

DM54L86/DM74L86 Quad 2-Input Exclusive-OR Gates

General Description

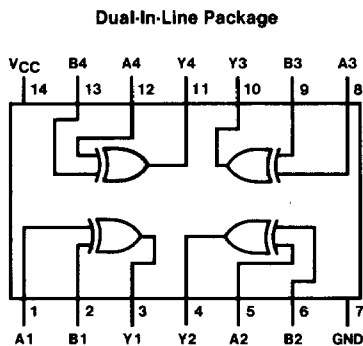
This device contains four independent gates each of which performs the logic Exclusive-OR function.

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



TL/F/6635-1

DM74L86 (N) DM54L86 (J)

Function Table

$$Y = A \oplus B = \bar{A}B + A\bar{B}$$

Inputs		Output
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	L

H = High Logic Level

L = Low Logic Level

Recommended Operating Conditions

Sym	Parameter	DM54L86			DM74L86			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	$V_{CC} = \text{Min}, I_{OH} = \text{Max}$ $V_{IL} = \text{Max}, V_{IH} = \text{Min}$	2.4	3.3		V
V_{OL}	Low Level Output Voltage	$V_{CC} = \text{Min}$ $I_{OL} = \text{Max}$ $V_{IL} = \text{Max}$ $V_{IH} = \text{Min}$	DM54	0.15	0.3	V
			DM74	0.2	0.4	
I_I	Input Current @ Max Input Voltage	$V_{CC} = \text{Max}, V_I = 5.5V$			0.2	mA
I_{IH}	High Level Input Current	$V_{CC} = \text{Max}, V_I = 2.4V$			20	μA
I_{IL}	Low Level Input Current	$V_{CC} = \text{Max}, V_I = 0.3V$			-0.36	mA
I_{OS}	Short Circuit Output Current	$V_{CC} = \text{Max}$ (Note 2)	DM54	-3	-15	mA
			DM74	-3	-15	
I_{CCH}	Supply Current With Outputs High	$V_{CC} = \text{Max}$ (Note 3)		2.2	4.4	mA
I_{CCL}	Supply Current With Outputs Low	$V_{CC} = \text{Max}$ (Note 4)		3.8	6.68	mA

Note 1: All typicals are at $V_{CC} = 5V$, $T_A = 25^\circ C$.

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

Note 3: I_{CCH} is measured with all outputs open, one input of each gate at 4.5V, and the other inputs grounded.

Note 4: I_{CCL} is measured with all outputs open and all inputs at ground.

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

Parameter	Conditions	$R_L = 4k\Omega$ $C_L = 50\text{ pF}$			Units
		Min	Typ	Max	
t_{PLH} Propagation Delay Time Low to High Level Output	Other Input Low		37	60	ns
t_{PHL} Propagation Delay Time High to Low Level Output			21	60	ns
t_{PLH} Propagation Delay Time Low to High Level Output	Other Input High		25	60	ns
t_{PHL} Propagation Delay Time High to Low Level Output			35	60	ns