82S137
4K-bit TTL bipolar PROM

DESCRIPTION

The 82S137 is field programmable, which means that custom patterns are immediately available by following the Signetics Generic I fusing procedure. The 82S137 is 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.

This device includes on-chip decoding and 2 Chip Enable inputs for ease of memory expansion. It features 3-State outputs for optimization of word expansion in bused organizations.

Ordering information can be found on the following page.

The 82S137 device is also processed to military requirements for operation over the military temperature range, for specifications and ordering information consult the Signetics Military Data Handbook.
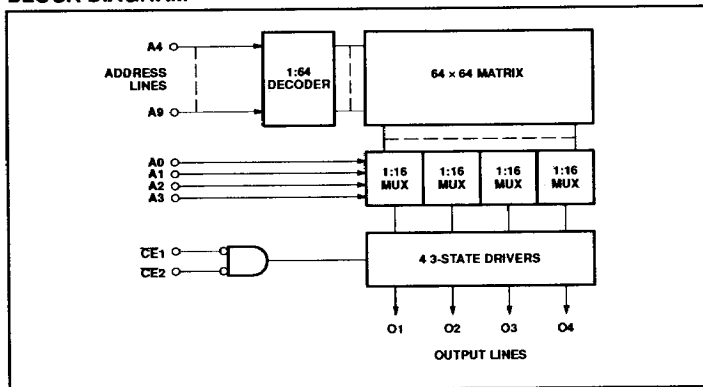
FEATURES

- Address access time: 60ns max
- Power dissipation: 0.13mW/bit typ
- Input loading: -100µA max
- On-chip address decoding
- No separate fusing pins
- Unprogrammed outputs are Low level
- Fully TTL compatible
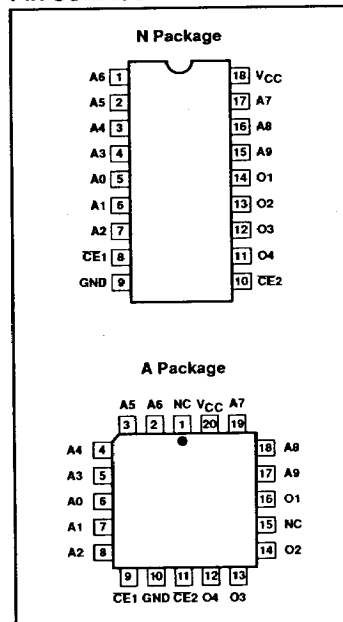- Two Chip Enable inputs
- Outputs: 3-State

APPLICATIONS

- Sequential controllers
- Control store
- Random logic
- Code conversion

PIN CONFIGURATIONS

N Package

A6 1	18 V_CC
A5 2	17 A7
A4 3	16 A8
A3 4	15 A9
A0 5	14 O1
A1 6	13 O2
A2 7	12 O3
CE1 8	11 O4
GND 9	10 CE2

A Package

A5 A6 NC V_CC A7
3 2 1 20 19

A4 4	18 A8
A3 5	17 A9
A0 6	16 O1
A1 7	15 NC
A2 8	14 O2

9 10 11 12 13
CE1 GND CE2 O4 O3

BLOCK DIAGRAM

A4 — ADDRESS LINES — A9
1:64 DECODER
64 × 64 MATRIX
A0 A1 A2 A3
1:16 MUX 1:16 MUX 1:16 MUX 1:16 MUX
CE1 CE2
4 3-STATE DRIVERS
O1 O2 O3 O4
OUTPUT LINES

4K-bit TTL bipolar PROM (1024 × 4)   82S137

ORDERING INFORMATION

DESCRIPTION	ORDER CODE
18-Pin Plastic Dual-In-Line 300mil-wide	N82S137 N
20-Pin Plastic Leaded Chip Carrier 350mil-square	N82S137 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
$0°C \leq T_{amb} \leq +75°C$, $4.75V \leq V_{CC} \leq 5.25V$

