National Semiconductor

54LS136/DM54LS136/DM74LS136 Quad 2-Input Exclusive-OR Gate with Open-Collector Outputs

General Description

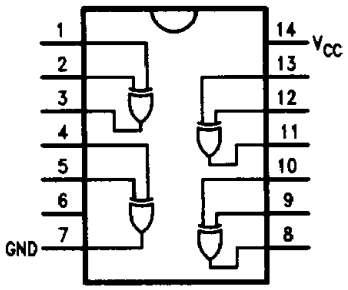
This device contains four independent gates, each of which performs the logic exclusive-OR function.

Features

- Alternate Military/Aerospace device (54LS136) is available. Contact a National Semiconductor Sales Office/ Distributor for specifications.

Connection Diagram

Dual-In-Line Package



TL/F/9819–1

Order Number 54LS136DMQB, 54LS136FMQB, DM54LS136J, DM54LS136W, DM74LS136M or DM74LS136N
See NS Package Number J14A, M14A, N14A or W14B

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

Absolute Maximum Ratings (Note)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	
DM54LS and 54LS	−55°C to +125°C
DM74LS	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	DM54LS136			DM74LS136			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			0.8	V
I_{OL}	Low Level Output Current			4			8	mA
T_A	Free Air Operating Temperature	−55		125	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
V_{OL}	Low Level Output Voltage	V_{CC} = Min, I_{OL} = Max, V_{IH} = Min	DM54		0.25	0.4	V
			DM74		0.35	0.5	
		I_{OL} = 4 mA, V_{CC} = Min	DM74		0.25	0.4	
I_I	Input Current @ Max Input Voltage	V_{CC} = Max, V_I = 10V				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

National Semiconductor was acquired by Texas Instruments.

http://www.ti.com/corp/docs/investor_relations/pr_09_23_2011_national_semiconductor.html

This file is the datasheet for the following electronic components:

DM74LS136N - http://www.ti.com/product/dm74ls136n?HQS=TI-null-null-dscatalog-df-pf-null-wwe

DM54LS136J - http://www.ti.com/product/dm54ls136j?HQS=TI-null-null-dscatalog-df-pf-null-wwe

54LS136FMQB - http://www.ti.com/product/54ls136fmqb?HQS=TI-null-null-dscatalog-df-pf-null-wwe

54LS136DMQB - http://www.ti.com/product/54ls136dmqb?HQS=TI-null-null-dscatalog-df-pf-null-wwe

DM54LS136W - http://www.ti.com/product/dm54ls136w?HQS=TI-null-null-dscatalog-df-pf-null-wwe

DM74LS136M - http://www.ti.com/product/dm74ls136m?HQS=TI-null-null-dscatalog-df-pf-null-wwe