Peripheral/Power Drivers

LM75450, LM350 dual peripheral driver

general description

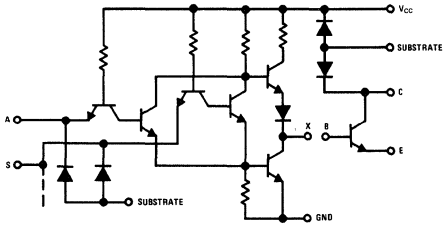
The LM75450 and LM350 are general purpose dual peripheral drivers. The design employs two standard TTL gates (NOR in LM350, NAND in LM75450) and two totally uncommitted, high-voltage, high-current NPN transistors. These transistors are capable of sinking 300 mA and will withstand 30V in the OFF state. Inputs are fully DTL/TTL compatible. The LM75450 meets or exceeds the specifications for both the SN75450 and the SN75450A and is a pin-for-pin replacement.

features

- High speed
- High sink current 300 mA
- Separate gates and transistors
- Both transistors can sink 300 mA simultaneously
- Transistors withstand 30V collector to emitter in the OFF state
- Input clamp diodes

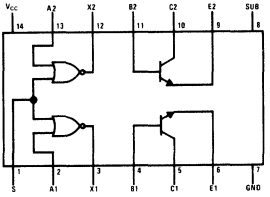
schematic and connection diagrams

LM350



Note 1/2 of unit shown

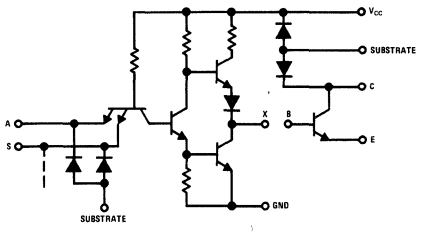
LM350



Positive Logic: $\overline{A+S} = X$

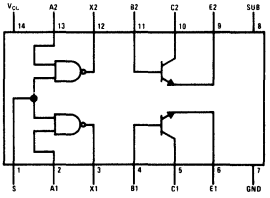
Order Number LM350N
See Package 22

LM75450



Note 1/2 of unit shown

LM75450



Positive Logic: $\overline{A \cdot S} = X$

Order Number LM75450N
See Package 22

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absolute maximum ratings (Note 1)

Supply Voltage V_{CC}	7V	Emitter-Base Voltage	5V
Input Voltage	5.5V	Continuous Collector Current	300 mA
V_{CC} -to-Substrate Voltage	35V	Continuous Total Power Dissipation (Note 3)	800 mW
Collector-to-Substrate Voltage	35V	Operating Free-Air Temperature Range	0°C to 70°C
Collector-Base Voltage	35V	Storage Temperature Range	−65°C to 150°C
Collector-Emitter Voltage (Note 2)	30V		

electrical characteristics

The following apply for $0°C \leq T_A \leq 70°C$, V_{CC} = 5V ±5%, for LM75450 and LM350 unless otherwise specified.

TTL GATES

PARAMETER	COMMENTS	LOGIC INPUT	LOGIC OUTPUT	SUPPLY VOLTAGE	MIN	TYP	MAX	UNIT
Logical "1" Input Voltage	Logic Output ≤ 0.4V	V_{IN}	16 mA	4.75V	2			V
Logical "0" Input Voltage	Logic Output ≥ 2.4V	V_{IN}	−400 μA	4.75V			0.8	V
Logical "1" Output Voltage		0.8V	−400 μA	4.75V	2.4			V
Logical "0" Output Voltage		2V	16 mA	4.75V			0.4	V
Logical "1" Input Current	A Input	2.4V		5.25V			40	μA
	S Input	2.4V		5.25V			80	μA
	A Input	5.5V		5.25V			1	mA
	S Input	5.5V		5.25V			2	mA
Logical "0" Input Current	A Input	0.4V		5.25V			−1.6	mA
	S Input	0.4V		5.25V			−3.2	mA
Output Short Circuit Current	Note 4	0V	0V	5.25V	−18		−55	mA
Supply Current								
Output Low								
LM350	Per Package	5V		5.25V		8	14	mA
LM75450	Per Package	5V		5.25V		6	11	mA
Output High								
LM350	Per Package	0V		5.25V		4	7	mA
LM75450	Per Package	0V		5.25V		2	4	mA
Input Diode Clamp Voltage	T_A = 25°C, V_{SUB} = 0V	−1.2 mA		5V			−1.5	V

TRANSISTORS

PARAMETER	COMMENTS	BASE	EMITTER	COLLECTOR	MIN	TYP	MAX	UNIT
BV_{CBO}		0V		100 μA	35			V
BV_{CER}	$R_{BE} \leq 500\Omega$		0V	100 μA	30			V
BV_{EBO}		0V	100 μA		5			V
V_{BE}		10 mA	0V	100 mA		0.85	1	V
		30 mA	0V	300 mA		1.05	1.2	V
$V_{CE(sat)}$		10 mA	0V	100 mA		0.25	0.4	V
		30 mA	0V	300 mA		0.5	0.7	V
h_{FE}	V_{CE} = 3V, T_A = 0°C, Note 5	I_B	0V	100 mA	20			
	V_{CE} = 3V, T_A = 0°C Note 5	I_B	0V	300 mA	25			
	V_{CE} = 3V, T_A = 25°C, Note 5	I_B	0V	100 mA	25			
	V_{CE} = 3V, T_A = 25°C, Note 5	I_B	0V	300 mA	30			

The following apply for V_{CC} = 5V, T_A = 25°C

TTL GATES (Note 6)

PARAMETER	TYP	MAX
t_{pd1}	10 ns	22 ns
t_{pd0}	5 ns	15 ns

TRANSISTORS

PARAMETER	TYP	MAX
t_d	6 ns	15 ns
t_r	12 ns	20 ns
t_s	6 ns	15 ns
t_f	8 ns	15 ns

GATES AND TRANSISTORS (Note 7)

PARAMETER	TYP
t_{pd1}	30 ns
t_{pd0}	30 ns
t_r	12 ns
t_f	15 ns

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

Note 2: With base-emitter resistance ≤ 500Ω.

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 150°C/W θ_{JA}.

Note 4: Only one output should be shorted at a time.

Note 5: These parameters are to be measured with less than 2% duty cycle.

Note 6: Delays measured with fanout of 10, 15 pF total load capacitance; measured from 1.5V input to 1.5V output.

Note 7: Delays measured with 50Ω load to 10V, 15 pF total load capacitance; measured from 1.5V input to 50% of output.