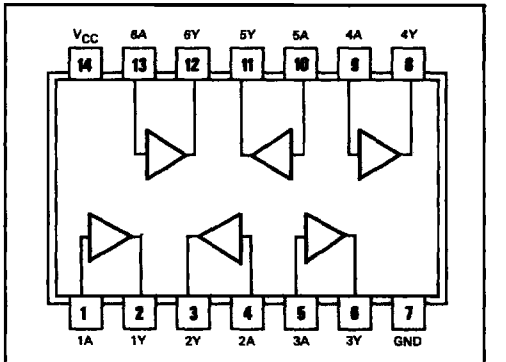
SN54LS63, SN74LS63
HEX CURRENT-SENSING INTERFACE GATES WITH TOTEM-POLE OUTPUTS

- Translates low-level input current to low-level output voltage
- Translates high-level input current to high-level output voltage
- Interfaces to PLA's or other logic elements that source current but do not sink current
- Operates from a single 5 V supply
- TTL compatible
- Low power dissipation . . .40 mW typical

SN54LS63 . . . J OR W PACKAGE
SN74LS63 . . . J OR N PACKAGE



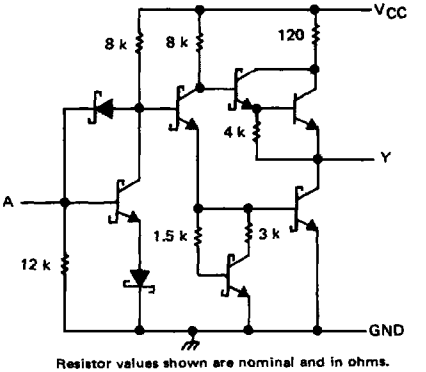
logic: Y = A

description

Each of these Schotty-clamped interface gates is able to discriminate between low-level ($\leq$ 50 μA) and high-level ($\geq$ 200 μA) input currents.

The outputs are fabricated with standard Low-Power Schottky design rules and are compatible with all TTL families.

schematic (each gate)



Resistor values shown are nominal and in ohms.

recommended operating conditions

	SN54LS63			SN74LS63			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V_{CC}	4.5	5	5.5	4.75	5	5.25	V
High-level output current, I_{OH}			−400			−400	μA
Low-level output current, I_{OL}			4			8	mA
Input current, I_I			1			1	mA
Operating free-air temperature, T_A	−55		125	0		70	°C

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electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

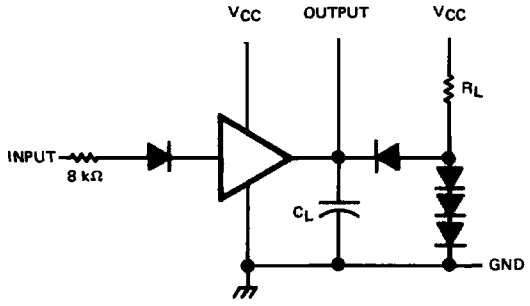
PARAMETER		TEST CONDITIONS†			SN54LS63			SN74LS63			UNIT
					MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_I	Input voltage	I_I = 50 μA,	V_{CC} = MIN		0.35	1.05	1.75	0.6	1.05	1.6	V
		I_I = 200 μA,	V_{CC} = MAX		0.6	1.30	2	0.85	1.30	1.8	
V_{OH}	High-level output voltage	V_{CC} = MAX	I_I = 200 μA	I_{OH} = −400 μA,	3.5	3.4		3.2	3.4		V
V_{OL}	Low-level output voltage	V_{CC} = MIN,	I_I = 50 μA	I_{OL} = 4 mA		0.25	0.4		0.25	0.4	V
				I_{OL} = 8 mA					0.35	0.5	
I_{OS}	Short-circuit output current§	V_{CC} = MAX	I_I = 600 μA		−20		−100	−20		−100	mA
I_{CC}	Supply current	V_{CC} = MAX,	See Note 1			8	16		8	16	mA

†For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
‡All typical values are at V_{CC} = 5 V, T_A = 25°C.
§Not more than one output should be shorted at a time, and duration of output short circuit should not exceed one second.
NOTE 1: I_{CC} is measured with inputs and outputs open.

switching characteristics, V_{CC} = 5 V, T_A = 25°C

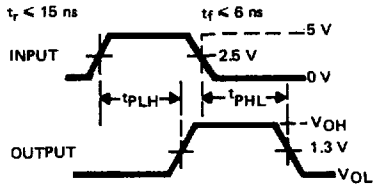
PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	Propogation delay time, low-to-high-level output	C_L = 15 pF,		27	45	ns
t_{PHL}	Propogation delay time, high-to-low-level output	R_L = 2 kΩ		15	25	ns

PARAMETER MEASUREMENT INFORMATION



NOTES: a. C_L includes probe and jig capacitance
b. All diodes are 1N916 or 1N3064

TEST CIRCUIT



VOLTAGE WAVEFORMS