

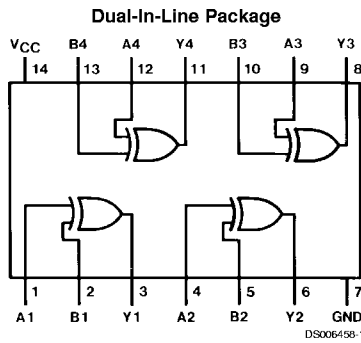
DM74S86

Quad 2-Input Exclusive-OR Gates

General Description

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

Connection Diagram



Order Number DM54S86J, DM54S86W or DM74S86N
See Package Number J14A, N14A or W14B

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

Absolute Maximum Ratings (Note 1)

Supply Voltage	7V	DM54S	-55°C to +125°C
Input Voltage	5.5V	DM74S	0°C to +70°C
Operating Free Air Temperature Range		Storage Temperature Range	-65°C to +150°C

Recommended Operating Conditions

Symbol	Parameter	DM54S86			DM74S86			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			0.8			0.8	V
I _{OH}	High Level Output Current			-1			-1	mA
I _{OL}	Low Level Output Current			20			20	mA
T _A	Free Air Operating Temperature	-55		125	0		70	°C

Note 1: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot 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.

Electrical Characteristics

over recommended operating free air temperature (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 2)	Max	Units
V _I	Input Clamp Voltage	V _{CC} = Min, I _I = -18 mA			-1.2	V
V _{OH}	High Level Output Voltage	V _{CC} = Min, I _{OH} = Max	DM54	2.5	3.4	V
		V _{IL} = Max, V _{IH} = Min	DM74	2.7	3.4	
V _{OL}	Low Level Output Voltage	V _{CC} = Min, I _{OL} = Max V _{IH} = Min, V _{IL} = Max			0.5	V
I _I	Input Current @ Max Input Voltage	V _{CC} = Max, V _I = 5.5V			1	mA
I _{IH}	High Level Input Current	V _{CC} = Max, V _I = 2.7V			50	μA
I _{IL}	Low Level Input Current	V _{CC} = Max, V _I = 0.5V			-2	mA
I _{OS}	Short Circuit Output Current	V _{CC} = Max (Note 3)	DM54	-40	-100	mA
			DM74	-40	-100	
I _{CCCH}	Supply Current with Outputs High	V _{CC} = Max (Note 4)		35	50	mA
I _{CCCL}	Supply Current with Outputs Low	V _{CC} = Max (Note 5)		50	75	mA

Note 2: All typicals are at V_{CC} = 5V, T_A = 25°C.

Note 3: Not more than one output should be shorted at a time, and the duration should not exceed one second.

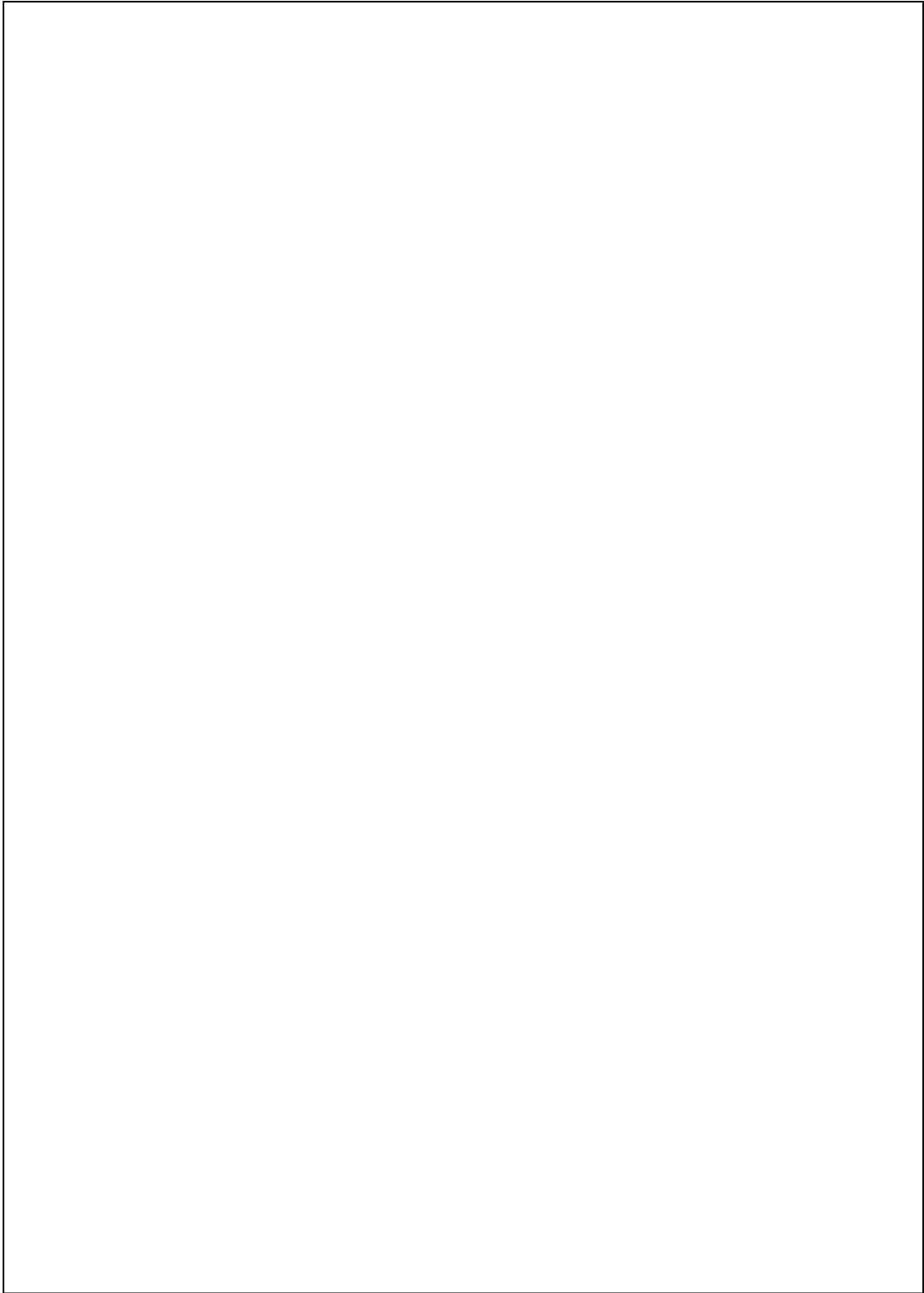
Note 4: I_{CCCH} is measured with all outputs open, one input of each gate at 4.5V, and the other inputs grounded.

