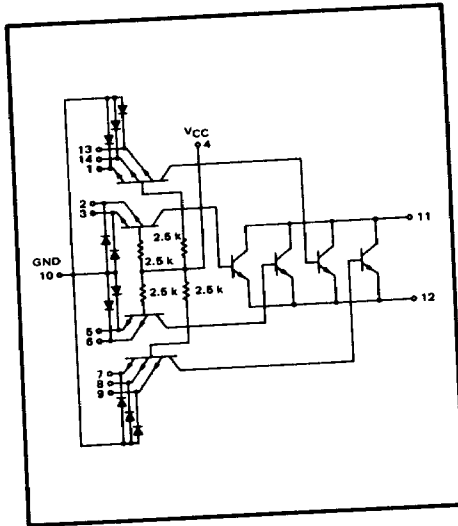


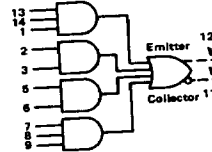
MTTL II MC2100/2000 series

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

MC2102 • MC2152  
MC2002 • MC2052



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 MC2102 series or the MC2106 series expander package.



Total Power Dissipation = 28 mW typ/Pkg.

Propagation Delay Times:

$\Delta t_{pd} = +2.0$  ns typ

When added to the expandable AND-OR-INVERT gates.

$\Delta t_{pd}/\sigma F = +0.7$  ns/pF typ

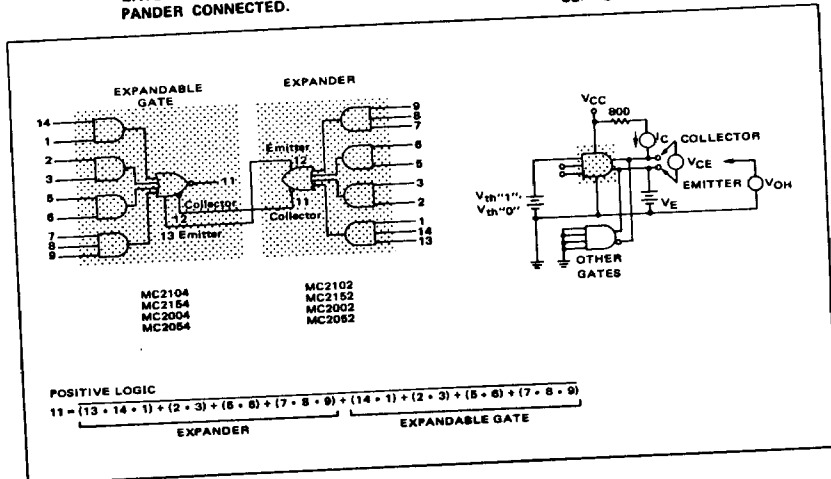
Caused by additional capacitance at expansion points.

TYPE NO.	INPUT LOADING FACTOR	(I <sub>F</sub> )	TEMPERATURE RANGE
MC2102 MC2152	1	-2.0 mA	-85°C to +128°C
MC2002 MC2052	1	-2.5 mA	0°C to +75°C

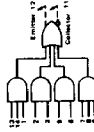
Full output loading factor of the expandable gate is maintained.

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

VCE, VOH TEST CIRCUIT



**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	MC2102 Test Limits						MC2152 Test Limits						MC2002, MC2052 Test Limits						Units	Test Current / Voltage Applied to Pins Listed Below:	V <sub>CE</sub>	V <sub>OH</sub>	V <sub>OL</sub>	V <sub>CC</sub>	V <sub>CMH</sub>	V <sub>CE</sub>	V <sub>CMH</sub>	V <sub>CE</sub>	V <sub>CMH</sub>					
			-55°C		+25°C		+75°C		0°C		+25°C		+75°C		I <sub>C</sub>	I <sub>B</sub>	V <sub>BE</sub>	V <sub>CE</sub>	V <sub>BE</sub>	V <sub>CE</sub>												V <sub>BE</sub>	V <sub>CE</sub>	V <sub>BE</sub>	V <sub>CE</sub>	
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max																						
Input Forward Current	I <sub>F</sub>	1	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	2.3, 5.6, 7.8 8.9, 13.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Leakage Current	I <sub>R</sub>	1	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100
Inverse Beta Current	I <sub>L</sub>	1	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100
Breakdown Voltage BV <sub>in-01</sub>	BV <sub>in-01</sub>	1	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	
Breakdown Voltage BV <sub>in-11</sub>	BV <sub>in-11</sub>	1	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	
Output Output Voltage	V <sub>OH</sub>	11	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Output Output Voltage	V <sub>CE(O)</sub>	11	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Leakage Current	I <sub>OL</sub>	11	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
Power Requirements (Total Device)	I <sub>max</sub>	4	-	-	14	-	-	-	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maximum Power Supply Current	I <sub>DD</sub>	4	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Power Supply Drain	I <sub>DDL</sub>	4	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5

\* Indicated pins tied to V<sub>CC</sub> thru 800 ohms - 1.0% resistor.  
 \*\* Indicated pins tied to V<sub>CE</sub> thru 800 ohms - 1.0% resistor.  
 † V<sub>CE</sub> is referenced to the emitter. Voltage (Pin 12)

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Pin-out and Package Information

Table 3-4 DSP56001A Identification by Signal Name (Continued)

Signal Name	132 pin "FC" PQFP or "FE" CQFP Pin No.	88 pin "RC" PGA Pin No.	Signal Name	132 pin "FC" PQFP or "FE" CQFP Pin No.	88 pin "RC" PGA Pin No.
WT	45	L13	nc	103	
X/Y	48	N13	nc	107	
XTAL	126	A6	nc	110	
nc	3		nc	116	
nc	4		nc	117	
nc	7		nc	122	
nc	17		nc	125	
nc	18		nc	132	
nc	21				

Power and ground pins have special considerations for noise immunity. See the section **Design Considerations**.

Table 3-5 DSP56001A Power Supply Pins

132 pin "FC" PQFP or "FE" CQFP Pin No.	88 pin "RC" PGA Pin No.	Power Supply	Circuit Supplied
63	L8	VCCN	Address Bus Buffers
64			
55	L6	GNDN	
56	L9		
73			
74			