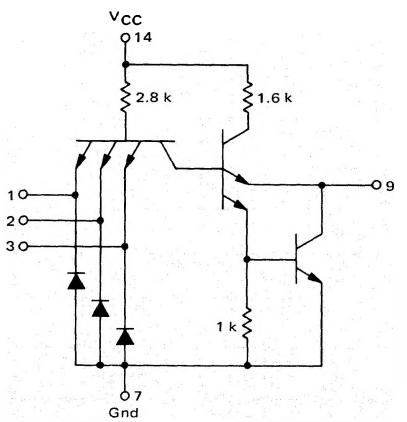
TRIPLE 3-INPUT EXPANDER
FOR "AND-OR" GATES

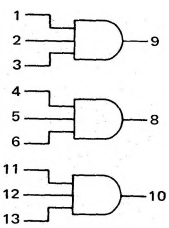
MC3119F • MC3019F
MC3119L • MC3019L,P

(54H61J) (74H61J, N)

1/3 OF CIRCUIT SHOWN



This device consists of three independent 3-input AND gates. The outputs of each gate are available as ORing nodes. Using the MC3019 expander, with the MC3031 expandable gate, up to six AND gates can be ORed together.



Input Loading Factor = 1
Full output loading factor of the expandable gate is maintained.

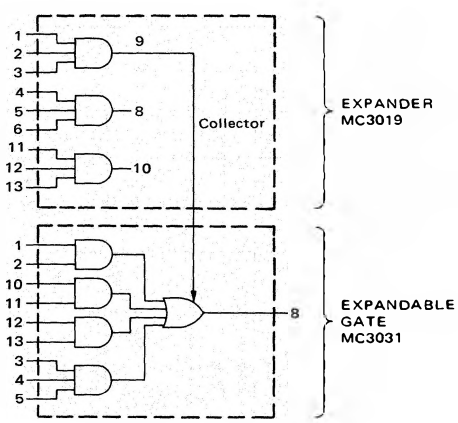
Total Power Dissipation = 25 mW typ/pkg
Propagation Delay Time:
Δt_{pd1} = +0.4 ns typ
Δt_{pd0} = +0.05 ns typ
When added to the expandable "AND-OR" gate.

Δt_{pd1}/pF = +0.3 ns/pF typ
Δt_{pd0}/pF = +0.04 ns/pF typ
Caused by additional capacitance at expansion points.

Pin numbers for the 54H61F/74H61F device are shown in the chart. These devices are available on special request.

DEVICE	PIN NUMBERS													
MC3119F,L/3019F,L,P	1	2	3	4	5	6	7	8	9	10	11	12	13	14
54H61F/74H61F	1	2	3	5	6	7	11	13	14	12	8	9	10	4

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



Positive Logic:

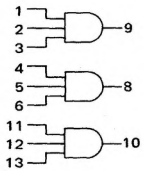
$8 = (1 \bullet 2) + (3 \bullet 4 \bullet 5) + (10 \bullet 11) + (12 \bullet 13) + (1 \bullet 2 \bullet 3)$

Expandable Gate — Expander

See General Information section for packaging.

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.



	@ Test Temperature	TEST CURRENT/VOLTAGE VALUES mA I_{OL}	I_{in}	I_D	Volts V_R	V_{RH}	V_F	V_{CEX}	V_{IH}	V_{IL}	V_{max}	V_{CC}	V_{CCL}	V_{CCH}
MC3119	−55°C	4.5	-	-	2.4	4.0	0.4	2.2	2.0	0.8	-	5.0	4.5	5.5
MC3119	+25°C	5.5	1.0	-10	2.4	4.0	0.4	2.2	1.8	0.8	7.0	5.0	4.5	5.5
MC3119	+125°C	7.3	-	-	2.4	4.0	0.4	2.2	1.8	0.8	-	5.0	4.5	5.5
MC3019	0°C	5.35	-	-	2.5	4.0	0.4	2.2	2.0	0.8	-	5.0	4.75	5.25
MC3019	+25°C	5.5	1.0	-10	2.5	4.0	0.4	2.2	1.8	0.8	7.0	5.0	4.75	5.25
MC3019	+75°C	6.2	-	-	2.5	4.0	0.4	2.2	1.8	0.8	-	5.0	4.75	5.25

Characteristics	Symbol	Pin Under Test	MC3119 Test Limits −55°C Min	−55°C Max	+25°C Min	+25°C Max	+125°C Min	+125°C Max	MC3019 Test Limits 0°C Min	0°C Max	+25°C Min	+25°C Max	+75°C Min	+75°C Max	Unit	TEST CURRENT/VOLTAGE APPLIED TO PINS LISTED BELOW: I_{OL}	I_{in}	I_D	V_R	V_{RH}	V_F	V_{CEX}	V_{IH}	V_{IL}	V_{max}	V_{CC}	V_{CCL}	V_{CCH}	Gnd
Input																												
Forward Current	I_F	1	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	mAdc	-	-	-	-	2,3	1	-	-	-	-	-	-	14	7*
Leakage Current	I_R	1	-	50	-	50	-	50	-	50	-	50	-	50	μAdc	-	-	-	1	-	-	-	-	-	-	-	-	14	2,3,7
Breakdown Voltage	BV_{in}	1	-	-	5.5	-	-	-	-	-	5.5	-	-	-	Vdc	-	-1	-	-	-	-	-	-	-	-	-	-	14	2,3,7
Clamp Voltage	V_D	1	-	-	-	-1.5	-	-	-	-	-	-1.5	-	-	Vdc	-	-	1	-	-	-	-	-	-	-	-	14	-	7*
Output																												
Output Voltage	V_{OL}	9	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0	Vdc	9	-	-	-	-	-	-	1,2,3	-	-	-	14	-	7*
Emitter Current	I_{CEX}	9	-	50	-	50	-	50	-	50	-	50	-	50	μAdc	-	-	-	-	2,3	-	9	-	1	-	-	14	-	7
Power Requirements (Total Device) Maximum Power Supply Current	I_{max}	14	-	-	-	9.0	-	-	-	-	-	9.0	-	-	mAdc	-	-	-	-	-	-	-	-	-	14	-	-	-	1,2,3,4,5, 6,7,11,12,13
	I_{PDH}	14	-	18	-	18	-	18	-	18	-	18	-	18	mAdc	-	-	-	-	1,2,3,4,5,6, 11,12,13	-	-	-	-	-	-	-	14	7
Power Supply Drain	I_{PDL}	14	-	6.75	-	6.75	-	6.75	-	6.75	-	6.75	-	6.75	mAdc	-	-	-	-	-	-	-	-	-	-	-	-	14	1,2,3,4,5, 6,7,11,12,13

*Ground inputs to gates not under test.