Note 5: I_{CCCL} is measured with all outputs open and all inputs grounded.

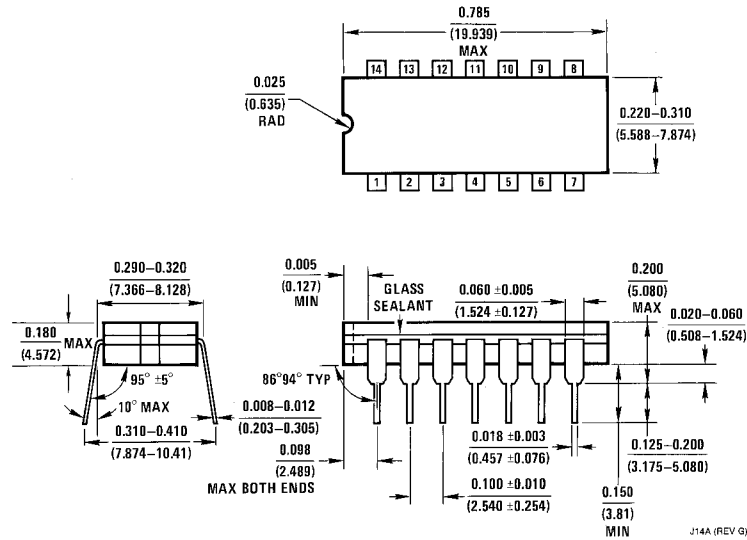
Switching Characteristics

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

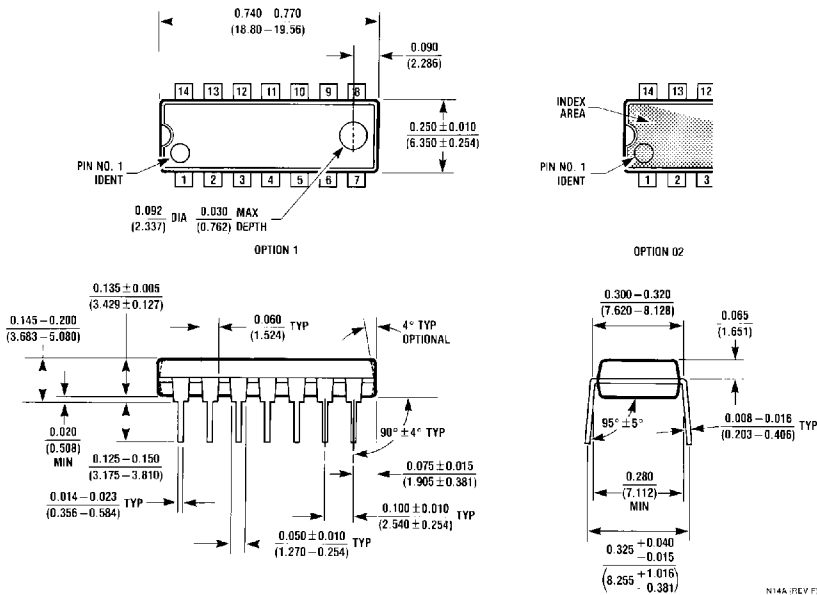
Symbol	Parameter	From (Input) to (Output)	$R_L = 280\Omega$				Units
			$C_L = 15\text{ pF}$		$C_L = 50\text{ pF}$		
			Min	Max	Min	Max	
t_{PLH}	Propagation Delay Time Low to High Level Output	A or B to Y		10.5		14	ns
t_{PHL}	Propagation Delay Time High to Low Level Output			10		13	ns



Physical Dimensions inches (millimeters) unless otherwise noted

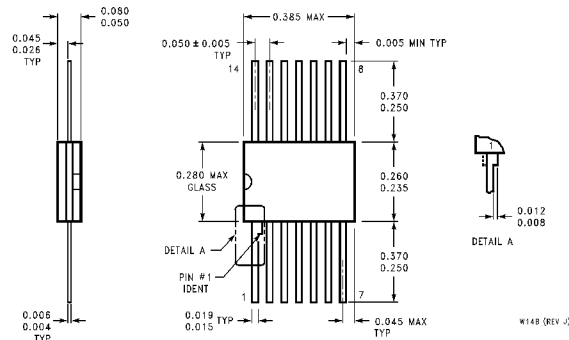


14-Lead Ceramic Dual-In-Line Package (J)
Order Number DM54S86J
Package Number J14A



14-Lead Molded Dual-In-Line Package (N)
Order Number DM74S86N
Package Number N14A

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



14-Lead Ceramic Flat Package (W)
Order Number DM54S86W
Package Number W14B

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