National Semiconductor

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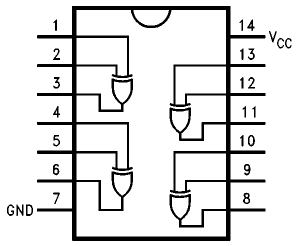
DM74LS136
Quad 2-Input Exclusive-OR Gate with Open-Collector Outputs

General Description

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

Connection Diagram

Dual-In-Line Package



TL/F/9819–1

Order Number DM74LS136M or DM74LS136N
See NS Package Number M14A or N14A

Truth Table

Inputs		Output
A	**B**	**Z**
L	L	L
L	H	H
H	L	H
H	H	L

H = HIGH Voltage Level
L = LOW Voltage Level

RRD-B30M115/Printed in U. S. A.

Absolute Maximum Ratings (Note)

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	0°C to +70°C
Storage Temperature Range	−65°C to +150°C

Note: *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.*

Recommended Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units
V_{CC}	Supply Voltage	4.75	5	5.25	V
V_{IH}	High Level Input Voltage	2			V
V_{IL}	Low Level Input Voltage			0.8	V
I_{OL}	Low Level Output Current			8	mA
T_A	Free Air Operating Temperature	0		70	°C

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

Symbol	Parameter	Conditions	Min	Typ (Note 1)	Max	Units
V_I	Input Clamp Voltage	V_{CC} = Min, I_I = −18 mA			−1.5	V
I_{CEX}	High Level Output Current	V_{CC} = Min, V_O = 5.5V			100	μA
V_{OL}	Low Level Output Voltage	V_{CC} = Min, I_{OL} = Max, V_{IH} = Min		0.35	0.5	V
		I_{OL} = 4 mA, V_{CC} = Min		0.25	0.4	
I_I	Input Current @ Max Input Voltage	V_{CC} = Max, V_I = 7V			0.2	mA
I_{IH}	High Level Input Current	V_{CC} = Max, V_I = 2.7V			40	μA
I_{IL}	Low Level Input Current	V_{CC} = Max, V_I = 0.4V			−0.6	mA
I_{CC}	Supply Current	V_{CC} = Max			10	mA

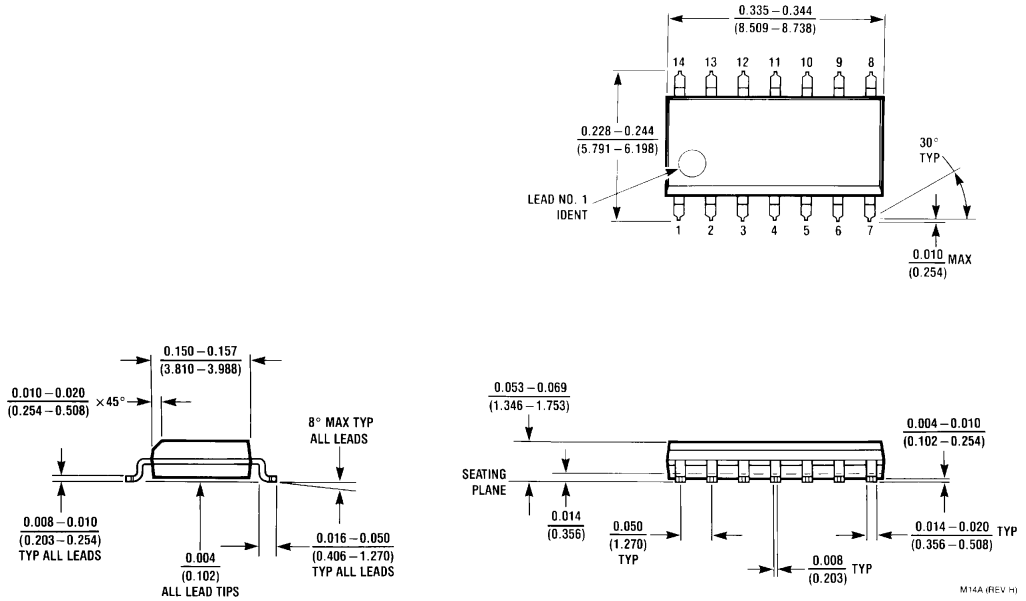
Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.

Note 2: Not more than one output should be shorted at a time, and the duration should not exceed one second.

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

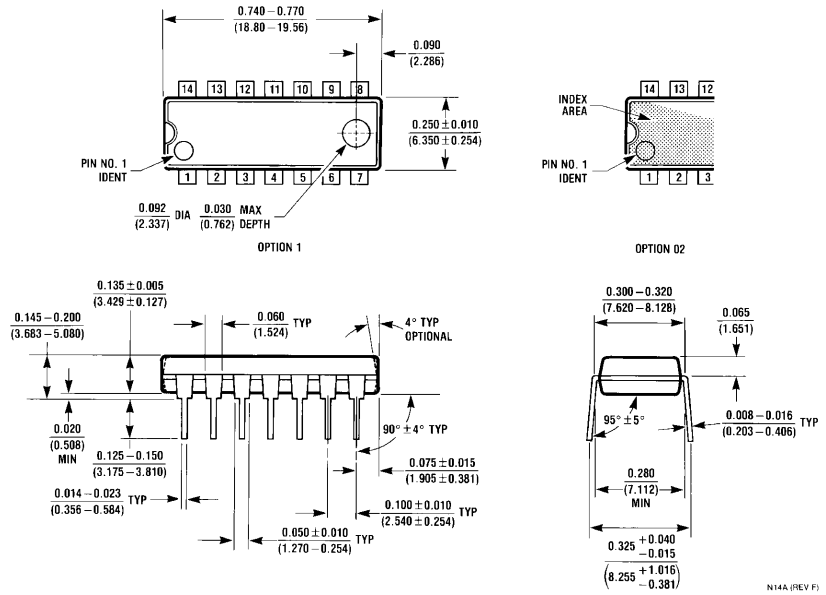
Symbol	Parameter	R_L = 2 kΩ, C_L = 15 pF		Units
		Min	Max	
t_{PLH}	Propagation Delay Time Low to High Level Output		23	ns
t_{PHL}	Propagation Delay Time High to Low Level Output		23	ns

Physical Dimensions inches (millimeters)



14-Lead Small Outline Molded Package (M)
Order Number DM74LS136M
NS Package Number M14A

Physical Dimensions inches (millimeters) (Continued)



14-Lead Molded Dual-In-Line Package (N)
Order Number DM74LS136N
NS Package Number N14A

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