SYMBOL	PARAMETER	TEST CONDITIONS[1,2]	LIMITS			UNIT
			Min	Typ[3]	Max	
Input voltage						
V_{IL}	Low				0.8	V
V_{IH}	High		2.0			V
V_{IC}	Clamp	$I_{IN} = -12mA$			-1.2	V
Output voltage						
V_{OL}	Low	$\overline{CE}1,2 = Low$ $I_{OUT} = 16mA$			0.45	V
V_{OH}	High	$I_{OUT} = -2mA$	2.4			V
Input current						
I_{IL}	Low	$V_{IN} = 0.45V$			-100	µA
I_{IH}	High	$V_{IN} = 5.5V$			40	µA
Output current						
I_{OZ}	Hi-Z state	$\overline{CE}1,2 = High, V_{OUT} = 0.5V$			-40	µA
		$\overline{CE}1,2 = High, V_{OUT} = 5.5V$			40	µA
I_{OS}	Short circuit[4]	$\overline{CE}1,2 = Low, V_{OUT} = 0V$, High stored	-15		-70	mA
Supply current[5]						
I_{CC}		$V_{CC} = 5.25V$			140	mA
Capacitance						
C_{IN}	Input	$\overline{CE}1,2 = High, V_{CC} = 5.0V$ $V_{IN} = 2.0V$		5		pF
C_{OUT}	Output	$V_{OUT} = 2.0V$		8		pF

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

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AC ELECTRICAL CHARACTERISTICS
$R_1 = 270\Omega$, $R_2 = 600\Omega$, $C_L = 30pF$, $0°C \leq T_{amb} \leq +75°C$, $4.75V \leq V_{CC} \leq 5.25V$

SYMBOL	PARAMETER	TO	FROM	LIMITS			UNIT
				Min	Typ[1]	Max	
Access time[2]							
t_{AA}		Output	Address		40	60	ns
t_{CE}		Output	Chip Enable		25	30	ns
Disable time[3]							
t_{CD}		Output	Chip Disable		25	30	ns

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

TEST LOAD CIRCUIT
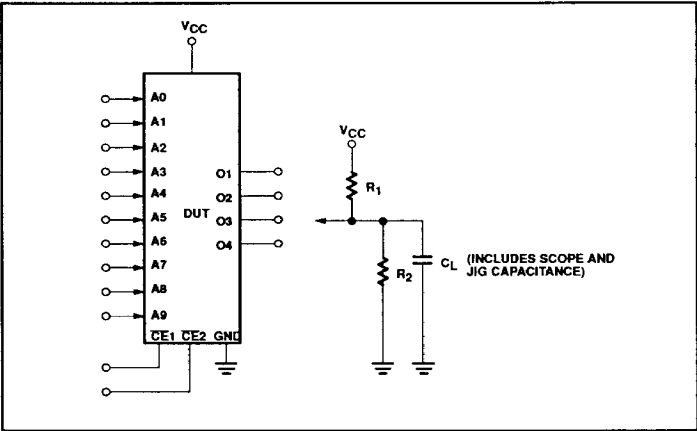
VOLTAGE WAVEFORMS
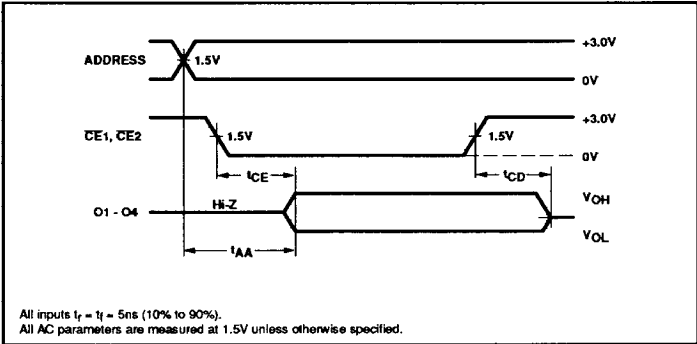
All inputs $t_r = t_f = 5ns$ (10% to 90%).
All AC parameters are measured at 1.5V unless otherwise specified.