SERTECH LABS

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TSC341
MULTI-Function Gates
- Dual 2-Wide, 2-Input AND-OR-Invert
- Dual Expandable AND-NOR

Features

341

- PROVIDES COMPLEX FUNCTION WITH LOW SUPPLY DRAIN
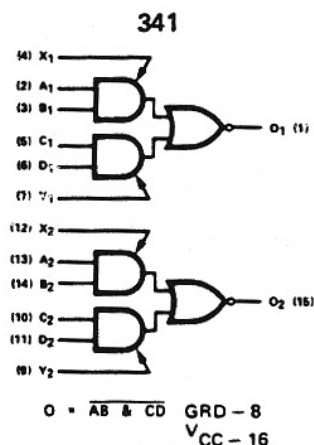- EXPANDABLE INPUTS
- ACTIVE PULLUP

344

- ALLOWS COMBINATION OF COLLECTOR OR'ING AND ACTIVE OUTPUT DESIGN
- COLLECTOR OR'ABLE WITH OTHER OPEN COLLECTOR GATES
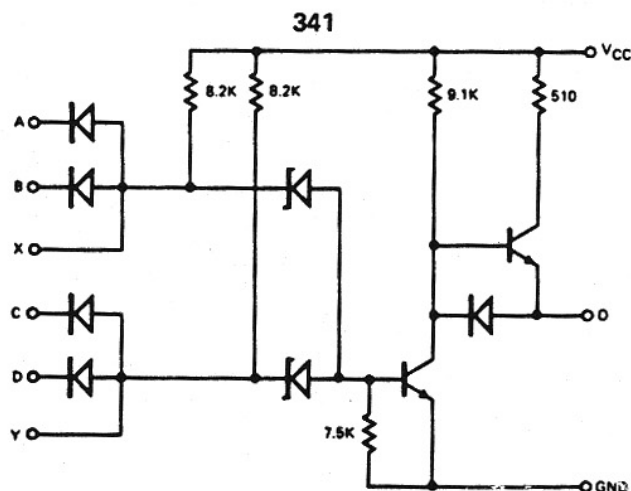
General Descriptions

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The 341 is an expandable gate with active pullup outputs. It is used in applications such as comparing two binary numbers. Large numbers may be compared by using the expander inputs.

Logic Diagrams

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(4) X_1
(2) A_1
(3) B_1
(5) C_1
(6) D_1
(7) Y_1

O_1 (1)

(12) X_2
(13) A_2
(14) B_2
(10) C_2
(11) D_2
(9) Y_2

O_2 (15)

$O = \overline{AB \ \& \ CD}$ GRD – 8
V_{CC} – 16

Equivalent Circuit

341

V_{CC}

8.2K   8.2K   9.1K   510

A
B
X
C
D
Y

7.5K

O

GND

Equivalent Circuits (contd.)

Specifications

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I_{CC} (WORST-CASE)	11 mA @ 13V, 15 mA @ 16V	
t_{PD}	150 ns	410 ns
I/O FUNCTION FOR t_{PD}	A+O−	A−O+

NOTE:
I_{CC} is tested at V_{CC} +1 Volt (+13V for C type and +16V for A type) and is guaranteed across the applicable temp range. t_{PD} is guaranteed at V_{CC} ±1V and across the applicable temp range with the output loaded with 5 unit loads.

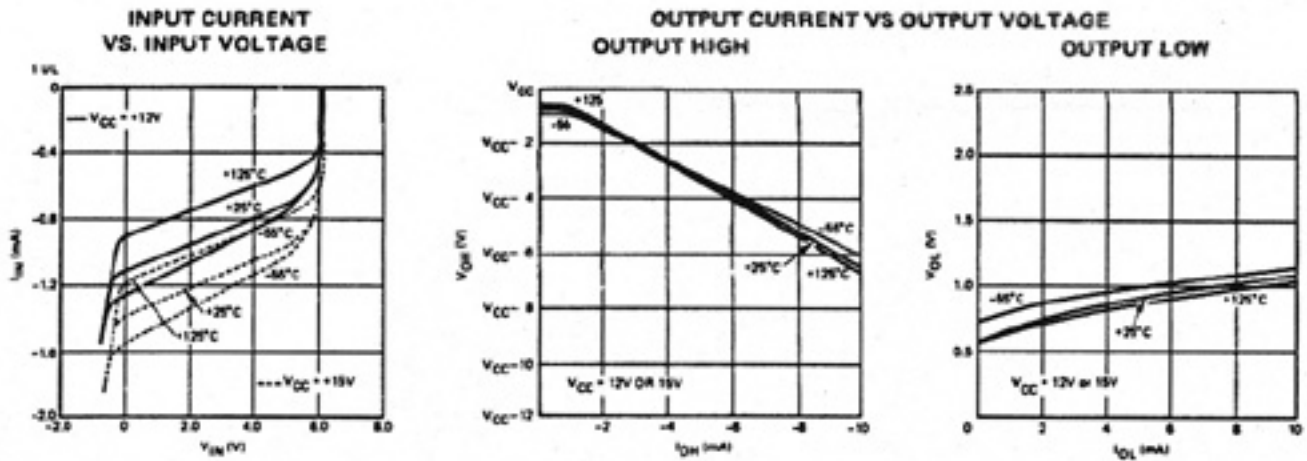See page 12 for electrical summary data.

