2516-I,N

FEATURES

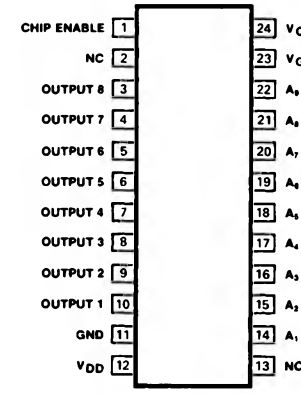
- **5V TTL level input signals**
- **Tri-state outputs**
- **Direct, low cost interfacing with TTL, DTL and Signetics MOS 2500 series**

TRUTH TABLE

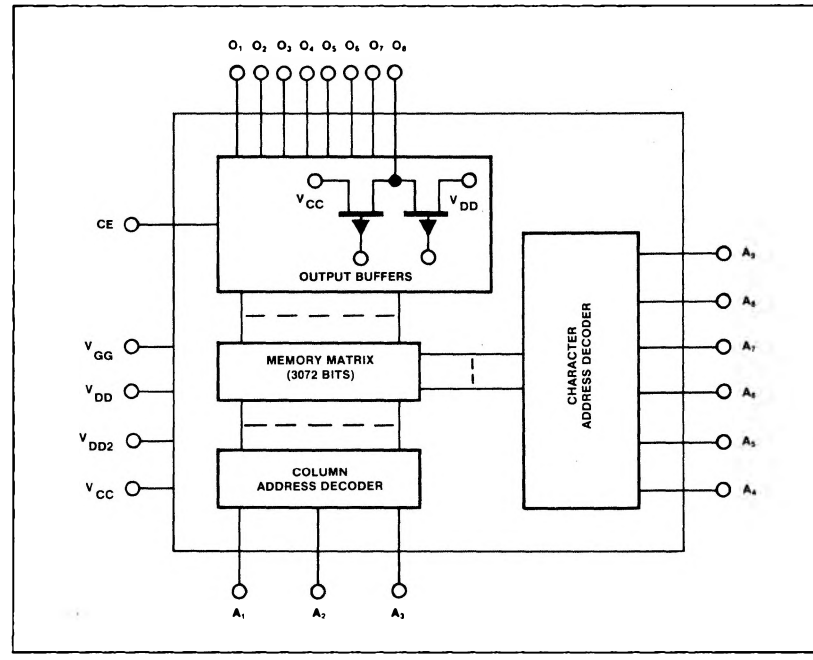
CE	OUTPUT
0	Data
1	Open

PIN CONFIGURATION

I,N PACKAGE



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS[1]

	PARAMETER	RATING	UNIT
	Temperature range		°C
T_A	Operating	0 to 70	
T_{STG}	Storage	-65 to 150	
P_D	Power dissipation at 70°C[2]	730	mW
	Input[3] and supply voltages with respect to V_{CC}	0.3 to -20	V

DC ELECTRICAL CHARACTERISTICS

T_A = 0°C to 70°C, V_{CC} = 5V ± 5%, V_{DD} = -5V ± 5%, V_{GG} = -12V ± 5% unless other noted.[4,5,6,7]

	PARAMETER	TEST CONDITIONS	LIMITS Min	LIMITS Typ	LIMITS Max	UNIT
	Input voltage[8]					V
V_{IL}	Low		-5		0.6	
V_{IH}	High		3.4		5.3	
	Output voltage[9]					V
V_{OL}	Low	I_{OL} = 1.6mA	-5		0.5	
V_{OH}	High	I_{OH} = 100μA	3.8			
I_{LI}	Input load current	V_{IN} = -5.5V, T_A = 25°C		10	500	nA
I_{LO}	Output leakage current	V_{OUT} = -5.5V, T_A = 25°C, V_{CE} = V_{CC}		10	1000	nA
	Supply current	Outputs open				mA
I_{DD}	V_{DD}			14	21	
I_{GG}	V_{GG}			8	12	
	Capacitance					pF
C_{IN}	Address input	f = 1MHz, V_{IH} = V_{CC}, 25mV p-p			10	

AC ELECTRICAL CHARACTERISTICS

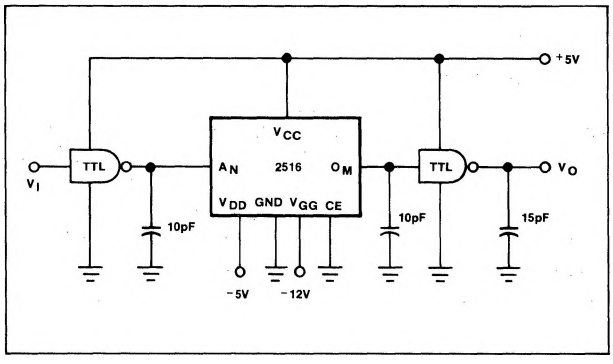
T_A = 0°C to 70°C, V_{CC} = 5V ± 5%, V_{DD} = -5V ± 5%, V_{GG} = -12V ± 5%, unless otherwise noted.

