Rochester Electronics

Datasheet

PART NUMBER

9014DMB-ROCV

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-38535
    - 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.

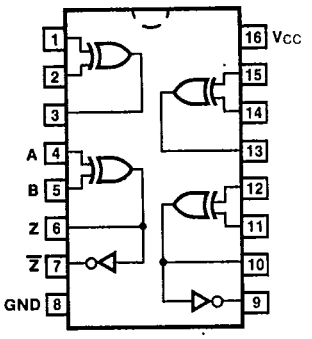
9014

QUAD EXCLUSIVE-OR GATE

DESCRIPTION — The 9014 consists of four Exclusive-OR gates, useful in a large number of code conversion, parity generation/checking, and comparison applications. The Exclusive-OR gate produces an output when the inputs are complementary. Two gates have an additional inverted output which provides directly a compare capability. The Boolean expressions for the gates are: $Z = A\overline{B} + \overline{A}B$; $\overline{Z} = AB + \overline{A}\overline{B}$.

CONNECTION DIAGRAM
PINOUT A

T-43-15



V_{CC} = Pin 16
GND = Pin 8

ORDERING CODE: See Section 9

PKGS	PIN OUT	COMMERCIAL GRADE	MILITARY GRADE	PKG TYPE
		V_{CC} = +5.0 V ±5%, T_A = 0°C to +75°C	V_{CC} = +5.0 V ±10%, T_A = -55°C to +125°C	
Ceramic DIP (D)	A	9014DC	9014DM	6B
Flatpak (F)	A	9014FC	9014FM	4L

TRUTH TABLE

INPUTS		OUTPUTS	
A	B	Z	$\overline{Z}$
L	L	L	H
L	H	H	L
H	L	H	L
H	H	L	H

H = HIGH Voltage Level
L = LOW Voltage Level

INPUT LOADING/FAN-OUT: See Section 3 for U.L. definitions

PINS	9XXX Series HIGH/LOW
Inputs	2.25/1.5
Outputs	
Pins 3, 7, 9, 13	30/8.8 (33)/(8.5)
Pins 6, 10	28.5/7.9 (30)/(7.75)

DC AND AC CHARACTERISTICS OVER COMMERCIAL TEMPERATURE RANGE: V_{CC} = +5.0 V ±5%

SYMBOL	PARAMETER	0°C Min	0°C Max	25°C Min	25°C Max	75°C Min	75°C Max	UNITS	CONDITIONS
V_{IH}	Input HIGH Voltage	1.9		1.8		1.6		V	Guaranteed Input HIGH Threshold
V_{IL}	Input LOW Voltage		0.85		0.85		0.85	V	Guaranteed Input LOW Threshold
V_{OL}	Output LOW Voltage		0.45		0.45		0.45	V	V_{CC} = 5.25 V, I_{OL} = 16 mA I_{OL} = 14.4 mA (Pins 6 & 10) Inputs = 5.25 V or 0 V per Truth Table

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DC AND AC CHARACTERISTICS OVER COMMERCIAL TEMPERATURE RANGE: V_{CC} = +5.0 V ±5%

SYMBOL	PARAMETER		0°C Min	0°C Max	25°C Min	25°C Max	75°C Min	75°C Max	UNITS	CONDITIONS
V_{OL}	Output LOW Voltage			0.45		0.45		0.45	V	V_{CC} = 4.75 V, I_{OL} = 14.1 mA I_{OL} = 12.7 mA (Pins 6 & 10) Inputs = 5.25 V or 0 V per Truth Table
I_{IL}	Input LOW Current			-2.4 -2.1		-2.4 -2.1		-2.4 -2.1	mA	V_{CC} = 5.25 V, V_{IN} = .45 V Other Inputs = 5.25 V V_{CC} = 4.75 V, V_{IN} = .45 V Other Inputs = 5.25 V
I_{CC}	Power Supply Current, each gate	ON		4.5		4.5		4.5	mA	One Input = 5.5 V, One Input = Gnd
		OFF		8.7 7.6		8.7 7.6		8.7 7.6	mA	Inputs = Gnd Inputs = 5.5 V
	Power Supply Current Per Inverter	ON		6.1		6.1		6.1	mA	Input Node HIGH
		OFF		1.7		1.7		1.7		Input Node LOW
$t_{PLH\ 1}$ $t_{PHL\ 1}$ $t_{PHH\ 1}$ $t_{PLL\ 1}$	Switching Tests				3.0 3.0 6.0 6.0	13 15 28 28			ns	C_L = 15 pF, V_{IN1} = 5.0 V Fig. a, Fig. b
$t_{PHH\ 2}$ $t_{PLL\ 2}$ $t_{PLH\ 2}$ $t_{PHL\ 2}$	Switching Tests				7.0 7.0 10 10	17 19 32 32			ns	C_L = 15 pF, V_{IN1} = 0 V Fig. a, Fig. c

