EFCIS

THOMSON-EFCIS MOS Integrated Circuits

mosmos mosmos mosmos

EF6885
EF6886
EF6887
EF6888

HEX THREE-STATE BUFFER INVERTERS

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.

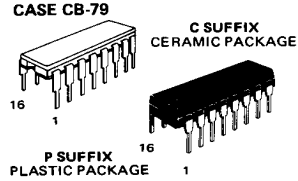
The devices differ in that the non-inverting EFF6885 and inverting EFF6886 provide a two-input Enable which controls all six buffers, while the non-inverting EFF6887 and inverting EFF6888 provide two Enable inputs — one controlling four buffers and the other controlling the remaining two buffers.

The units are well-suited for Address buffers on the EF6800 or similar microprocessor application.

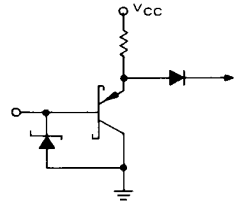
- High Speed — 8.0 ns (Typ)
- Three-State Logic Configuration
- Single +5 V Power Supply Requirement
- Compatible with 74LS Logic or EF6800 Microprocessor Systems
- High Impedance PNP Inputs Assure Minimal Loading of the Bus
- Pin for pin compatible with MC8T95, MC8T96, MC8T97, MC8T98.

HEX THREE-STATE BUFFER/INVERTERS

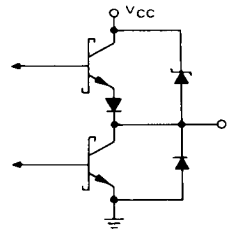
CASE CB-79



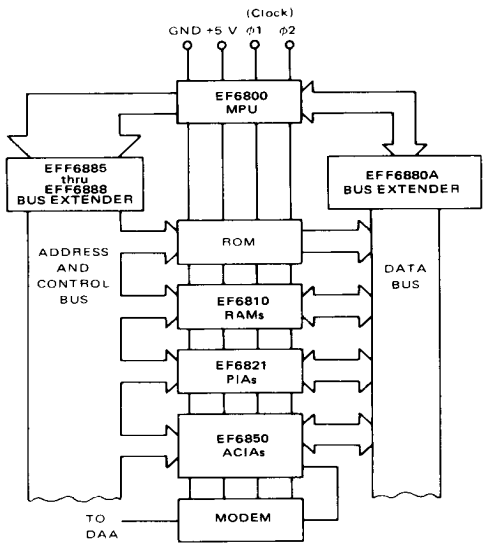
INPUT EQUIVALENT CIRCUIT



OUTPUT EQUIVALENT CIRCUIT



MICROPROCESSOR BUS EXTENDER APPLICATION



ORDERING INFORMATION

(Temperature Range for the following devices = 0 to +75°C)

DEVICE	PACKAGE
EFF6885C	Ceramic DIP
EFF6886C	Ceramic DIP
EFF6887C	Ceramic DIP
EFF6888C	Ceramic DIP
EFF6885P	Plastic DIP
EFF6886P	Plastic DIP
EFF6887P	Plastic DIP
EFF6888P	Plastic DIP

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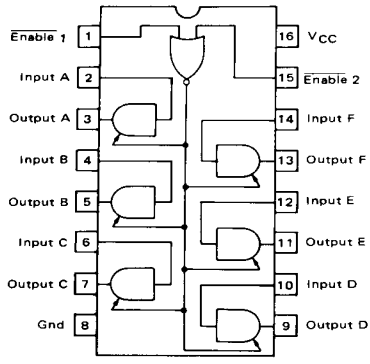
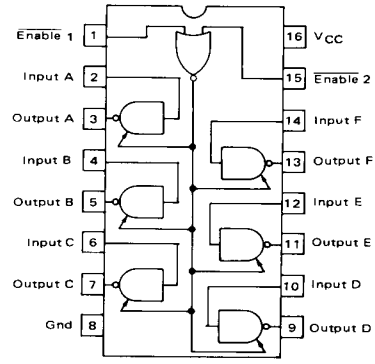
PIN CONNECTIONS AND TRUTH TABLES

