



Hex Inverter with Enable

**ELECTRICALLY TESTED PER:
5962-8751001**

The 10H589 is a Hex Inverter with a common Enable input. The hex inverting function is provided when Enable is in the low-state. When Enable is in the high-state, all outputs are low.

This MECL 10H part is a functional/pinout duplication of the standard MECL 10K family part, with 100% improvement in propagation delay and no increase in power-supply current.

- Propagation Delay, 1.3 ns Typical Data-to-Output
- 250 mW Max/Pkg (No Load)
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K-Compatible

FUNCTION	PIN ASSIGNMENTS			BURN-IN (CONDITION C)
	DIL	FLATS	LCC	
VCC1	1	5	2	GND
AOUT	2	6	3	51 Ω to V _{TT}
BOUT	3	7	4	51 Ω to V _{TT}
COUT	4	8	5	51 Ω to V _{TT}
A _{IN}	5	9	7	GND
B _{IN}	6	10	8	GND
C _{IN}	7	11	9	GND
VEE	8	12	10	VEE
Common	9	13	12	OPEN
D _{IN}	10	14	13	GND
E _{IN}	11	15	14	GND
F _{IN}	12	16	15	GND
DOUT	13	1	17	51 Ω to V _{TT}
EOUT	14	2	18	51 Ω to V _{TT}
FOUT	15	3	19	51 Ω to V _{TT}
VCC2	16	4	20	GND

BURN - IN CONDITIONS:

V_{TT} = - 2.0 V MAX/ - 2.2 V MIN

VEE = - 5.7 V MAX/ - 5.2 V MIN

TRUTH TABLE		
Inputs		Output
X	Y	OUT
L	L	H
L	H	L
H	L	L
H	H	L

Military 10H589

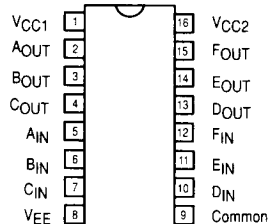


AVAILABLE AS

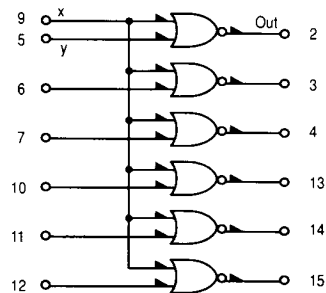
- 1) JAN: N/A
 - 2) SMD: 5962-8751001
 - 3) 883: 10H589/BXAJC
- X = CASE OUTLINE AS FOLLOWS:

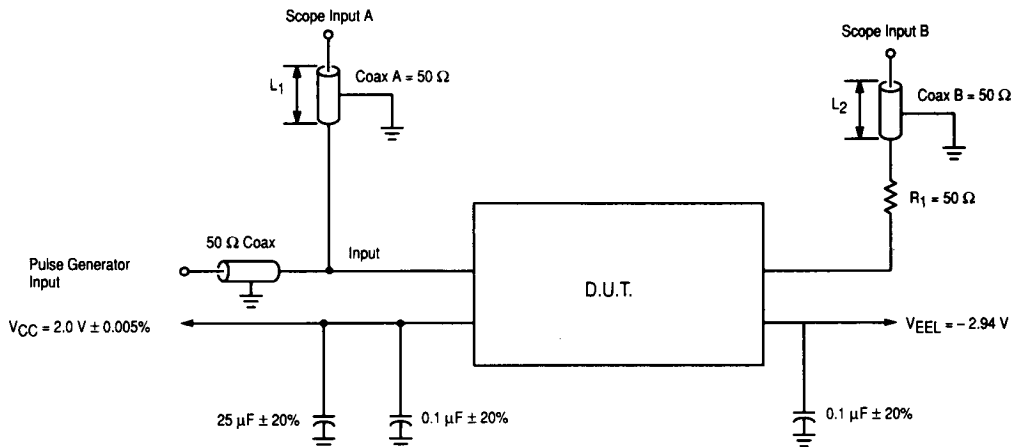
PACKAGE: CERDIP: E
CERFLAT: F
LCC: 2

The letter "M" appears before the slash on LCC.

