

### **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 recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceed 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.

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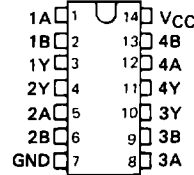
The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for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

# SN54LS386A, SN74LS386A QUADRUPLE 2-INPUT EXCLUSIVE-OR GATES

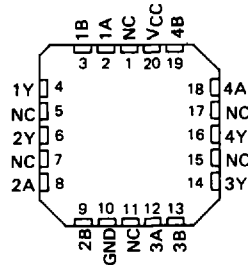
MARCH 1974 — REVISED MARCH 1988

- Electrically Identical to SN54LS86A/SN74LS86A
- Mechanically Identical to SN54L86/SN74L86
- Total Average Propagation Delay Times . . . 10 ns
- Typical Total Power Dissipation . . . 30.5 mW

SN54LS386A . . . J OR W PACKAGE  
SN74LS386A . . . D OR N PACKAGE  
(TOP VIEW)



SN54LS386A . . . FK PACKAGE  
(TOP VIEW)

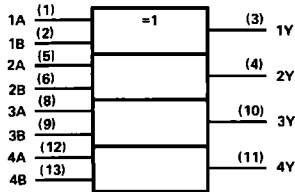


FUNCTION TABLE  
(EACH GATE)

INPUTS		OUTPUT
A	B	
L	L	L
L	H	H
H	L	H
H	H	L

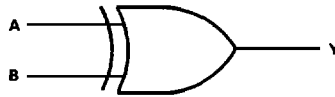
H = high level  
L = low level

logic symbol†



†This symbol is in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12.  
Pin numbers shown are for D, J, N, and W packages

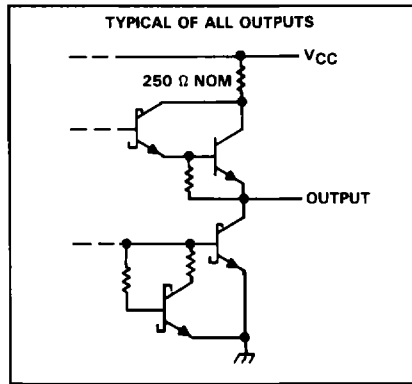
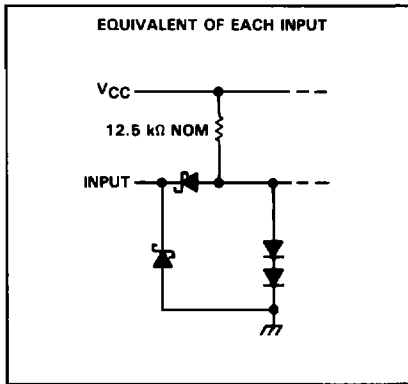
logic diagram (each gate)



positive logic

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

schematics of inputs and outputs



PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

TEXAS  
INSTRUMENTS

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2-917

# SN54LS386A, SN74LS386A QUADRUPLE 2-INPUT EXCLUSIVE-OR GATES

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

Supply voltage, $V_{CC}$ (see Note 1)	7 V
Input voltage	7 V
Operating free-air temperature range: SN54LS386A	-55°C to 125°C
SN74LS386A	0°C to 70°C
Storage temperature range	-65°C to 150°C

NOTE 1: Voltage values are with respect to network ground terminal.

recommended operating conditions

	SN54LS386A			SN74LS386A			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, $V_{CC}$	4.5	5	5.5	4.75	5	5.25	V
High-level output current, $I_{OH}$			-400			-400	$\mu$ A
Low-level output current, $I_{OL}$			4			8	mA
Operating free-air temperature, $T_A$	-55		125	0		70	°C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	SN54LS386A			SN74LS386A			UNIT
		MIN	TYP‡	MAX	MIN	TYP‡	MAX	
$V_{IH}$ High-level input voltage		2			2			V
$V_{IL}$ Low-level input voltage			0.7			0.8		V
$V_{IK}$ Input clamp voltage	$V_{CC} = \text{MIN}, I_I = -18 \text{ mA}$		-1.5			-1.5		V
$V_{OH}$ High-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = V_{IL \text{ max}}, I_{OH} = -400 \mu\text{A}$	2.5	3.4		2.7	3.4		V
$V_{OL}$ Low-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, I_{OL} = 4 \text{ mA}$		0.25	0.4		0.25	0.4	V
	$V_{IL} = V_{IL \text{ max}}, I_{OL} = 8 \text{ mA}$					0.35	0.5	
$I_I$ Input current at maximum input voltage	$V_{CC} = \text{MAX}, V_I = 7 \text{ V}$		0.2			0.2		mA
$I_{IH}$ High-level input current	$V_{CC} = \text{MAX}, V_I = 2.7 \text{ V}$		40			40		$\mu$ A
$I_{IL}$ Low-level input current	$V_{CC} = \text{MAX}, V_I = 0.4 \text{ V}$		-0.8			-0.8		mA
$I_{OS}$ Short-circuit output current§	$V_{CC} = \text{MAX}$	-20	-100		-20	-100		mA
$I_{CC}$ Supply current	$V_{CC} = \text{MAX},$ See Note 2		6.1	10		6.1	10	mA

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at  $V_{CC} = 5 \text{ V}, T_A = 25^\circ\text{C}$ .

§ Not more than one output should be shorted at a time.

NOTE 2:  $I_{CC}$  is measured with the inputs grounded and the outputs open.

switching characteristics,  $V_{CC} = 5 \text{ V}, T_A = 25^\circ\text{C}$

PARAMETER	FROM (INPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
$t_{PLH}$	A or B	Other input low $C_L = 15 \text{ pF}, R_L = 2 \text{ k}\Omega,$ See Note 3	12	23		ns
$t_{PHL}$			10	17		
$t_{PLH}$	A or B	Other input high	20	30		ns
$t_{PHL}$			13	22		

NOTE 3: Load circuits and voltage waveforms are shown in Section 1

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TTL Devices