	PARAMETER	TEST CONDITIONS	LIMITS Min	LIMITS Typ	LIMITS Max	UNIT
	Access time	See test load circuit				ns
t_{CA}	Character			500	600	
t_{CLA}	Column (A_1-A_3)			400	500	

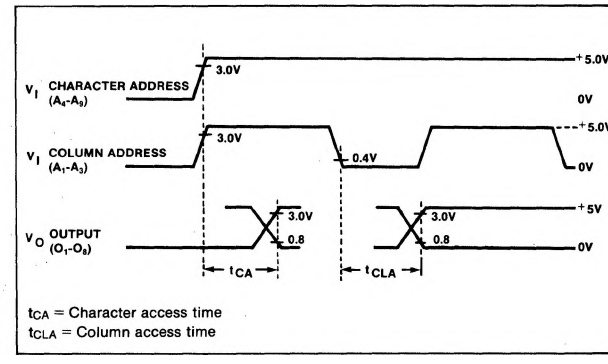
NOTES

1. 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 operational sections of the specification is not implied.
2. For operating at elevated temperatures the device must be derated based on a +150°C maximum junction temperature and a thermal resistance of 110°C/W junction to ambient.
3. All inputs are protected against static charge.
4. Parameters are valid over operating temperature range unless specified.
5. All voltage measurements are referenced to ground.
6. Manufacturer reserves the right to make design and process changes and improvements.
7. Typical values are at +25°C and typical supply voltages.
8. Guaranteed input levels are stated for worst case conditions including a ±5% variation in V_{CC} and a temperature variation of 0°C to +70°C. Actual input requirements with respect to V_{CC} are V_{IH} = V_{CC} -1.85V and V_{IL} = V_{CC} -4.15V.
9. V_{CC} tolerance is ±5%. Any variation in actual V_{CC} will be tracked directly by V_{IL}, V_{IH} and V_{OH}, which are stated for a V_{CC} of exactly 5V.

TEST LOAD CIRCUIT

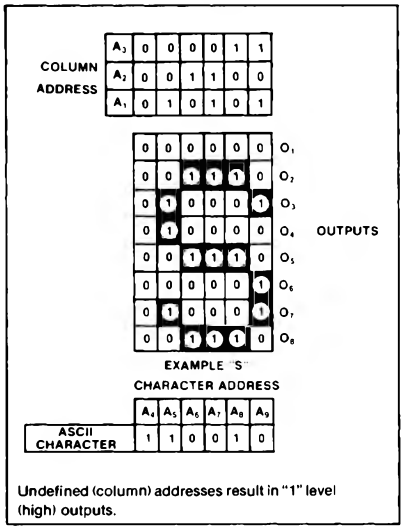


TIMING DIAGRAM



t_{CA} = Character access time
t_{CLA} = Column access time

CHARACTER FORMAT



Undefined (column) addresses result in "1" level (high) outputs.

APPLICATIONS DATA

Output Interfacing Notes

The tri-state outputs on this device exhibit 3 states:

1. "1" = Low impedance to +5V
2. "0" = Low impedance to -5V
3. Off = High impedance, 10m

The off state is controlled by the chip enable control input.

Custom ROM Organizations

The 2516 is a static ROM with a total 64X6X8-bit capacity. This allows a standard 5X7 font to be encoded in the ROM, e.g., the 2516/CM2150 ASCII font standard product. A custom coding configuration may make use of the full 6X8 dot matrix if desired.

ORGANIZATION AS CHARACTER GENERATOR

A 6-bit binary address (A_4-A_9) selects 1-of-64 matrix characters arranged 6 dots horizontally and 8 dots vertically. A 3-bit binary address code (A_1-A_3) selects 1 of 6 columns. Eight outputs display a complete column of the character matrix.

STANDARD PATTERN

A standard ASCII Character Font is available for the 2516. This device (2516N/CM2150) may be used for ASCII character generation or for device evaluation.

CUSTOM DEVICES

For unique custom memory patterns, the following formats should be used to transmit coding instructions. The nomenclature for each custom device will consist of the basic product type followed by a unique CM number assigned by Signetics, i.e., 2516N/CM2151.