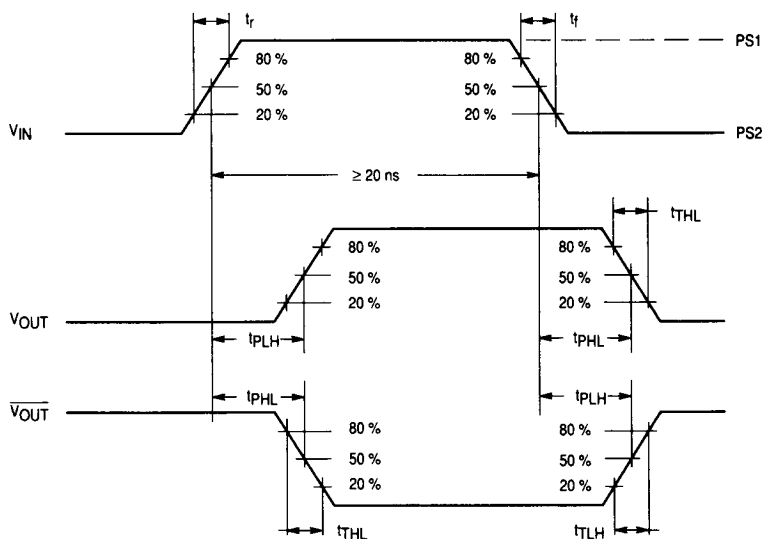


LOGIC DIAGRAM



**NOTES**

1. Pulse generator must be capable of rise and fall time of $1.0 \text{ ns} \pm 0.1 \text{ ns}$
2. Unused outputs connected to 100Ω resistor to ground
3. 2:1 divider may be used
4. $L1 = L2$: matched for equal time delay

**NOTES**

1. $R1 = 50 \Omega$ in series with a 50Ω coax constituting the 100Ω load.
2. $t_r = t_f = 1.0 \text{ ns} \pm 0.1 \text{ ns}$.
3. $PW \geq 20 \text{ ns}$
4. $f = 1.0 \text{ MHz}$.

Figure 1. Switching Test Circuit and Waveforms

10H589 QUIESCENT LIMIT TABLE *

* ELECTRICAL CHARACTERISTICS

Each MECL 10H series circuit has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Outputs are terminated through a 100 Ω resistor to - 2.0 volts.

Test Temperature	Test Voltage Values (Volts)							
	V _{IH1}	V _{IL1}	V _{IH2}	V _{IL2}	PS1	PS2	VEE1	VEE2
T _A = 25 °C	-0.78	-1.95	-1.11	-1.480	+1.11	+0.31	-5.46	-4.94
T _A = 125 °C	-0.65	-1.95	-0.96	-1.465	+1.24	+0.36	-5.46	-4.94
T _A = -55 °C	-0.84	-1.95	-1.16	-1.510	+1.01	+0.28	-5.46	-4.94

