

DESCRIPTION

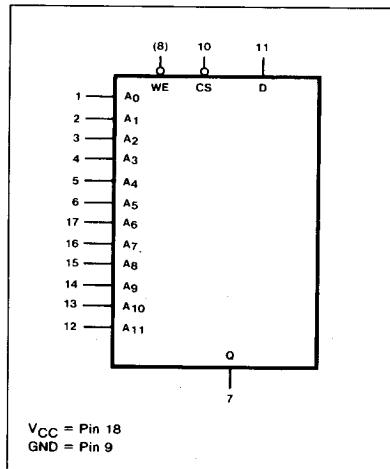
The Signetics 2613 is a high speed, 4096 bit static random access memory. Utilizing the Signetics n-channel, si-gate Mini-MOS technology to achieve high performance and high bit density, the 4096x1 organization offers a cost effective solution for designer needs.

The 2613 is fully static (access time=cycle time), all input and outputs are TTL compatible, and it has a single +5V supply. It is manufactured in the industry standard pinout 18 pin package.

FEATURES

- Typical access time 80ns
- Power dissipation 0.1 mW/bit typical
- 3-state TTL compatible output
- All inputs TTL compatible
- Fully static operation
- Identical access & cycle times
- High output impedance during write
- Single +5V power supply
- Standard 18-pin DIP

LOGIC SYMBOL



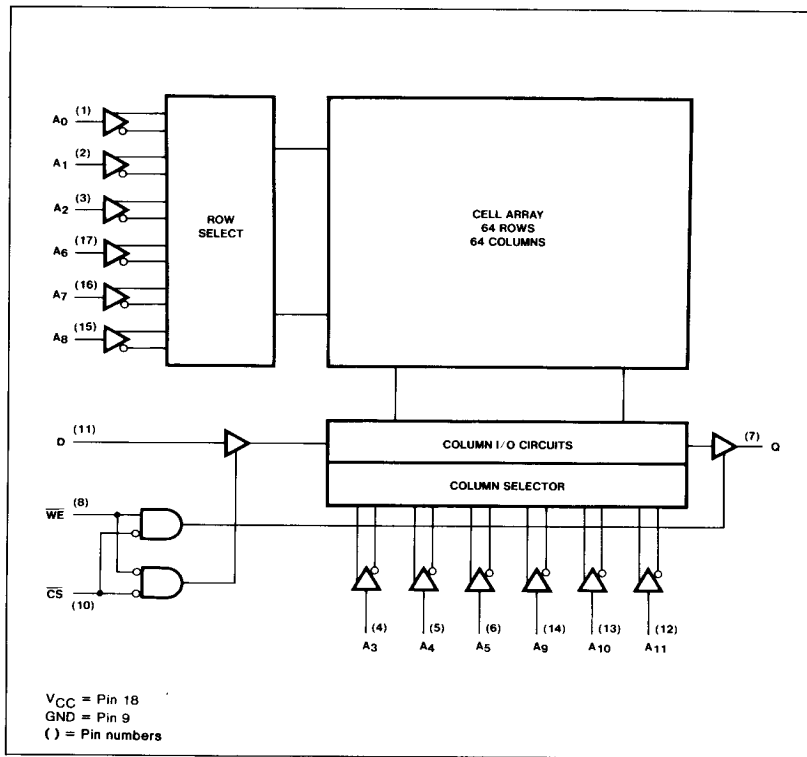
ORDERING CODE (See Packages Section for further information)

PACKAGES	ACCESS TIME			
	150ns	200ns	250ns	450ns
Ceramic DIP	2613-15I	2613-20I	2613-25I	2613-45I
Cerdip	2613-15F	2613-20F	2613-25F	2613-45F
Plastic DIP	2613-15N	2613-20N	2613-25N	2613-45N

