>	Supply voltage	4.5	5.0	5.5	V
V <sub>IH</sub> <sup>7</sup>	High level input voltage	2.0			V
V <sub>IL</sub> <sup>7</sup>	Low level input voltage			0.8	V
I <sub>IK</sub>	Input clamp current			-18	mA
I <sub>OH</sub>	High level output current			-2	mA
I <sub>OL</sub>	Low level output current			9.6	mA
T <sub>A</sub>	Operating free air temperature range	-55		+125	°C

DC ELECTRICAL CHARACTERISTICS -55°C ≤ T<sub>A</sub> ≤ +125°C, 4.5V ≤ V<sub>CC</sub> ≤ 5.5V

SYMBOL	PARAMETER	TEST CONDITIONS <sup>1,2</sup>	LIMITS			UNIT
			Min	Typ <sup>5</sup>	Max	
V <sub>IK</sub>	Input Clamp voltage	V <sub>CC</sub> = Min, I <sub>I</sub> = -18mA		-0.8	-1.2	V
V <sub>OL</sub>	Low level Output voltage	V <sub>CC</sub> = Min CE <sub>1</sub> = V <sub>IL</sub> , CE <sub>2,3</sub> = V <sub>IH</sub> , I <sub>O</sub> = Max			0.5	V
V <sub>OH</sub>	High level Output voltage	V <sub>CC</sub> = Min, I <sub>O</sub> = Max	2.4			V
I <sub>IL</sub> <sup>1</sup>	Low level Input current	V <sub>CC</sub> = Max, V <sub>I</sub> = 0.45V			-150	μA
I <sub>IH</sub> <sup>1</sup>	High level Input current	V <sub>CC</sub> = Max, V <sub>I</sub> = 5.5V			40	μA
I <sub>OLZ</sub> <sup>1</sup>	OFF-State output current low level	V <sub>CC</sub> = Max CE <sub>1</sub> = High, CE <sub>2,3</sub> = Low, V <sub>O</sub> = 0.4V			-40	μA
I <sub>OHZ</sub> <sup>1</sup>	OFF-State output current High State	V <sub>CC</sub> = Max CE <sub>1</sub> = High, CE <sub>2,3</sub> = Low, V <sub>O</sub> = 5.5V			40	μA
I <sub>OS</sub>	Short circuit output current <sup>3</sup>	CE <sub>1</sub> = Low, CE <sub>2,3</sub> = High, V <sub>CC</sub> = Max, V <sub>O</sub> = 0V	-15		-85	mA
I <sub>CC</sub>	Supply current	CE <sub>1</sub> = High, CE <sub>2,3</sub> = Low, V <sub>CC</sub> = Max		130	185	mA
C <sub>IN</sub> <sup>6</sup>	Input Capacitance	CE <sub>1</sub> = High, CE <sub>2,3</sub> = Low V <sub>CC</sub> = Nom, V <sub>I</sub> = 2.0V		5	10	pF
C <sub>OUT</sub> <sup>6</sup>	Output Capacitance	V <sub>CC</sub> = Nom, CE <sub>1</sub> = High, CE <sub>2,3</sub> = Low V <sub>O</sub> = 2.0V		8	13	pF

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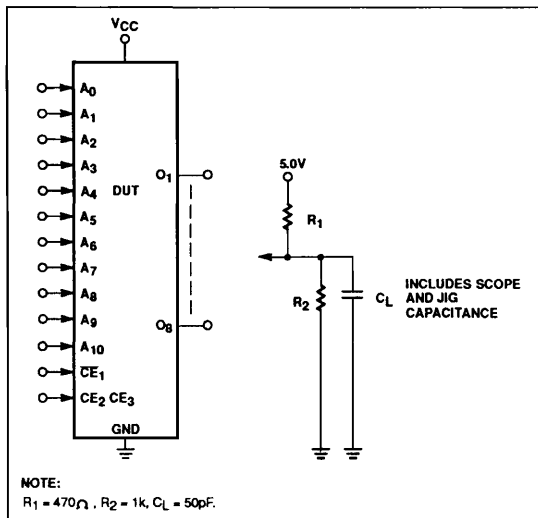
### AC ELECTRICAL CHARACTERISTICS -55°C ≤ T<sub>A</sub> ≤ +125°C, 4.5V ≤ V<sub>CC</sub> ≤ 5.5V

SYMBOL	PARAMETER	TO	FROM	82S191			82S191A			UNIT
				Min	Typ <sup>5</sup>	Max	Min	Typ <sup>5</sup>	Max	
t <sub>AA</sub>	Access time <sup>4</sup>	Output	Address		50	100		50	55	ns
t <sub>CE</sub>	Access time <sup>4</sup>	Output	Chip enable		30	50		20	30	ns
t <sub>CD</sub>	Disable time	Output	Chip disable		30	50		20	30	ns

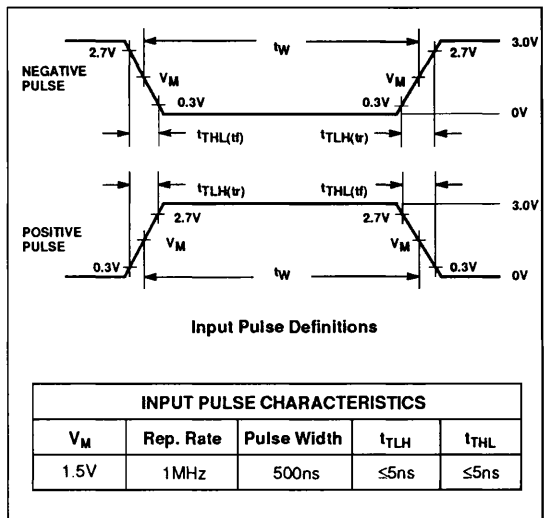
**NOTES:**

1. Positive current is defined as into the terminal referenced.
2. All voltages with respect to network ground.
3. Duration of short circuit should not exceed 1 second.
4. Tested at an address cycle time of 1μs.
5. Typical values are at V<sub>CC</sub> = 5V, T<sub>A</sub> = +25°C.
6. Guaranteed, but not tested.
7. These are absolute voltages with respect to device ground pin and include all overshoots due to system and/or tester noise. Testing of these values requires special equipment.
8. Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

### TEST LOAD CIRCUITS



### VOLTAGE WAVEFORMS



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TIMING DIAGRAMS

