

Document No.	853-0138
ECN No.	96054
Date of Issue	March 14, 1989
Status	Product Specification
Memory Products	

82S23A 82S123A 256-bit TTL bipolar PROM

DESCRIPTION

The 82S23A and 82S123A are field programmable, which means that custom patterns are immediately available by following the Signetics Generic I fusing procedure. The 82S23A and 82S123A devices are supplied with all outputs at logical Low. Outputs are programmed to a logic High level at any specified address by fusing a Ni-Cr link matrix.

These devices include on-chip decoding and 1 Chip Enable input for memory expansion. They feature either Open Collector or 3-State outputs for optimization of word expansion in bused organizations.

Ordering information can be found on the following page.

The 82S23A and 82S123A 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.

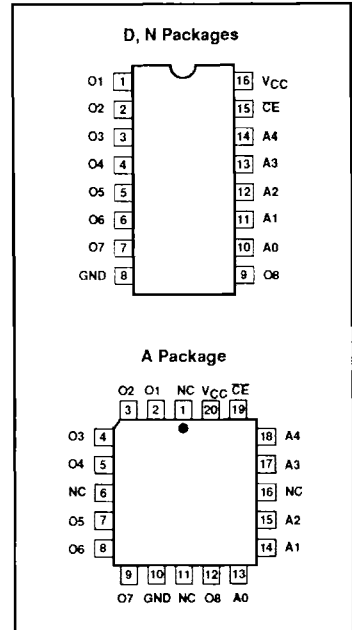
FEATURES

- Address access time: 25ns max
- Power dissipation: 1.3mW/bit typ
- Input loading: $-100\mu\text{A}$ max
- On-chip address decoding
- One Chip Enable input
- Output options:
 - N82S23A: Open Collector
 - N82S123A: 3-State
- No separate fusing pins
- Unprogrammed outputs are Low level
- Fully TTL compatible

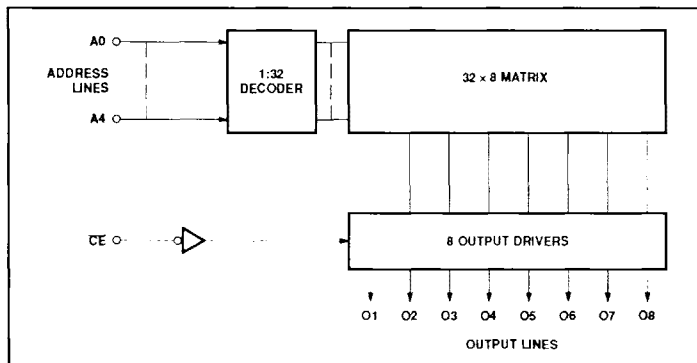
APPLICATIONS

- Prototyping/volume production
- Sequential controllers
- Format conversion
- Hardwired algorithms
- Random logic
- Code conversion

PIN CONFIGURATIONS



BLOCK DIAGRAM



256-bit TTL bipolar PROM (32 × 8)

82S23A / 82S123A

ORDERING INFORMATION

DESCRIPTION	ORDER CODE
16-Pin Plastic Dual-In-Line 300mil-wide	N82S23A N, N82S123A N
16-Pin Plastic Small Outline 300mil-wide	N82S23A D, N82S123A D
20-Pin Plastic Leaded Chip Carrier 350mil-square	N82S23A A, N82S123A 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_{OH}	Output voltage High (82S23A)	+5.5	V_{DC}
V_O	Output voltage Off-State (82S123A)	+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 ^{1,2}	LIMITS			UNIT
			MIN	TYP ³	MAX	
Input voltage						
V_{IL}	Low	$I_{IN} = -12mA$	2.0		0.8	V
V_{IH}	High				-1.2	V
V_{IC}	Clamp					V
Output voltage						
V_{OL}	Low	CE = Low	2.4		0.45	V
V_{OH}	High	$I_{OUT} = 16mA$ $I_{OUT} = -2.0mA$			V	
Input current						
I_{IL}	Low	$V_{IN} = 0.45V$			-100	μA
I_{IH}	High	$V_{IN} = 5.5V$			50	μA
Output current						
I_{OLK}	Leakage (82S23A)	CE = High, $V_{OUT} = 5.5V$			40	μA
I_{OZ}	Hi-Z state (82S123A)	CE = High, $V_{OUT} = 5.5V$			40	μA
I_{OS}	Short circuit (82S123A) ⁴	CE = High, $V_{OUT} = 0.5V$ CE = Low, $V_{OUT} = 0V$, High stored	-15		-40 -90	μA mA
Supply current⁵						
I_{CC}		$V_{CC} = 5.25V$			96	mA
Capacitance						
C_{IN}	Input	CE = High, $V_{CC} = 5.0V$ $V_{IN} = 2.0V$			5	pF
C_{OUT}	Output	$V_{OUT} = 2.0V$			8	pF

NOTES:

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

256-bit TTL bipolar PROM (32 × 8)

82S23A / 82S123A

AC ELECTRICAL CHARACTERISTICS

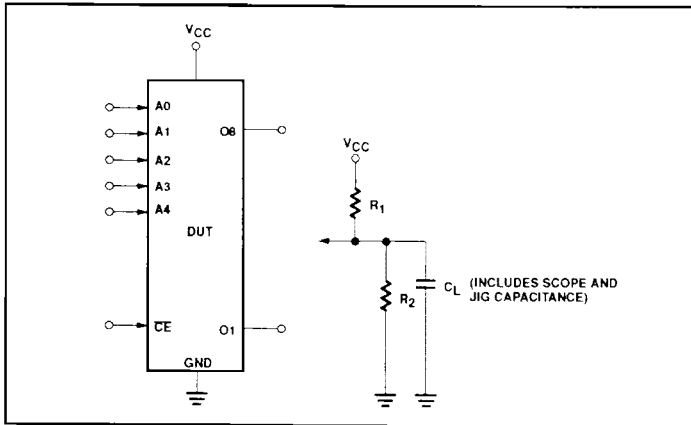
$R_1 = 270\Omega$, $R_2 = 600\Omega$, $C_L = 30\text{pF}$, $0^\circ\text{C} \leq T_{\text{amb}} \leq +75^\circ\text{C}$, $4.75\text{V} \leq V_{\text{CC}} \leq 5.25\text{V}$

SYMBOL	PARAMETER	TO	FROM	LIMITS			UNIT
				MIN	TYP ¹	MAX	
Access time²							
t_{AA}		Output	Address		20	25	ns
t_{CE}		Output	Chip Enable		18		ns
Disable time³							
t_{CD}		Output	Chip Disable			18	ns

NOTES:

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

TEST LOAD CIRCUIT



VOLTAGE WAVEFORM

