

# QUAD EXCLUSIVE-OR QUAD EXCLUSIVE-NOR

8241 8242

A,F,W PACKAGES

# DIGITAL 8000 SERIES TTL/MSI

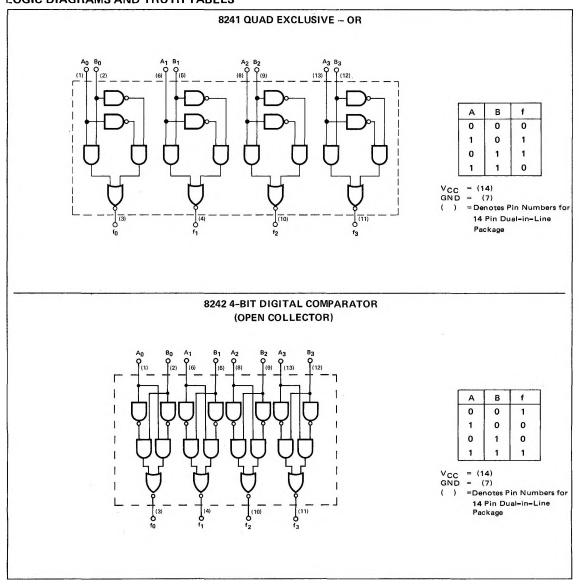
# DESCRIPTION

The 8241 contains four independent gating structures to perform the Exclusive-OR function on two input variables. The output of the 8241 employs the totem-pole structure characteristic of TTL devices.

The 8242 contains four independent Exclusive-NOR gates

which may be used to implement digital comparison functions. The 8242 outputs are bare collector to facilitate implementation of multiple-bit comparisons; a 4-bit comparison is made by connecting the outputs of the four independent gates together.

#### LOGIC DIAGRAMS AND TRUTH TABLES



# **ELECTRICAL CHARACTERISTICS** (Over Recommended Operating Temperature And Voltage)

(8241)

	LIMITS				TEST CONDITIONS			
CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	INPUTS		OUTPUTS	NOTES
					A	В	COIPOIS	
Output "1" Voltage	2.6	3.5		v	2.0	0.8	-800µA	7
Output "0" Voltage			0.4	v	2.0	2.0	16mA	8
Input "1" Current			80	μА	4.5	4.5V		11
Input "0" Current	-0.1		-3.2	mA	0.4	0.4		12
Power/Current Consumption		225/42.4	300/57.1	mW/mA				13
Output Short Circuit Current	-20		-70	mA			0V	6, 13
Input Voltage Rating								
A Input	5.5			v	10mA	0V		
B Input	5.5			v .	0V	10mA		

 $T_A = 25^{\circ} C$  and  $V_{CC} = 5.0 V$ 

(8241)

		LIMITS				TES			
CHARACTER	CHARACTERISTICS					INP	UTS		NOTES
8		MIN.	TYP.	MAX.	UNITS	A	В	OUTPUTS	
Propagation Delay	<sup>t</sup> on		17	23	ns				9
,,	<sup>t</sup> off		11	17,	ns	i			

# **ELECTRICAL CHARACTERISTICS** (Over Recommended Operating Temperature And Voltage)

(8242)

	LIMITS				TEST CONDITIONS			
CHARACTERISTICS			MAX.	UNITS	INPUTS		OUTPUT	NOTES
	MIN.	TYP.			A	8		
Output "1" Leakage Current			25	μА	2.0	2.0		10
Output "0" Voltage			0.4	v	2.0	8.0	25mA	ε
Input "1" Current			80	μА	4.5	4.5V		1
Inpute "0" Current	-0.1		-3.2	mA	0.4	0.4	į	1:
Power/Current Consumption		170/32	250/47.5	- mW/mA	0.4	0.4		1.
Input Voltage Rating								
A Input	5.5			v	10mA	0V		
B Input	5.5			v	ov	10mA		10
	1		1					

 $T_A = 25^{\circ} C$  and  $V_{CC} = 5.0 V$ 

(8242)

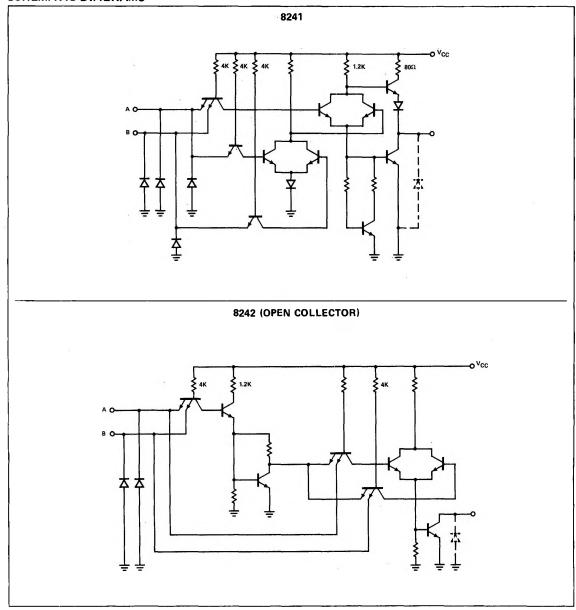
CHARACTERISTICS			LIMITS TEST CONDITIONS					IONS	
					INPUTS			INPUTS	
		MIN.	TYP.	MAX.	UNITS	A	В	OUTPUTS	
1	Inverting Path ton		12	20	ns				-
1	toff		14	23	ns				•
-	Propagation Delay Non-Inverting Path ton		14	21	ns				9
	<sup>t</sup> off]		20	28	ns		L		

#### NOTES:

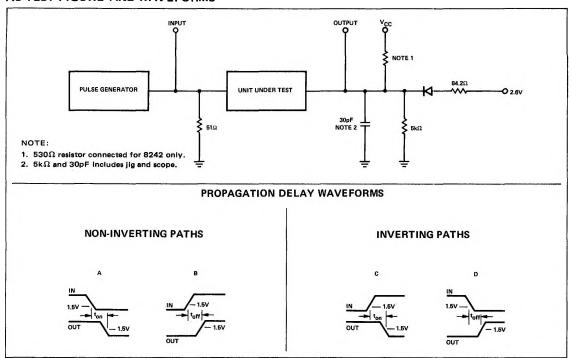
- 1. All voltage measurements are referenced to the ground terminal. Terminals not specifically referenced are left electrically open.
- All measurements are taken with ground pin tied to zero volts.
- 3. Positive current flow is defined as into the terminal referenced.
- 4. Positive NAND logic definition:
  "UP" Level = "1", "DOWN" Level = "0".
- 5. Precautionary measures should be taken to ensure current limiting In accordance with Absolute Maximum Ratings should the isolation diodes become forward blased.
- 6. Not more than one output should be shorted at a time.
- 7. Output source current is supplied through a resistor to ground.

- 8. Output sink current is supplied through a resistor to V<sub>CC</sub>.
- 9. Refer to AC Test Figure and waveforms.
- Connect an external 1K ±1% resistor from V<sub>CC</sub> to the output terminal for this test.
- 11. A and B are tested separately. When A is 4.5V, B is OV, and vice versa.
- 12. A and B are tested separately. When A is 0.4V, B is 5.25V, and vice versa.
- 13. V<sub>CC</sub> = 5.25V.

# SCHEMATIC DIAGRAMS



# AC TEST FIGURE AND WAVEFORMS



# TYPICAL APPLICATIONS