EFF6885



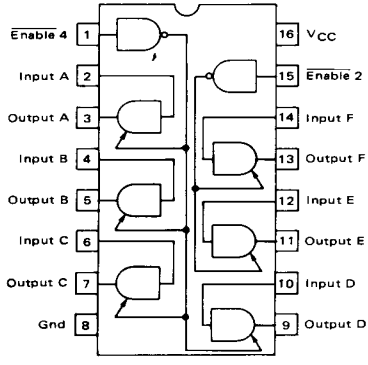
Enable 2	Enable 1	Input	Output
L	L	L	L
L	L	H	H
L	H	X	Z
H	L	X	Z
H	H	X	Z

EFF6886



Enable 2	Enable 1	Input	Output
L	L	L	H
L	L	H	L
L	H	X	Z
H	L	X	Z
H	H	X	Z

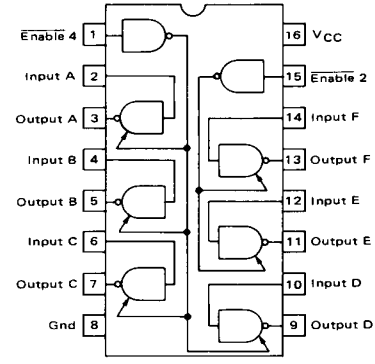
EFF6887



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

EFF6888



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

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 Plastic Package Ceramic Package	T_J	 150 175	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit
Input Voltage – High Logic State (V_{CC} = 4.75 V, T_A = 25°C)	V_{IH}	2.0	–	–	V
Input Voltage – Low Logic State (V_{CC} = 4.75 V, T_A = 25°C)	V_{IL}	–	–	0.8	V
Input Current – High Logic State (V_{CC} = 5.25 V, V_{IH} = 2.4 V)	I_{IH}	–	–	40	µA
Input Current – Low Logic State (V_{CC} = 5.25 V, V_{IL} = 0.5 V, $V_{IL(\overline{E})}$ = 0.5 V)	I_{IL}	–	–	-400	µA
Input Current – High Impedance State (V_{CC} = 5.25 V, $V_{IL(I)}$ = 0.5 V, $V_{IH(\overline{E})}$ = 2.0 V)	$I_{IH(\overline{E})}$	–	–	-40	µA
Output Voltage – High Logic State (V_{CC} = 4.75 V, I_{OH} = -5.2 mA)	V_{OH}	2.4	–	–	V
Output Voltage – Low Logic State (I_{OL} = 48 mA)	V_{OL}	–	–	0.5	V
Output Current – 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) EFF6885, EFF6887 EFF6886, EFF6888	I_{CC}	– –	65 59	98 89	mA
Input Clamp Voltage (V_{CC} = 4.75 V, I_{IC} = -12 mA)	V_{IC}	–	–	-1.5	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	V
Input Voltage (I_I = 1.0 mA)	V_I	5.5	–	–	V

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

Characteristic	Symbol	EFF6885/87			EFF6886/88			Unit
		Min	Typ	Max	Min	Typ	Min	
Propagation Delay Time – High to Low State	t_{PHL}							ns
(C_L = 50 pF)		3.0	–	12	4.0	–	11	
(C_L = 250 pF)		–	16	–	–	15	–	
(C_L = 375 pF)		–	20	–	–	18	–	
(C_L = 500 pF)		–	23	–	–	22	–	
Propagation Delay Time – Low to High State	t_{PLH}							ns
(C_L = 50 pF)		3.0	–	13	3.0	–	10	
(C_L = 250 pF)		–	25	–	–	22	–	
(C_L = 375 pF)		–	33	–	–	28	–	
(C_L = 500 pF)		–	42	–	–	35	–	
Transition Time – High to Low State	t_{THL}							ns
(C_L = 250 pF)		–	10	–	–	10	–	
(C_L = 375 pF)		–	11	–	–	13	–	
(C_L = 500 pF)		–	14	–	–	15	–	
Transition Time – Low to High State	t_{TLH}							ns
(C_L = 250 pF)		–	32	–	–	28	–	
(C_L = 375 pF)		–	42	–	–	38	–	
(C_L = 500 pF)		–	60	–	–	53	–	

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

Characteristic	Symbol	EFF6885/87			EFF6886/88			Unit
		Min	Typ	Max	Min	Typ	Min	
Propagation Delay Time – High State to Third State (C_L = 5.0 pF)	$t_{PHZ(\overline{E})}$	3.0	–	10	3.0	–	10	ns
Propagation Delay Time – Low State to Third State (C_L = 5.0 pF)	$t_{PLZ(\overline{E})}$	3.0	–	12	5.0	–	16	ns
Propagation Delay Time – Third State to High State (C_L = 50 pF)	$t_{PZH(\overline{E})}$	8.0	–	25	7.0	–	22	ns
Propagation Delay Time – Third State to Low State (C_L = 50 pF)	$t_{PZL(\overline{E})}$	12	–	25	11	–	24	ns

