Peripheral/Power Drivers

LM75451, LM75452, LM75453, LM351 dual peripheral driver

general description

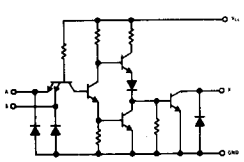
These devices are general purpose dual peripheral drivers, each capable of sinking two independent 300 mA loads to ground. In the off state (or with V_{CC} = 0V) the outputs will withstand 30V. Inputs are fully DTL/TTL compatible. The LM75451 meets or exceeds the specifications for the SN75451 and is a pin-for-pin replacement. The LM75452 and LM75453 meet or exceed the specifications for SN75452 and SN75453, respectively, and are pin-for-pin replacements.

features

- High speed
- Both outputs can sink 300 mA simultaneously
- Withstands 30V on output with V_{CC} = 0V for power strobing applications
- Input clamp diodes
- Two separate drivers per package

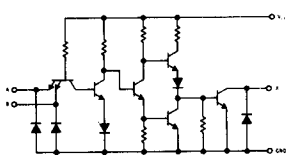
schematic diagrams

LM75451



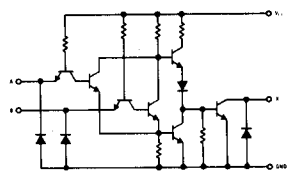
Note: 1/2 of unit shown.

LM75452



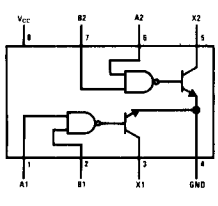
Note: 1/2 of unit shown.

LM351, LM75453



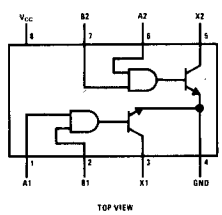
Note: 1/2 of unit shown.

connection diagrams



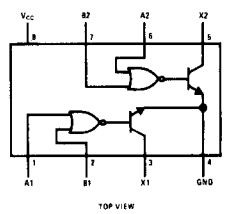
TOP VIEW

Order Number LM75451N
See Package 20



TOP VIEW

Order Number LM75452N
See Package 20



TOP VIEW

Order Number LM75453N or LM351
See Package 20

truth tables

Positive logic: AB=X

A	B	OUTPUT X*
0	0	0
1	0	0
0	1	0
1	1	1

*"0" Output ≤ 0.7V
"1" Output ≤ 100 μA

Positive logic: $\overline{AB}$=X

A	B	OUTPUT X*
0	0	1
1	0	1
0	1	1
1	1	0

*"0" Output ≤ 0.7V
"1" Output ≤ 100 μA

Positive logic: A + B = X

A	B	OUTPUT X*
0	0	0
1	0	1
0	1	1
1	1	1

*"0" Output ≤ 0.7V
"1" Output ≤ 100 μA

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absolute maximum ratings (Note 1)

Supply Voltage V_{CC}	7V	Continuous Total Power Dissipation (Note 3)	800 mW
Input Voltage	5.5V	Operating Free Air Temperature Range	0°C to 70°C
Output Voltage (Note 2)	30V	Storage Temperature Range	−65°C to 150°C
Continuous Output Current	300 mA	Lead Temperature (soldering, 10 sec)	300°C

electrical characteristics

The following apply for $0°C \leq T_A \leq 70°C$, V_{CC} = 5V ±5%, unless otherwise specified. (Note 4)

PARAMETER	LOGIC INPUT	OUTPUT	SUPPLY VOLTAGE	COMMENTS	MIN	TYP	MAX	UNIT
Logic "1" Input Voltage	V_{IN}	30V (300 mA)	4.75V	Output ≤ 100 μA (≤0.7V)	2			V
Logic "0" Input Voltage	V_{IN}	300 mA (30V)	4.75V	Output ≤ 0.7V (≤100 μA)			0.8	V
Output Leakage Currents	2V (0.8V)	30V	4.75V				100	μA
		30V	0V				100	μA
Output LOW Voltages	0.8V (2V)	100 mA	4.75V			0.25	0.4	V
	0.8V (2V)	300 mA	4.75V			0.5	0.7	V
Logic "1" Input Currents	2.4V		5.25V				40	μA
	5.5V		5.25V				1	mA
Logic "0" Input Current	0.4V		5.25V			−1	−1.6	mA
Supply Currents:								
Output Low								
LM75451	0V		5.25V	Per Package		48	65	mA
LM75452	5V		5.25V	Per Package		51	71	mA
LM75453	0V		5.25V	Per Package		50	68	mA
Output High								
LM75451	5V		5.25V	Per Package		7	11	mA
LM75452	0V		5.25V	Per Package		9	14	mA
LM75453	5V		5.25V	Per Package		9	11	mA
Input Diode Clamp Voltage	−12 mA		5V	T_A = 25°C			−1.5	V
The following apply for V_{CC} = 5V, T_A = 25°C								
Propagation Delay Times:								
Input to Output HIGH								
LM75451& LM75453			(Note 5)			11	25	ns
LM75452			(Note 5)			13	35	ns
Input to Output LOW								
LM75451& LM75453			(Note 5)			16	25	ns
LM75452			(Note 5)			19	35	ns
Output Risetime						4		ns
Output Falltime						10		ns

Note 1: All voltage values are with respect to ground terminal. Positive current is defined to be current into referenced pin.

Note 2: Maximum voltage to be applied to either output in the off state.

Note 3: The maximum junction temperature is 150°C. For operating at elevated temperatures, the package must be derated based on a thermal resistance of 110°C/W θ_{JA}.

Note 4: Test conditions in parentheses pertain to LM75452, other test conditions pertain to LM75451A and LM75453.

Note 5: Delays measured with 50Ω load to 10V, 15 pF total load capacitance; measured from 1.5V input to 50% of output.