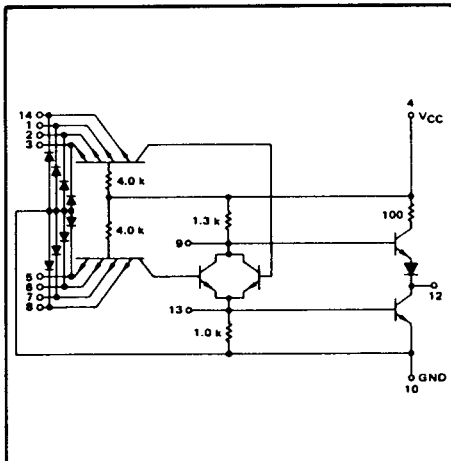


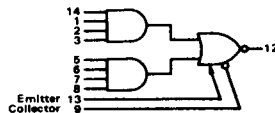
EXPANDABLE 2-WIDE 4-INPUT
"AND-OR-INVERT" GATE

MTTL I MC500/400 series

MC505 · MC555
MC405 · MC455



This device consists of two 4-input AND gates ORed together and driving an output inverter. The ORing nodes are available for expansion and up to 10 AND gates can be ORed together using the MC509 or MC510 series expanders. Care should be taken to minimize the amount of capacitance on the expander terminals in order to maintain switching speeds.



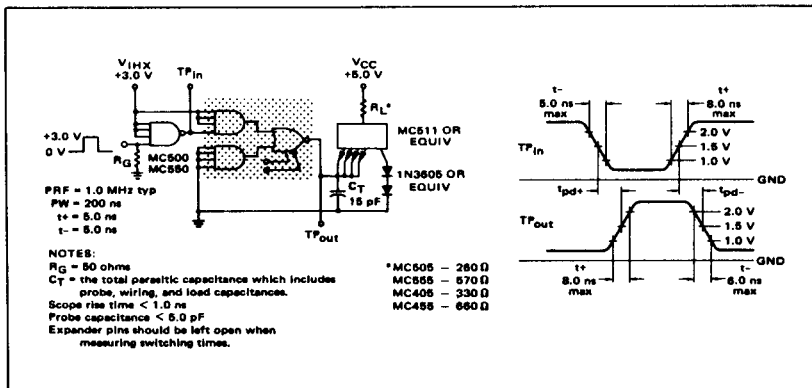
Positive Logic:
 $12 = (1 + 2 + 3 + 14) + (5 + 6 + 7 + 8) + (\text{Expanders})$
 Negative Logic:
 $12 = (1 + 2 + 3 + 14) + (5 + 6 + 7 + 8) + (\text{Expanders})$

Total Power Dissipation = 20 mW typ/pkg
 Propagation Delay Time = 12 ns typ

TYPE NO.	INPUT LOADING FACTOR	(I _P)	OUTPUT DRIVE	(I _{OL})	TEMPERATURE RANGE
MC505 MC555	1	(-1.33 mA)	15 MC500 series Gates 7 MC500 series Gates	(20 mA) (10 mA)	-55°C to +125°C
MC400 MC450	1	(-1.88 mA)	12 MC400 series Gates 6 MC400 series Gates	(20 mA) (10 mA)	0° to +75°C

SWITCHING TIME TEST CIRCUIT

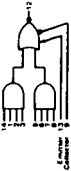
VOLTAGE WAVEFORMS AND DEFINITIONS



MC505, MC555/MC405, MC455 (continued)

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one input of the device. To complete testing sequence through remaining inputs in the same manner.



③ Test Temperature

MC505 ¹ , MC555	-55°C	0°C	+25°C
MC405 ² , MC455	+25°C	0°C	+75°C

Characteristic	Symbol	MC505, MC555 Test Limits			MC405, MC455 Test Limits			TEST CONDITIONS																			
		-55°C		+25°C		0°C		+25°C		+75°C		TEST CURRENT / VOLTAGE APPLIED TO PINS LISTED BELOW:															
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Unit	I _{CC}	I _{OH}	I _{OL}	V _{OL}	V _{OH}	V _{IL}	V _{IH}	V _L	V _H	V _{CE(sat)}	V _{CE(sat)}	V _{CE(sat)}	V _{CE(sat)}		
Input Forward Current	I _F	1	-1.33	-1.33	-1.66	-1.66	-1.66	-1.66	-1.66	-1.66	mA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leakage Current	I _R	1	100	100	100	100	100	100	100	100	μA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inverse Beta Current	I _L	1	100	100	100	100	100	100	100	100	μA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Breakdown Voltage	BV _{in(0)}	1	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	Vdc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Breakdown Voltage	BV _{in(1)}	1	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	Vdc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Output Output Voltage	V _{out(0)}	12	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	Vdc	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Output Output Voltage	V _{out(1)}	12	2.5	2.4	2.7	2.5	2.4	2.5	2.4	2.5	Vdc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leakage Current	I _{OLK}	12	250	250	250	250	250	250	250	250	μA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Short-Circuit Current	I _{SC}	12	-10	-45	-10	-45	-10	-45	-10	-45	mA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Output Voltage	V _{OL}	12	0.40	0.40	0.45	0.45	0.40	0.40	0.40	0.45	Vdc	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Output Voltage	V _{OH}	12	2.8	3.2	3.35	3.0	3.1	3.15	3.15	3.15	Vdc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Power Requirements (Total Device)	I _{max}	4	-	-	10	-	-	-	10	-	mA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maximum Power Supply Current	I _{DDH}	4	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0	mA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Power Supply Drain	I _{PDL}	4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	mA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Switching Parameters	t _{pd}	1,12	-	-	22	-	-	-	22	-	ns	1	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turn-On Delay	t _{pd+}	1,12	-	-	22	-	-	-	22	-	ns	1	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turn-Off Delay	t _{pd-}	1,12	-	-	8.0	-	-	-	8.0	-	ns	1	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rise Time	t _r	1,12	-	-	6.0	-	-	-	6.0	-	ns	1	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall Time	t _f	1,12	-	-	6.0	-	-	-	6.0	-	ns	1	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Prime Fan-Out