

54187/74187 1024-Bit Read-Only Memory (1024-Bit ROM)

	Schottky TTL				High-Speed TTL				Low-Power Schottky TTL				Standard TTL				Low-Power TTL					
	Device Type	Package			Device Type	Package			Device Type	Package			Device Type	Package			Device Type	Package				
		C	P	M		CF	C	P		M	CF	C		P	M	CF		C	P	M	CF	
T. I.													SN54187	J (C)		W (C)						
FAIRCHILD													SN74187	J (C)	N (C)							
MOTOROLA													93406		P (L)							
N. S. C.													DM54187	J (C)			DM54L187A	J (C)	N (C)		F (L)	
PHILIPS													DM74187	J (C)	N (C)		DM74L187A	J (C)	N (C)		F (L)	
SIGNETICS																						
SIEMENS																						
FUJITSU																						
HITACHI																						
MITSUBISHI																						
NEC																						
TOSHIBA																						

Electrical Characteristics SN54187/SN74187
absolute maximum ratings over operating free-air temperature range

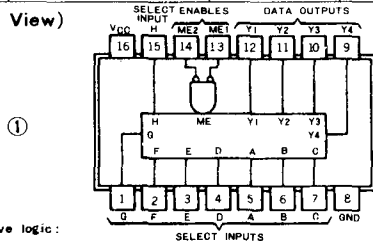
Supply voltage, V_{CC}	7V	Operating free-air temperature range	SN54	-55°C to 125°C
Input voltage	5.5V		SN74	0°C to 70°C
		Storage temperature range		-65°C to 150°C

recommended operating conditions

	SN54187			SN74187			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V_{CC}	4.5	5	5.5	4.75	5	5.25	V
High-level output voltage, V_{OH}			5.5			5.5	V
Low-level output current, I_{OL}			16			16	mA
Operating free-air temperature, T_A (see Note 1)	-55		125	0		70	°C

electrical characteristics over recommended operating free-air temperature range

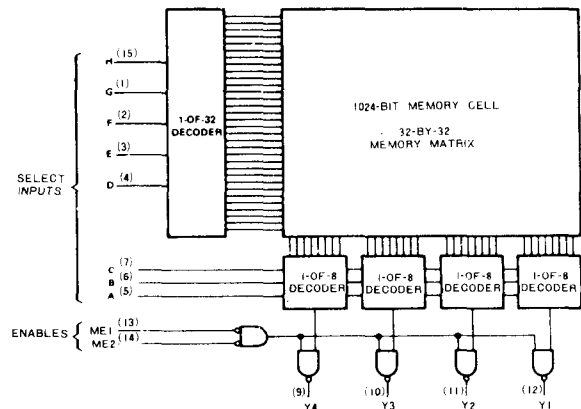
PARAMETER	TEST CONDITIONS †	MIN	TYP ‡	MAX	UNIT
V_{IH} High-level input voltage		2			V
V_{IL} Low-level input voltage				0.8	V
V_I Input clamp voltage	$V_{CC} = \text{MIN.}$, $I_I = -12\text{mA}$			-1.5	V
I_{OH} High-level output current	$V_{CC} = \text{MIN.}$, $V_{IH} = 2\text{V}$, $V_{IL} = 0.8\text{V}$, $V_{OH} = 5.5\text{V}$			40	μA
V_{OL} Low-level output voltage	$V_{CC} = \text{MIN.}$, $V_{IH} = 2\text{V}$, $V_{IL} = 0.8\text{V}$, $I_{OL} = 16\text{mA}$		0.4	0.45	V
I_I Input current at maximum input voltage	$V_{CC} = \text{MAX.}$, $V_I = 5.5\text{V}$		1		mA
I_{IH} High-level input current	$V_{CC} = \text{MAX.}$, $V_I = 2.4\text{V}$		40		μA
I_{IL} Low-level input current	$V_{CC} = \text{MAX.}$, $V_I = 0.4\text{V}$		-1		mA
I_{CC} Supply current	$V_{CC} = \text{MAX.}$, See Note 2		92	130	mA
C_O Off-state output capacitance	$V_{CC} = 5\text{V}$, $V_O = 5\text{V}$, $f = 1\text{MHz}$		6.5		pF
t_{PLH} Propagation delay time, low-to-high-level output from enable	$V_{CC} = 5\text{V}$, $T_A = 25^\circ\text{C}$		20	30	ns
t_{PHL} Propagation delay time, high-to-low-level output from enable	$C_L = 30\text{pF}$ to GND,		20	30	ns
t_{PLH} Propagation delay time, low-to-high-level output from select	$R_{L1} = 300\Omega$ to V_{CC} ,		40	60	ns
t_{PHL} Propagation delay time, high-to-low-level output from select	$R_{L2} = 600\Omega$ to GND,		40	60	ns

Pin Assignment (Top View)


Positive logic:

Function Table
 187 WORD-SELECT TABLE

WORD	INPUTS							
	H	G	F	E	D	C	B	A
0	L	L	L	L	L	L	L	L
1	L	L	L	L	L	L	L	H
2	L	L	L	L	L	L	H	L
3	L	L	L	L	L	L	H	H
4	L	L	L	L	L	H	L	L
5	L	L	L	L	L	H	L	H
6	L	L	L	L	L	H	H	L
7	L	L	L	L	L	H	H	H
8	L	L	L	L	H	L	L	L
Words 9 thru 250 omitted								
251	H	H	H	H	H	L	H	H
252	H	H	H	H	H	L	L	L
253	H	H	H	H	H	H	L	H
254	H	H	H	H	H	H	H	L
255	H	H	H	H	H	H	H	H

Functional Block Diagram

187 1024-BIT READ ONLY MEMORY

- NOTES: 1. An SN54187 in the W package operating at free-air temperatures above 111°C requires a heat sink that provides a thermal resistance from case-to-free-air, $R_{\theta CA}$, of not more than 46°C/W.
2. With outputs open and both ME inputs grounded, I_{CC} is measured first by selecting a word which contains the maximum number of programmed high-level outputs, then by selecting a word which contains the maximum number of programmed low-level outputs.

†For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

 ‡All typical values are at $V_{CC} = 5\text{V}$, $T_A = 25^\circ\text{C}$.