MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

MC8T97 (MC6887)
MC8T98 (MC6888)

HEX THREE-STATE BUFFER INVERTERS

HEX THREE-STATE BUFFER/INVERTERS

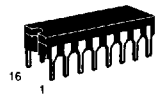
MONOLITH SCHOTTSKY INTEGRATED CIRCUITS

This series of devices combines three features usually found desirable in bus-oriented systems: 1) High impedance logic inputs insure that these devices do not seriously load the bus; 2) Three-state logic configuration allows buffers not being utilized to be effectively removed from the bus; 3) Schottky technology allows high-speed operation.

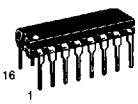
The noninverting MC8T97/MC6887 and inverting MC&t98/MC6888 provide two Enable inputs — one controlling four buffers and the other controlling the remaining two buffers.

The units are well-suited for Address buffers on the MC6800 or similar microprocessor application.

- High Speed — 8.0 ns (Typ)
- Three-State Logic Configuration
- Single +5 V Power Supply Requirement
- Compatible with 74LS Logic or MC6800 Microprocessor Systems
- High Impedance PNP Inputs Assure Minimal Loading of the Bus

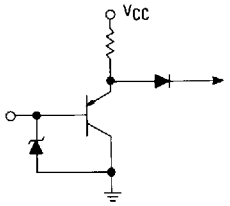


L SUFFIX
CERAMIC PACKAGE
CASE 620

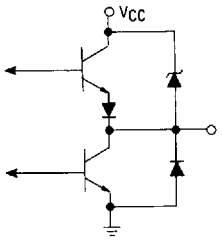


P SUFFIX
PLASTIC PACKAGE
CASE 648

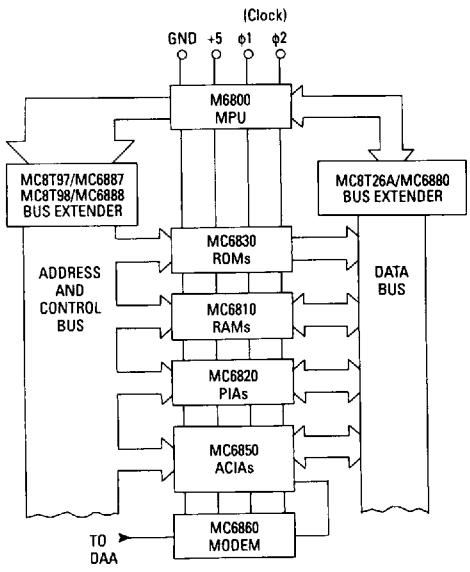
INPUT EQUIVALENT CIRCUIT



OUTPUT EQUIVALENT CIRCUIT



MICROPROCESSOR BUS EXTENDER APPLICATION



ORDERING INFORMATION
(Temperature Range = 0 to + 75°C)

Device	Alternate	Package
MC8T97L	MC6887L	Ceramic DIP
MC8T98L	MC6888L	Ceramic DIP
MC8T97P	MC6887P	Plastic DIP
MC8T98P	MC6888P	Plastic DIP

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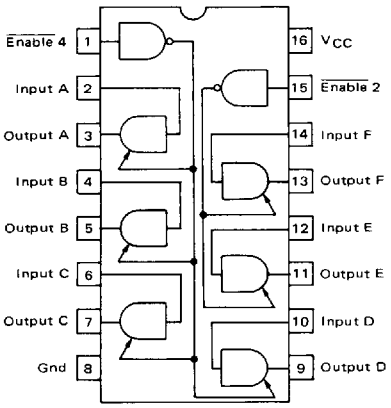
MC8T97, MC8T98

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted.)