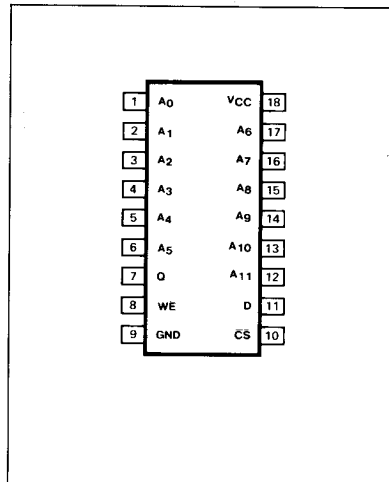
PIN DESIGNATION

SYMBOL	DESCRIPTION
A ₀ -A ₁₁	Address inputs
\overline{CS}	Chip select (active LOW) input
\overline{WE}	Write enable (active LOW) input
D	Data input
Q	Data output (3-State)
GND	Ground (0V)
V _{CC}	Power supply (+5V)

BLOCK DIAGRAM



PIN CONFIGURATION



MOS MEMORY

MODE SELECT - FUNCTION TABLE

OPERATING MODE	INPUTS			OUTPUT
	CS	WE	D	Q
Not selected	H	X	X	(Z)
Write '0'	L	L	L	(Z)
Write '1'	L	L	H	(Z)
Read	L	H	X	Data

X = Don't care
 H = HIGH voltage level
 L = LOW voltage level
 (Z) = High impedance "off" state

ABSOLUTE MAXIMUM RATINGS¹

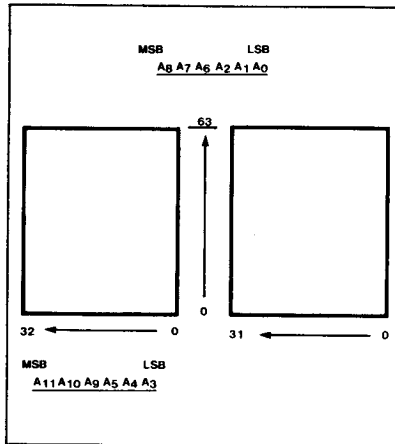
PARAMETER	RATING
Operating temperature range	0 to 70°C
Storage temperature range	-55 to 150°C
Supply voltage to ground potential	-0.5 to 7V
Short circuit output current	-20mA
Input voltage	-0.5 to 7V

NOTE
 1. Stresses above these listed as "Absolute Maximum Ratings" may damage the device. These ratings are meant for short term stress only, prolonged exposure at these ratings may affect device reliability.

DC CHARACTERISTICS : T_A = 0°C to 70°C, V_{CC} = 5V ± 5%

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS		UNIT
			MIN	MAX	
V _{IL}	Input LOW voltage range		-0.5	0.8	V
V _{IH}	Input HIGH voltage range		2.0	V _{CC}	V
I _{IL}	Input LOW current	V _{CC} = MAX, V _{IN} = 0V		-10	uA
I _{IH}	Input HIGH current	V _{CC} = MAX, V _{IN} = 5.25V		10	uA
V _{OL}	Output LOW voltage	V _{CC} = MIN, I _{OL} = 2.1mA		0.45	V
V _{OH}	Output HIGH voltage	V _{CC} = MIN, I _{OH} = -1.0mA	2.4		V
I _{OZL}	Output off current LOW	V _{CC} = MAX, V _{OUT} = 0.4V, V _{CS} = 2V		-10	uA
I _{OZH}	Output off current HIGH	V _{CC} = MAX, V _{OUT} = 5.25V, V _{CS} = 2V		10	uA
I _{CC}	Supply current	V _{CC} = MAX, V _{CS} = 2V		140	mA
C _{IN}	Input capacitance	V _{CS} = 2V, V _{IN} = 0V, f = 1.0MHz		5.0	pF
C _{OUT}	Output capacitance	V _{CS} = 2V, V _{OUT} = 0V, f = 1.0MHz		5.0	pF