- Programming with punched cards:
  For maximum accuracy and minimum cost and turn-around time, the truth table should be transmitted to Signetics in the form of punched cards according to the format indicated on the following pages.
- Programming with written truth table:
  When punched data cards cannot be supplied, the truth table may be transmitted in written form using the attached blank truth table.

VERIFICATION

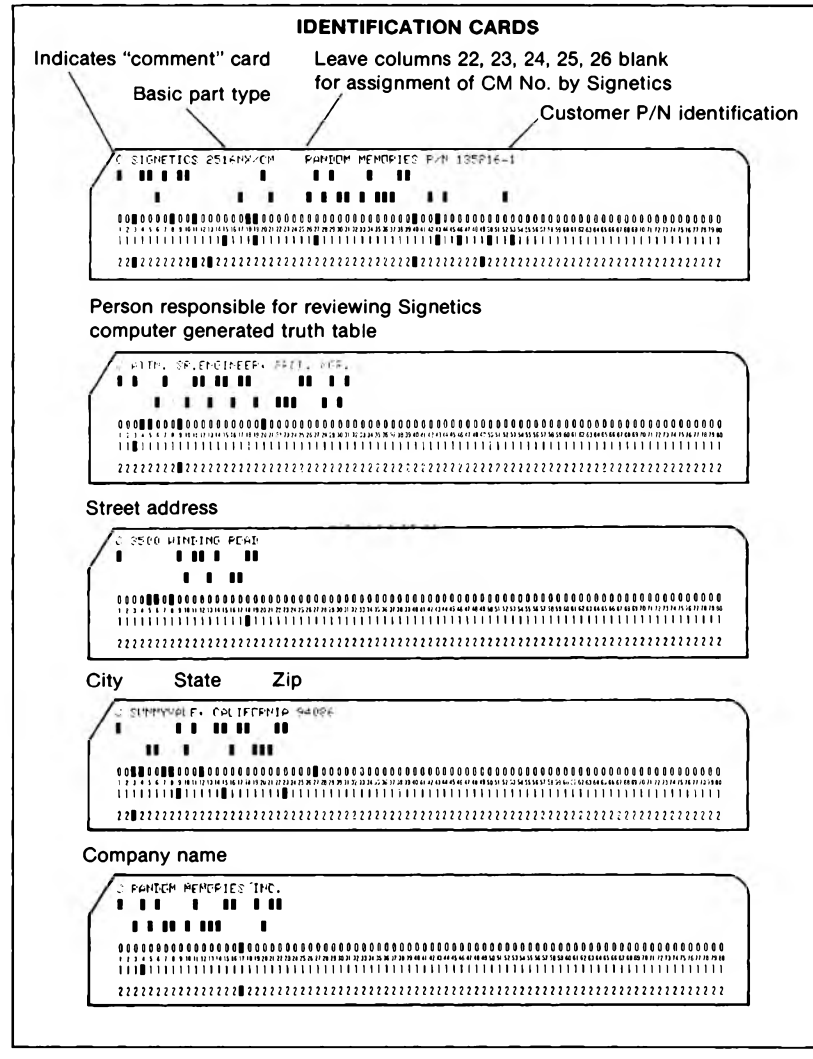
Upon receipt of either punched card or written truth table information, Signetics will prepare a computer tabulation of the instructions and return to the address indicated. If errors are detected, they should be transmitted to Signetics as quickly as possible.

LOGIC CONVENTION

Logic "1"s of blackened squares in the truth table will result in high output from the indicated output terminal, i.e., +3.6V minimum. Similarly, a "1" address input level is interpreted as +3.2V minimum.

Undefined addresses result in "1" level outputs.

CARD FORMAT

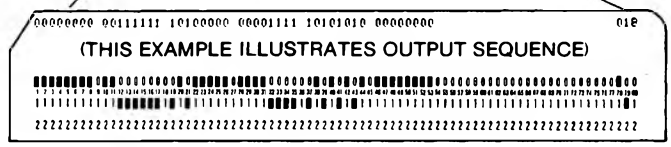


CARD FORMAT (Cont'd)

DATA CARDS

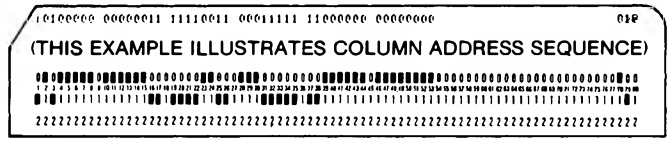
Outputs O_8 — O_1 respectively

Decimal character address
(Data card number 001 — 064)



