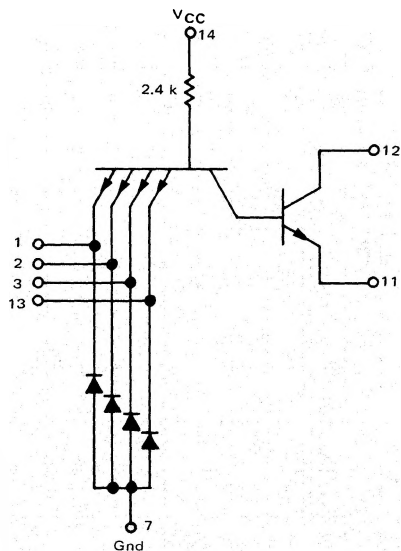


DUAL 4-INPUT EXPANDER
FOR "AND-OR-INVERT" GATES

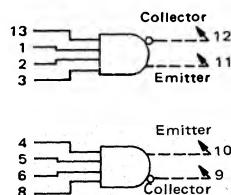
MC3100/MC3000 series

MC3130F • MC3030F
MC3130L • MC3030L,P
(54H60J) (74H60J,N)

CIRCUIT SCHEMATIC
1/2 OF CIRCUIT SHOWN



This device consists of two independent 4-input AND gates. The outputs of each gate are available as ORing nodes. Using the MC3030/3130 expander, with the MC3020/3120 expandable gate, up to four AND gates can be ORED together.



Input Loading Factor = 1

Full output loading factor of the expandable gate is maintained.

Total Power Dissipation = 15 mW typ/pkg

Propagation Delay Time:

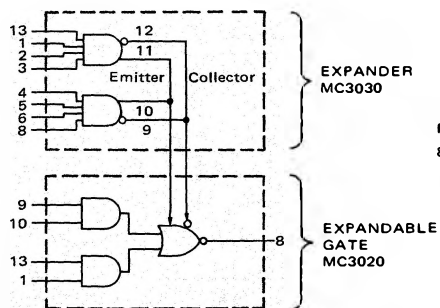
$\Delta t_{pd} = +1.0$ ns typ

When added to the expandable "AND-OR-INVERT" gate.

$\Delta t_{pd}/pF = +1.0$ ns pF typ

Caused by additional capacitance at expansion points.

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



Positive Logic:

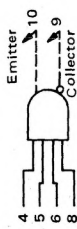
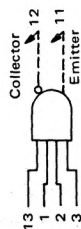
$$8 = (9 \bullet 10) + (13 \bullet 1) + (13 \bullet 1 \bullet 2 \bullet 3) + (4 \bullet 5 \bullet 6 \bullet 8)$$

Expandable Gate

Expander

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one expander. The other expander is tested in a similar manner. Further, test procedures are shown for only one input of the expander being tested. To complete testing, sequence through remaining inputs.



Characteristic		Pin Under Test	MC3130 Test Limits						MC3030 Test Limits						TEST CURRENT / VOLTAGE VALUES																			
			-55°C						+25°C						+125°C						Volts													
			Min		Max		Min		Max		Min		Max		Min		Max		Min		Max		Min		Max		Min		Max		Min		Max	
			I _F	I _R	BV _{in}	V _D	V _{OL}	I _{EO}	I _{CO}	I _{max}	I _{PDL}	I _F	I _R	BV _{in}	V _D	V _{OL}	I _{EO}	I _{CO}	I _{max}	I _{PDL}	I _C	I _{in}	I _b	V _R	V _{RH}	V _F	V _{EE1}	V _{EE2}	V _{IH}	V _{IL}	V _{max}	V _{CCL}	V _{CCH}	
Input																																		
Forward Current	I _F	1	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leakage Current	I _R	1	-	50	-	50	-	50	-	50	-	50	-	50	-	50	-	50	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Breakdown Voltage	BV _{in}	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Clamp Voltage	V _D	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Output																																		
Output Voltage	V _{OL}	12	-	1.5	-	1.35	-	1.15	-	1.4	-	1.35	-	1.25	-	1.25	-	1.25	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emitter Current	I _{EO}	11	-	-300	-	-300	-	-300	-	-300	-	-300	-	-300	-	-300	-	-300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Collector Current	I _{CO}	12	-	300	-	300	-	300	-	300	-	300	-	300	-	300	-	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Power Requirements																																		
(Total Device)																																		
Maximum Power	I _{max}	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Supply Current	I _{PDL}	14	-	4.5	-	4.5	-	4.5	-	4.5	-	4.5	-	4.5	-	4.5	-	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Ground inputs to gates not under test unless otherwise noted.

** The inputs to both gates are ungrounded.