## Switching Time Waveforms
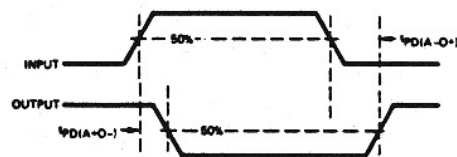
Loading Tables

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PINS	FUNCTION	LOADING
A-D	Inputs	1 UL
X	Expanders	Each diode tied to X_1 or X_2 is 1 unit load
0	Outputs	5 UL

Typical Performance Characteristics

INPUT CURRENT VS. INPUT VOLTAGE

OUTPUT CURRENT VS OUTPUT VOLTAGE
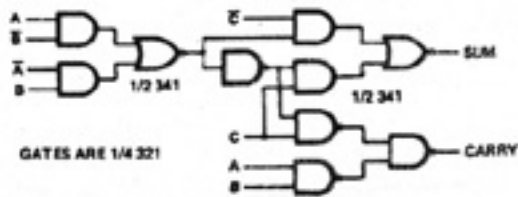**OUTPUT HIGH**

OUTPUT LOW

Typical Applications

The number of inputs to each gate may be increased to any desired number of adding 331 gate expanders or 1N4148 diodes (or any 20-volt silicon diode) to the expander inputs.
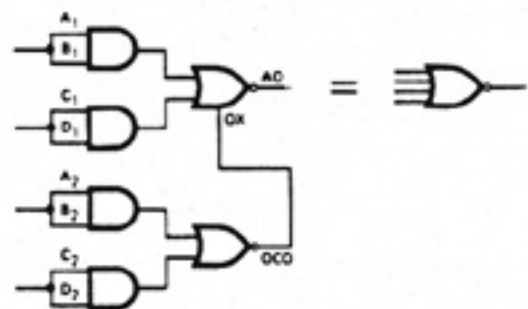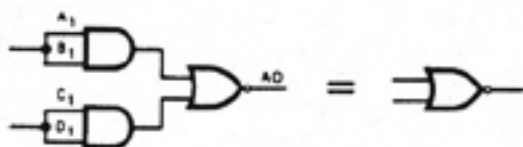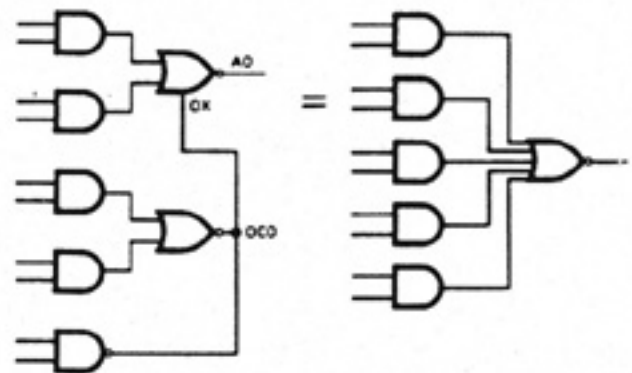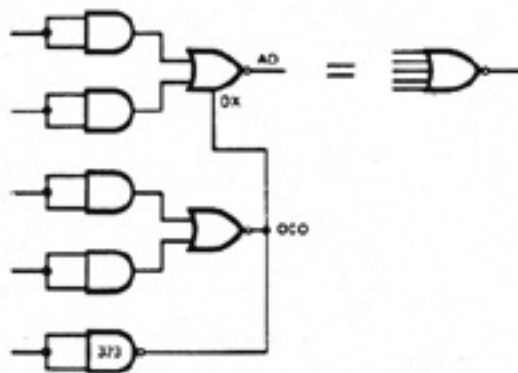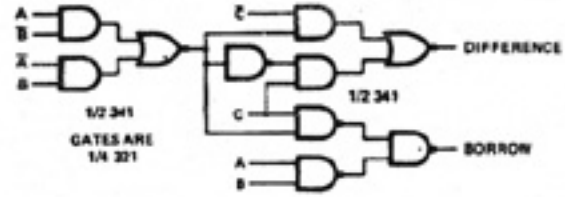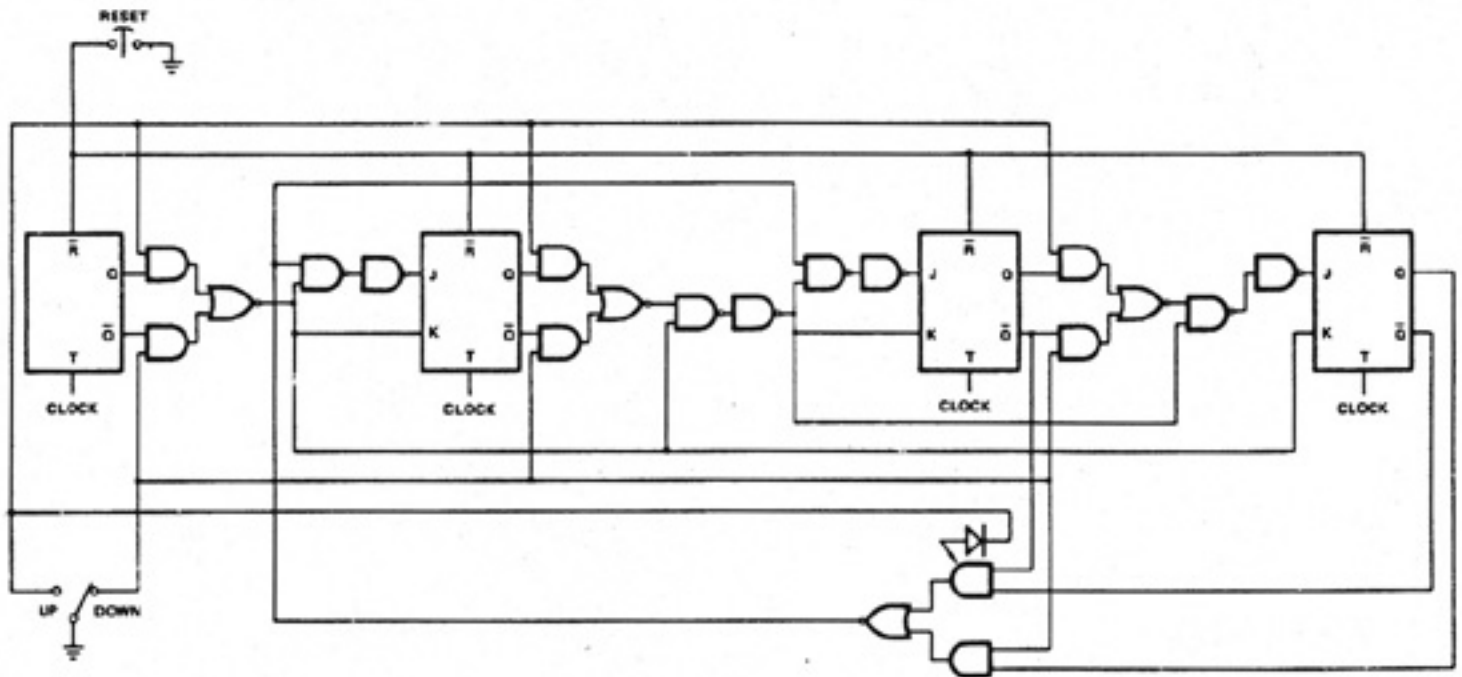
Typical Applications (contd.)

FULL ADDER

SUBTRACTOR

GATES ARE 1/4 321

GATES ARE
1/4 321

UP-DOWN BCD SYNCHRONOUS RESETTABLE COUNTER

This circuit requires only two 312, two 321 and two 341 packages, plus a 1N914 diode.