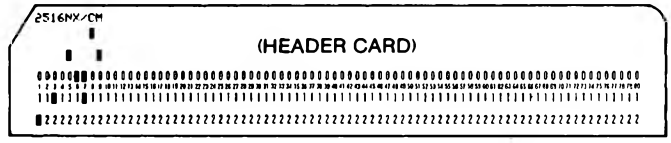
Column address (A_3.A_2.A_1)

000 001 010 011 100 101



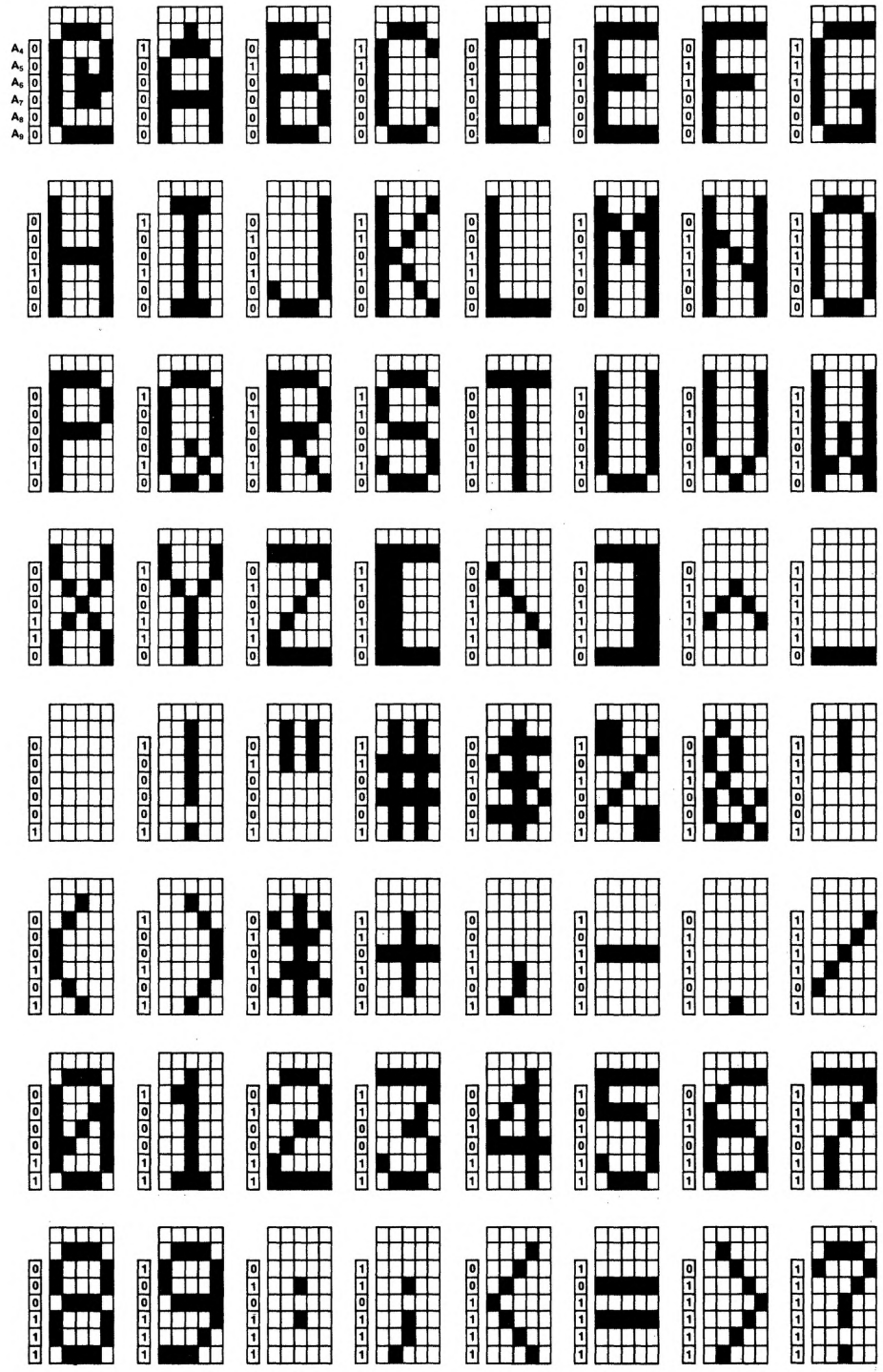
Basic device type

Leave columns 10, 11, 12, 13 blank for assignment of CM No. by Signetics



Character number is in columns 78, 79 and 80.

ASCII CHARACTER FONT



Excess addresses yield logic "1" outputs.