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW											
		+ 25 °C		+ 125 °C		- 55 °C			Pinouts referenced are for DIL package, check Pin Assignments V _{CC} = 0 V, Output Load = 100 Ω to - 2.0 V											
	Functional Parameters:	Min	Max	Subgroup 1	Min	Max	Subgroup 2	Min	Max	Subgroup 3	Min	Max	V _{IH1}	V _{IL1}	V _{IH2}	V _{IL2}	V _{EE1}	V _{EE2}	V _{CC}	P. U. T.
V _{OH}	High Output Voltage	- 1.01	- 0.78		- 0.86	- 0.65		- 1.06	- 0.84				V	9			8		1, 16	2 - 4, 13 - 15
V _{OL}	Low Output Voltage	- 1.95	- 1.58		- 1.95	- 1.565		- 1.95	- 1.61				V		5 - 7 10 - 12		8		1, 16	2 - 4, 13 - 15
V _{OH1}	High Output Voltage	- 1.01	- 0.78		- 0.86	- 0.65		- 1.06	- 0.84				V			5 - 7 9 - 12	8	8	1, 16	2 - 4, 13 - 15
V _{OL1}	Low Output Voltage	- 1.95	- 1.58		- 1.95	- 1.565		- 1.95	- 1.61				V	9			8	8	1, 16	2 - 4, 13 - 15
I _{EE}	Power Supply Current	- 42			- 46			- 46					mA				8		1, 16	8
I _{IH}	Input Current High		310			495			495				μA	5 - 7 9 - 12			8		1, 16	5 - 7, 9 - 12
I _{IL}	Input Current Low	0.5		0.5	0.3				0.5				μA	5 - 7 9 - 12				8	1, 16	5 - 7, 9 - 12

10H589 QUIESCENT LIMIT TABLE *

* ELECTRICAL CHARACTERISTICS

Each MECL 10H series circuit has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Outputs are terminated through a 100 Ω resistor to -2.0 volts.

Test Temperature	Test Voltage Values (Volts)							
	V _{IH1}	V _{IL1}	V _{IH2}	V _{IL2}	PS ₁	PS ₂	VEE ₁	VEE ₂
T _A = 25 °C	-0.780	-1.950	-1.11	-1.480	+1.11	+0.31	-5.46	-4.94
T _A = 125 °C	-0.650	-1.950	-0.96	-1.465	+1.24	+0.36	-5.46	-4.94
T _A = -55 °C	-0.840	-1.950	-1.16	-1.510	+1.01	+0.28	-5.46	-4.94

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW								
Functional Parameters:		+ 25 °C		+ 125 °C				- 55 °C		Pinouts referenced are for DIL package, check Pin Assignments VCC = 2.0 V, Output Load = 100 Ω to - 2.0 V, VEEL = - 2.94 V							
		Subgroup 1		Subgroup 2		Subgroup 3											
		Min	Max	Min	Max	Min	Max										
t _{TLH}	Rise Time	0.7	2.4	0.7	2.4	0.7	2.2	ns	V _{IN}	5 - 7, 9 - 12	V _{OUT}	2 - 4, 13 - 15	V _{CC}	1, 16	VEEL	8	2, 3, 4, 13, 14, 15
t _{FHL}	Fall Time	0.7	2.4	0.7	2.4	0.7	2.2	ns	V _{IN}	5 - 7, 9 - 12	V _{OUT}	2 - 4, 13 - 15	V _{CC}	1, 16	VEEL	8	2, 3, 4, 13, 14, 15
t _{PLH}	Propagation Delay Data	0.7	1.8	0.7	1.9	0.7	1.9	ns	V _{IN}	5 - 7, 9 - 12	V _{OUT}	2 - 4, 13 - 15	V _{CC}	1, 16	VEEL	8	2, 3, 4, 13, 14, 15
t _{pHL}	Propagation Delay Data	0.7	1.8	0.7	1.9	0.7	1.9	ns	V _{IN}	5 - 7, 9 - 12	V _{OUT}	2 - 4, 13 - 15	V _{CC}	1, 16	VEEL	8	2, 3, 4, 13, 14, 15
t _{pHL}	Propagation Delay Enable	0.7	2.5	0.7	2.8	0.7	2.2	ns	V _{IN}	5 - 7, 9 - 12	V _{OUT}	2 - 4, 13 - 15	V _{CC}	1, 16	VEEL	8	2, 3, 4, 13, 14, 15
t _{pLH}	Propagation Delay Enable	0.7	2.5	0.7	2.8	0.7	2.2	ns	V _{IN}	5 - 7, 9 - 12	V _{OUT}	2 - 4, 13 - 15	V _{CC}	1, 16	VEEL	8	2, 3, 4, 13, 14, 15