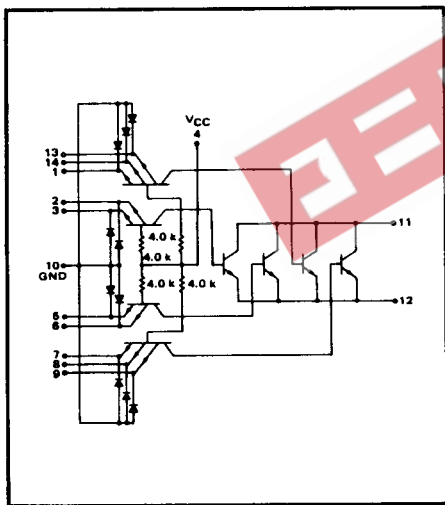


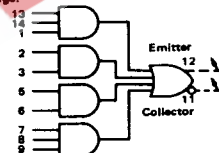
4-WIDE 3-2-2-3 INPUT
EXPANDER FOR
"AND-OR-INVERT" GATES

MC509 · MC559
MC409 · MC459

MTTL I MC500/400 series



This device consists of two 2-input and two 3-input AND gates ORed together with the common ORing nodes made available as the output. The basic expandable gate can be expanded up to 10 AND gates by using the MC509 series or the MC510 series expander package.



Total Power Dissipation = 20 mW/pkg.

Propagation Delay Time:

$\Delta t_{pd} = +4.0$ ns typ (1.0 ns per ORed function)
When added to the expandable "AND-OR-INVERT" gates.

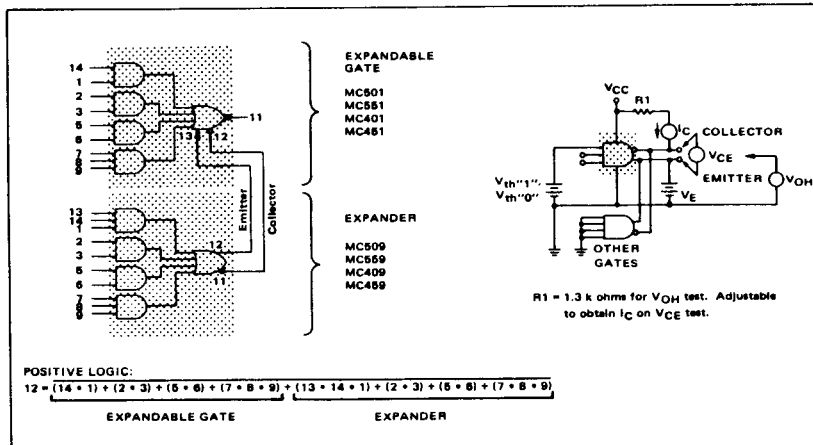
$\Delta t_{pd}/pF = 1.0$ ns/pF typ
Caused by additional capacitance at expansion points.

TYPE NO.	INPUT LOADING FACTOR	(I_F)	TEMPERATURE RANGE
MC509 MC559	1	(-1.33 mA)	-55°C to +125°C
MC409 MC459	1	(-1.66 mA)	0°C to +75°C

Full output loading factor of the expandable gate is maintained.

APPLICATION: EXPANDABLE 4-WIDE "AND-OR-INVERT" GATE WITH A 4-WIDE 3-2-2-3 INPUT EXPANDER CONNECTED.

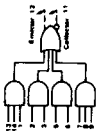
V_{CE}, V_{OH} TEST CIRCUIT



MC509, MC559/MC409, MC459 (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.



Characteristic	Symbol	Pin Under Test	TEST CONDITIONS																		
			-55°C			+25°C			+125°C			+75°C									
			Min	Max	Units	Min	Max	Units	Min	Max	Units	Min	Max	Units							
Input [†] Forward Current	I_F	1	-1.33	-1.33	-1.33	-1.66	-1.66	-1.66	mA	V_E	4.5	1.00	0.90	0.8	2.0	1.0	1.5	V_{CE}	V_{CC}	V_{CC}	V_{CC}
Leakage Current	I_R	1	100	100	100	100	100	100	μ Adc	V_E	1	V_{E1}	V_{E2}	V_{E3}	V_{E4}	V_{E5}	V_{CE}	V_{CC}	V_{CC}	V_{CC}	
Inverse Beta Current	I_L	1	100	100	100	100	100	100	μ Adc	V_E	1	12	12	12	11	4	4	4	4	4	4
Breakdown Voltage	$BV_{in}^{(*)}$	1	5.5	5.5	5.5	5.5	5.5	5.5	Vdc	V_E	1	12	12	12	11	4	4	4	4	4	4
Output	V_{OH}	11	4.8	4.8	4.8	4.8	4.8	4.8	Vdc	V_E	1	12	12	12	11	4	4	4	4	4	4
	$V_{CE}^{(*)}$	11	0.65	0.65	0.65	0.65	0.65	0.65	Vdc	V_E	1	12	12	12	11	4	4	4	4	4	4
Leakage Current	I_{OLK}	11	250	250	250	250	250	250	μ Adc	V_E	1	12	12	12	11	4	4	4	4	4	4
Power Requirements (Total Device)	I_{max}	4	-	-	-	-	-	-	mA	V_E	1	12	12	12	11	4	4	4	4	4	4
Maximum Power Supply Current	I_{PPH}	4	5.0	5.0	5.0	6.0	6.0	6.0	mAdc	V_E	1	12	12	12	11	4	4	4	4	4	4
Power Supply Drain	I_{PDL}	4	6.0	6.0	6.0	7.0	7.0	7.0	mAdc	V_E	1	12	12	12	11	4	4	4	4	4	4

* Indicated pins used to V_{CE} thru 1.3 k Ω min. - 1.0 Ω resistor.
 ** Indicated pins used to V_{CC} thru 1.2 k Ω min. - 1.0 Ω resistor.
 † V_{CE} is referenced to the emitter Voltage (Pin 12).

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