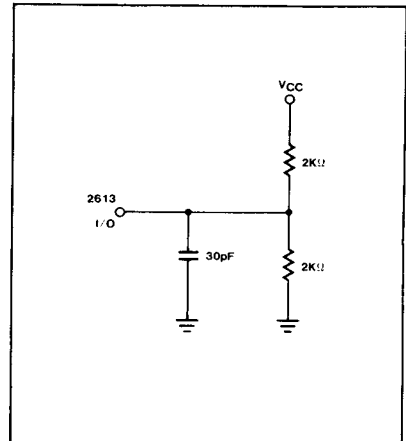
BIT MAP



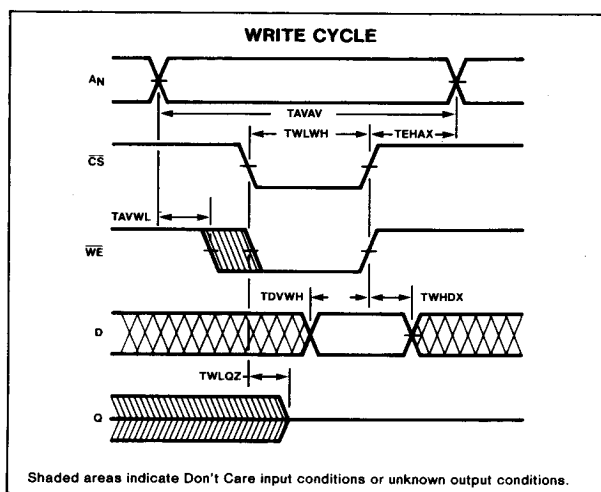
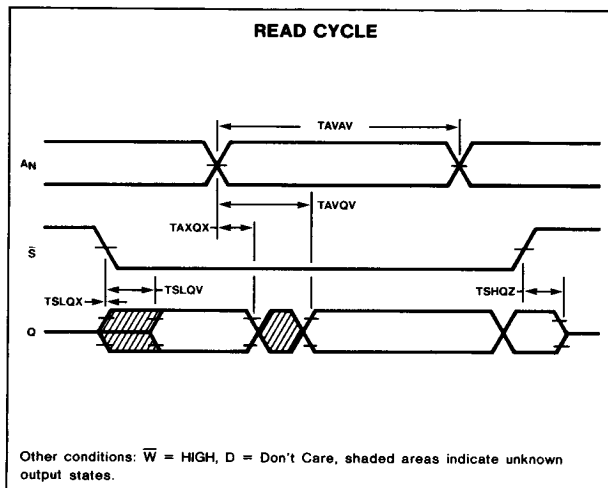
ADDRESS SCRAMBLE

TESTER	2613	PIN
COLUMN		
A ₀	A ₃	4
A ₁	A ₄	5
A ₂	A ₅	6
A ₃	A ₉	14
A ₄	A ₁₀	13
A ₅	A ₁₁	12
ROW		
A ₆	A ₀	1
A ₇	A ₁	2
A ₈	A ₂	3
A ₉	A ₆	17
A ₁₀	A ₇	16
A ₁₁	A ₈	15

TEST LOAD CIRCUIT



AC WAVEFORMS



AC CHARACTERISTICS $T_A = 0^\circ\text{C}$ to 70°C , $V_{CC} = 5.0\text{V} \pm 5\%$

SYMBOL	PARAMETER	TEST CONDITIONS	2613-15		2613-20		2613-25		2613-45		UNIT
			Min	Max	Min	Max	Min	Max	Min	Max	
READ CYCLE											
TAVAV	Read cycle time		150		200		250		450		ns
TSLQX	Select LOW to output on		0		0		0		0		ns
TSHQZ	Select HIGH to output off		0	35	0	40	0	60	0	100	ns
TAXQX	Address to output invalid		10		10		10		20		ns
TSLQV	Chip select access time			50		70		100		120	ns
TAVQV	Address access time			150		200		250		450	ns
WRITE CYCLE											
TAVAV	Write cycle time		150		200		250		450		ns
TAVWL	Address to write set up time		30		50		70		70		ns
TWLWH	Write LOW pulse duration		75		100		125		200		ns
TDVWH	Data set up time		50		75		100		200		ns
TWHDX	Data hold time		0		0		0		0		ns
TWLQZ	Write to output off		0	35	0	40	0	60	0	100	ns
TEHAX	Write HIGH to address invalid		20		20		20		20		ns

MOS MEMORY