Rating	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	8.0	Vdc
Input Voltage	V_I	5.5	Vdc
Operating Ambient Temperature Range	T_A	0 to +75	°C
Storage Temperature Range	T_{stg}	-65 to +150	°C
Operating Junction Temperature	T_J		°C
Plastic Package		150	
Ceramic Package		175	

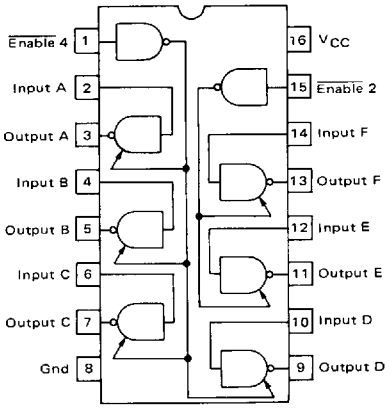
MC8T97/MC6887



Enable	Input	Output
L	L	L
L	H	H
H	X	Z

L = Low Logic State
H = High Logic State
Z = Third (High Impedance) State
X = Irrelevant

MC8T98/MC6888



Enable	Input	Output
L	L	H
L	H	L
H	X	Z

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MC8T97, MC8T98

ELECTRICAL CHARACTERISTICS (Unless otherwise noted, $0°C \le T_A \le 75°C$ and $4.75\ V \le V_{CC} \le 5.25\ V$)

Characteristics	Symbol	Min	Typ	Max	Unit
Input Voltage High Logic State (V_{CC} = 4.75 V, T_A = 25°C) Low Logic State (V_{CC} = 4.75 V, T_A = 25°C)	V_{IH} V_{IL}	2.0 —	— —	— 0.8	V
Input Current — High Logic State (V_{CC} = 5.25 V, V_{IH} = 2.4 V) Low Logic State (V_{CC} = 5.25 V, V_{IL} = 0.5 V, $V_{IL(\overline{E})}$ = 0.5 V) High Impedance State (V_{CC} = 5.25 V, V_{IL} = 0.5 V, $V_{IH(\overline{E})}$ = 2.0 V)	I_{IH} I_{IL} $I_{IH(E)}$	— — —	— — —	40 −400 −40	μA
Output Voltage High Logic State (V_{CC} = 4.75 V, I_{OH} = −5.2 mA) Low Logic State (I_{OL} = 48 mA)	V_{OH} V_{OL}	2.4 —	— —	— 0.5	V
Output Voltage — High Impedance State (V_{CC} = 5.25 V, V_{OH} = 2.4 V) (V_{CC} = 5.25 V, V_{OL} = 0.5 V)	I_{OZ}	— —	— —	40 −40	μA
Output Short Circuit Current (V_{CC} = 5.25 V, V_O = 0, only one output can be shorted at a time)	I_{OS}	−40	−80	−115	mA
Power Supply Current (V_{CC} = 5.25 V) MC8T97, MC6887 MC8T98, MC6888	I_{CC}	— —	65 59	98 89	mA
Input Clamp Voltage (V_{CC} = 4.75 V, I_{IC} = −12 mA)	V_{IC}	—	—	−1.5	V
Input Voltage (I_I = 1.0 mA)	V_I	5.5	—	—	V
Output V_{CC} Clamp Voltage (V_{CC} = 0, I_{OC} = 12 mA)	V_{OC}	—	—	1.5	V
Output Gnd Clamp Voltage (V_{CC} = 0, I_{OC} = 12 mA)	V_{OC}	—	—	−1.5	