DC AND AC CHARACTERISTICS OVER MILITARY TEMPERATURE RANGE: V_{CC} = +5.0 V ±10%

SYMBOL	PARAMETER	-55°C Min	-55°C Max	25°C Min	25°C Max	125°C Min	125°C Max	UNITS	CONDITIONS
V_{IH}	Input HIGH Voltage	2.0		1.7		1.4		V	Guaranteed Input HIGH Threshold
V_{IL}	Input LOW Voltage		0.8		0.9		0.8	V	Guaranteed Input LOW Threshold
V_{OL}	Output LOW Voltage		0.4		0.4		0.4	V	V_{CC} = 5.5 V, I_{OL} = 17.6 mA I_{OL} = 16 mA (Pins 6 & 10) Inputs = 5.5 V or 0 V per Truth Table
			0.4		0.4		0.4		V_{CC} = 4.5 V, I_{OL} = 13.6 mA I_{OL} = 12.4 mA (Pins 6 & 10) Inputs = 5.5 V or 0 V per Truth Table

DC AND AC CHARACTERISTICS OVER MILITARY TEMPERATURE RANGE: V_{CC} = +5.0 V ±10%

SYMBOL	PARAMETER		-55°C Min	-55°C Max	25°C Min	25°C Max	125°C Min	125°C Max	UNITS	CONDITIONS
I_{IL}	Input LOW Current			-2.4		-2.4		-2.4	mA	V_{CC} = 5.5 V, V_{IN} = 0.4 V Other Inputs = 5.5 V
				-1.86		-1.86		-1.86		V_{CC} = 4.5 V, V_{IN} = 0.4 V Other Inputs = 5.5 V
I_{CC}	Power Supply Current, each gate	ON		4.2		4.2		4.2	mA	One Input = 5.5 V One Input = Gnd
		OFF		8.1		8.1		8.1	mA	Inputs = Gnd
				7.2		7.2		7.2		Inputs = 5.5 V
	Power Supply Current Per Inverter	ON		5.5		5.5		5.5	mA	Input Node HIGH
		OFF		1.6		1.6		1.6		Input Node LOW
$t_{PLH\ 1}$ $t_{PHL\ 1}$ $t_{PHH\ 1}$ $t_{PLL\ 1}$	Switching Tests				3.0 3.0 6.0 6.0	10 12 22 22			ns	C_L = 15 pF, V_{IN1} = 5.0 V Fig. a, Fig. b
$t_{PHH\ 2}$ $t_{PLL\ 2}$ $t_{PLH\ 2}$ $t_{PHL\ 2}$	Switching Tests				7.0 7.0 10 10	14 16 26 26			ns	C_L = 15 pF, V_{IN1} = 0 V Fig. a, Fig. c

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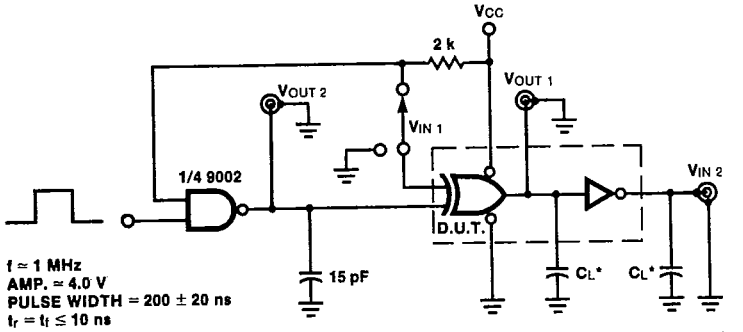
SWITCHING TEST CIRCUIT



*C_L includes probe and jig capacity

Fig. a

WAVEFORMS

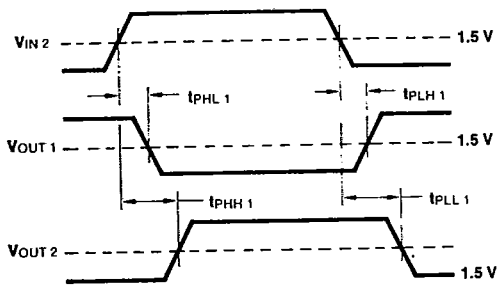


Fig. b

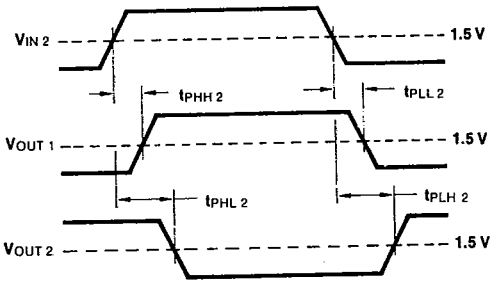


Fig. c