



DM54L51/DM74L51 Dual 2-Wide 2-Input, 2-Wide 3-Input AND-OR-INVERT Gates

General Description

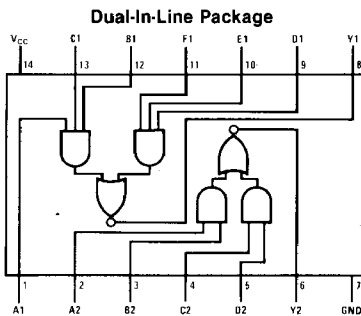
This device contains two combinations of gates each of which performs the logic AND-OR-INVERT function.

Absolute Maximum Ratings (Note 1)

Supply Voltage	8V
Input Voltage	5.5V
Storage Temperature Range	-65°C to 150°C

Note 1: The "Absolute Maximum Ratings" are those values beyond which the safety of the device can not be guaranteed. The device should not be operated at these limits. The parametric values defined in the "Electrical Characteristics" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Connection Diagram



DM54L51 (J) DM74L51 (N)

Function Table

$$Y1 = \overline{[(A1)(B1)(C1)] + [(D1)(E1)(F1)]}$$

Inputs						Output
A1	B1	C1	D1	E1	F1	Y1
H	H	H	X	X	X	L
X	X	X	H	H	H	L
Other Combinations						H

$$Y2 = \overline{[(A2)(B2)] + [(C2)(D2)]}$$

Inputs				Output
A2	B2	C2	D2	Y2
H	H	X	X	L
X	X	H	H	L
All other combinations				H

H = High Logic Level

L = Low Logic Level

X = Either Low or High Logic Level

Recommended Operating Conditions

Symbol	Parameter	DM54L51			DM74L51			Units
		Min	Nom	Max	Min	Nom	Max	
V _{CC}	Supply Voltage	4.5	5	5.5	4.75	5	5.25	V
V _{IH}	High Level Input Voltage	2			2			V
V _{IL}	Low Level Input Voltage			0.7			0.7	V
I _{OH}	High Level Output Current			-0.2			-0.2	mA
I _{OL}	Low Level Output Current			2			3.6	mA
T _A	Free Air Operating Temperature	-55		125	0		70	°C

Electrical Characteristics over recommended operating free air temperature (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 1)	Max	Units
V _{OH}	High Level Output Voltage	V _{CC} = Min, I _{OH} = Max V _{IL} = Max, V _{IH} = Min	2.4	3.3		V
V _{OL}	Low Level Output Voltage	V _{CC} = Min	DM54	0.15	0.3	V
		I _{OL} = Max V _{IH} = Min	DM74	0.2	0.4	
I _I	Input Current @ Max Input Voltage	V _{CC} = Max, V _I = 5.5V			0.1	mA
I _{IH}	High Level Input Current	V _{CC} = Max, V _I = 2.4V			10	μA
I _{IL}	Low Level Input Current	V _{CC} = Max, V _I = 0.3V			-0.18	mA
I _{OS}	Short Circuit Output Current	V _{CC} = Max (Note 2)	DM54	-3	-15	mA
			DM74	-3	-15	
I _{COH}	Supply Current With Outputs High	V _{CC} = Max		0.44	0.8	mA
I _{COCL}	Supply Current With Outputs Low	V _{CC} = Max		0.76	1.3	mA

Switching Characteristics at V_{CC} = 5V and T_A = 25°C (See Section 1 for Test Waveforms and Output Load)

Parameter	Conditions	R _L = 4 kΩ C _L = 50 pF			Units
		Min	Typ	Max	
t _{PLH} Propagation Delay Time Low to High Level Output			50	90	ns
t _{PHL} Propagation Delay Time High to Low Level Output			35	60	ns

Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.

Note 2: Not more than one output should be shorted at a time.