SWITCHING CHARACTERISTICS (V_{CC} = 5.0 V, T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	MC8T97 MC6887 Min	MC8T97 MC6887 Typ	MC8T97 MC6887 Max	MC8T98 MC6888 Min	MC8T98 MC6888 Typ	MC8T98 MC6888 Max	Unit
Propagation Delay Time — High-to-Low State (C_L = 50 pF) (C_L = 250 pF) (C_L = 375 pF) (C_L = 500 pF)	t_{PHL}	3.0 — — —	— 16 20 23	12 — — —	4.0 — — —	— 15 18 22	11 — — —	ns
Propagation Delay Time — Low-to-High State (C_L = 50 pF) (C_L = 250 pF) (C_L = 375 pF) (C_L = 500 pF)	t_{PLH}	3.0 — — —	— 25 33 42	13 — — —	3.0 — — —	— 22 28 35	10 — — —	ns
Transition Time — High-to-Low State (C_L = 250 pF) (C_L = 375 pF) (C_L = 500 pF)	t_{THL}	— — —	10 11 14	— — —	— — —	10 13 15	— — —	ns
Transition Time — Low-to-High State (C_L = 250 pF) (C_L = 375 pF) (C_L = 500 pF)	t_{TLH}	— — —	32 42 60	— — —	— — —	28 38 53	— — —	ns
Propagation Delay Time — High State-to-Third State (C_L = 5.0 pF)	$t_{PHZ(\overline{E})}$	—	—	10	—	—	10	ns
Propagation Delay Time — Low State-to-Third State (C_L = 5.0 pF)	$t_{PLZ(\overline{E})}$	—	—	12	—	—	16	
Propagation Delay Time — Third State-to-High State (C_L = 50 pF)	$t_{PZH(\overline{E})}$	—	—	25	—	—	22	ns
Propagation Delay Time — Third State-to-Low State (C_L = 50 pF)	$t_{PZL(\overline{E})}$	—	—	25	—	—	24	

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FIGURE 1 – TEST CIRCUIT FOR SWITCHING CHARACTERISTICS

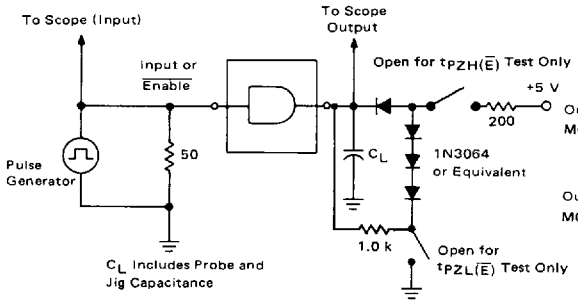


FIGURE 2 – WAVEFORMS FOR PROPAGATION DELAY TIMES INPUT TO OUTPUT

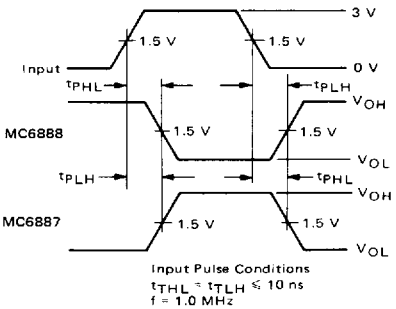
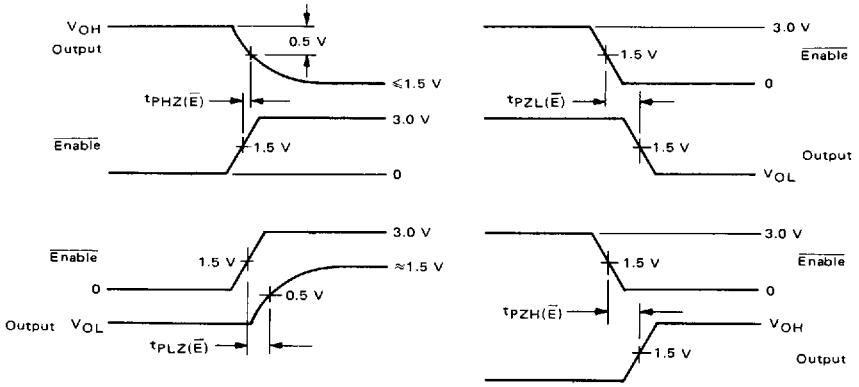


FIGURE 3 – WAVEFORMS FOR PROPAGATION DELAY TIMES – $\overline{\text{ENABLE}}$ TO OUTPUT



H = High-Logic State, L = Low-Logic State, Z = High Impedance State

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