



DM54L54/DM74L54 4-Wide AND-OR-INVERT Gates

General Description

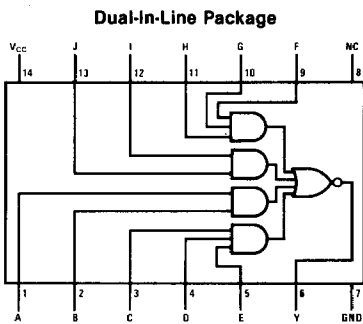
This device contains a combination of gates which performs the logic AND-OR-INVERT function.

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



DM54L54 (J) DM74L54 (N)

Function Table

$$Y = \overline{AB + CDE + FGH + IJ}$$

Inputs										Output
A	B	C	D	E	F	G	H	I	J	Y
H	H	X	X	X	X	X	X	X	X	L
X	X	H	H	H	X	X	X	X	X	L
X	X	X	X	X	H	H	H	X	X	L
X	X	X	X	X	X	X	X	H	H	L
All other combinations										H

H = High Logic Level
 L = Low Logic Level
 X = Either Low or High Logic Level

TL/F/6626-1

Recommended Operating Conditions

Sym	Parameter	DM54L54			DM74L54			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)

Sym	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 I _{OL} = Max V _{IH} = Min	DM54	0.15	0.3	V
			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 _{CCH}	Supply Current With Outputs High	V _{CC} = Max		0.39	0.8	mA
I _{CCL}	Supply Current With Outputs Low	V _{CC} = Max		0.6	0.99	mA

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.

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