

DM74LS136MX

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

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

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All re-creations are done with the approval of the Original Component Manufacturer (OCM).

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceeds the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
 - Class Q Military
 - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
 - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OCM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.



October 1988 Revised March 2000

DM74LS136

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

General Description

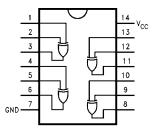
This device contains four independent gates, each of which performs the logic exclusive-OR function.

Ordering Code:

	Order Number	Package Number	Package Description
DM74LS136M M14A		M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow
	DM74LS136N	N14A	14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

Connection Diagram



Truth Table

Inp	outs	Output		
Α	В	Z		
L	L	L		
L	Н	Н		
Н	L	Н		
Н	Н	L		

H = HIGH Voltage Level L = LOW Voltage Level

Absolute Maximum Ratings(Note 1)

Supply Voltage 7V Input Voltage 7V Operating Free Air Temperature Range 0° C to $+70^{\circ}$ C Storage Temperature Range -65° C to $+150^{\circ}$ 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 tables 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 2)	Max	Units
VI	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	μΑ
V _{OL}	LOW Level Output Voltage	$V_{CC} = Min, I_{OL} = Max$ $V_{IH} = Min$		0.35	0.5	V
		$I_{OL} = 4 \text{ mA}, V_{CC} = Min$		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	μΑ
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

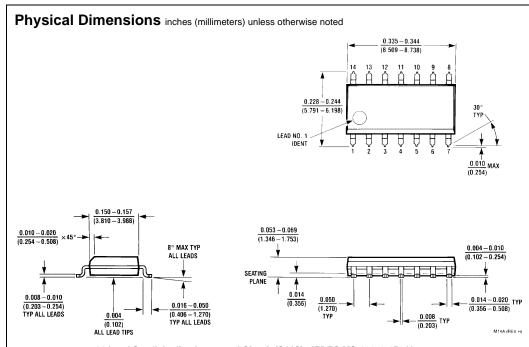
Note 2: All typicals are at $V_{CC} = 5V$, $T_A = 25$ °C.

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

Switching Characteristics

at $V_{CC} = 5V$ and $T_A = 25^{\circ}C$

		R _L =	Units				
Symbol	Parameter	C _L =					
		Min	Max	1			
t _{PLH}	Propagation Delay Time		23	ns			
	LOW-to-HIGH Level Output		23	115			
t _{PHL}	Propagation Delay Time		23				
	HIGH-to-LOW Level Output		23	ns			



14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow Package Number M14A

Physical Dimensions inches (millimeters) unless otherwise noted (Continued) 0.740 - 0.770 (18.80 - 19.56)0.090 (2.286) 14 13 12 11 10 9 8 14 13 12 INDEX AREA 0.250 ± 0.010 (6.350 ± 0.254) PIN NO. 1 PIN NO. 1 IDENT 1 2 3 4 5 6 7 1 2 3 $\frac{0.092}{(2.337)}$ DIA 0.030 MAX (0.762) DEPTH OPTION 1 OPTION 02 $\frac{0.135 \pm 0.005}{(3.429 \pm 0.127)}$ 0.300 - 0.320 $\frac{0.630 - 8.128}{(7.620 - 8.128)}$ 0.060 0.145 - 0.2004° TYP Optional (1.651) (3.683 - 5.080) $\frac{0.008 - 0.016}{(0.203 - 0.406)}$ TYP 0.020 (0.508) 0.125 - 0.150 0.075 ± 0.015 $\overline{(3.175 - 3.810)}$ (1.905 ± 0.381) (7.112) MIN 0.014 - 0.0230.100 ± 0.010 (2.540 ± 0.254) (0.356 - 0.584) $\frac{0.050 \pm 0.010}{(1.270 - 0.254)}$ TYP 0.325 ^{+0.040} -0.015 8.255 + 1.016

14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide Package Number N14A

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N144 (REV.F)