FIGURE 1 – TEST CIRCUIT FOR SWITCHING CHARACTERISTICS

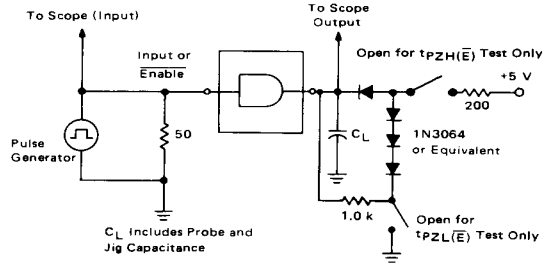


FIGURE 2 – WAVEFORMS FOR PROPAGATION DELAY TIMES INPUT TO OUTPUT

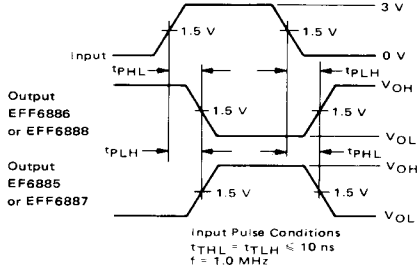
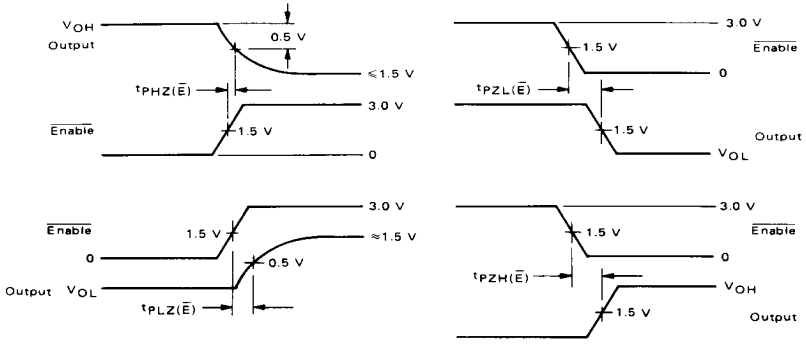
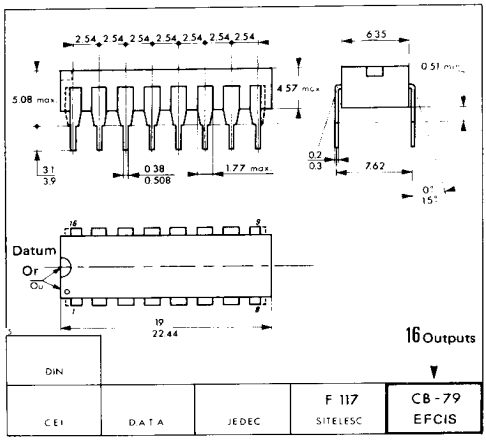


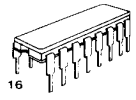
FIGURE 3 – WAVEFORMS FOR PROPAGATION DELAY TIMES – $\overline{\text{ENABLE}}$ TO OUTPUT



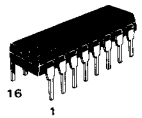
H = High-Logic State, L = Low-Logic State, Z = High Impedance State



CASE CB-79



C SUFFIX
CERAMIC PACKAGE



P SUFFIX
PLASTIC PACKAGE

THERMAL INFORMATION

The maximum power consumption an integrated circuit can tolerate at a given operating ambient temperature, can be found from the equation:

$$P_{D(T_A)} = \frac{T_{J(max)} - T_A}{R_{\theta JA(Typ)}}$$

Where: $P_{D(T_A)}$ = Power Dissipation allowable at a given operating ambient temperature. This must be greater than the sum of the products of the supply voltages and supply currents at the worst case operating condition.

$T_{J(max)}$ = Maximum Operating Junction Temperature as listed in the Maximum Ratings Section
T_A = Maximum Desired Operating Ambient Temperature
$R_{\theta JA(Typ)}$ = Typical Thermal Resistance Junction to Ambient

These specifications are subject to change without notice.
Please inquire with our sales offices about the availability of the different packages.