

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	HEF4049BT / HEF4050BT
▶ Overseas	Part Number	HEF4049BT / HEF4050BT
▶ Equivalent	Part Number	HEF4049BT / HEF4050BT

EV is the abbreviation of name EVVO

HEF4049BT (4050BT) 6-reverse (same as) phase buffer

summary

The HEF4049BT and HEF4050BT six-buffers are single-chip wide voltage range CMOS integrated circuits, so they have the advantages of low power consumption, anti-interference, and strong use flexibility. The device has the characteristic of realizing the logic level conversion with only one power supply voltage V_{DD} . When these devices are used as a logic-level conversion, the input signal high-level V_{IH} can exceed the supply voltage V_{DD} . The device is used as a level conversion from CMOS to DTL and TTL, or as a CMOS current driver, and they can drive 2 DTL / TTL loads at $V_{DD} = 5.0V$.

1. Characteristics

Wide working voltage range: $3.0 \sim 15V$;

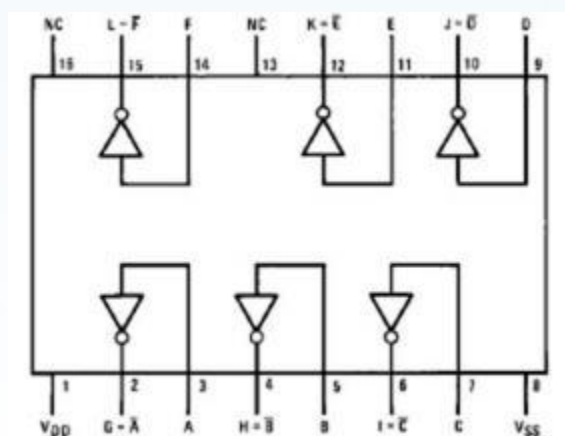
$V_{DD} = 5.0V$ drives 2 TTL loads within the operating temperature range;

Make high current / current capacity;

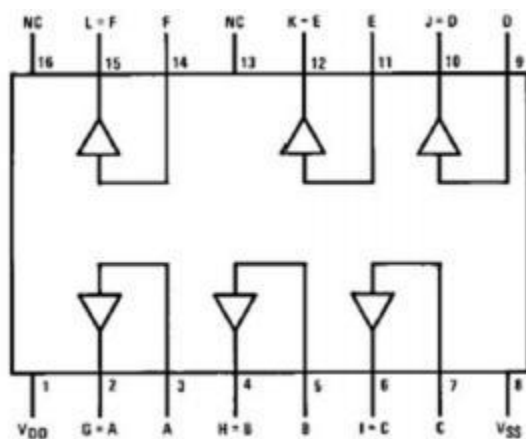
Make the dedicated input protection network allow an input voltage greater than V_{DD} .

2. Top view

Order the HEF4049BT

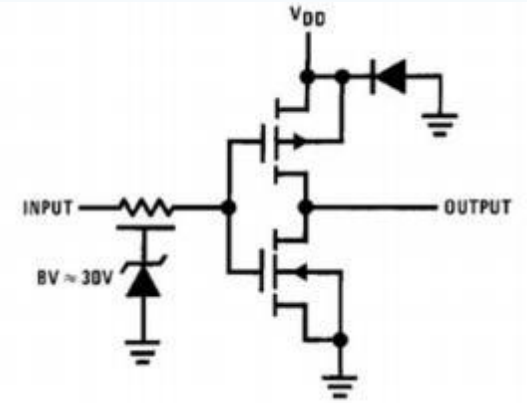


Order the HEF4050BT

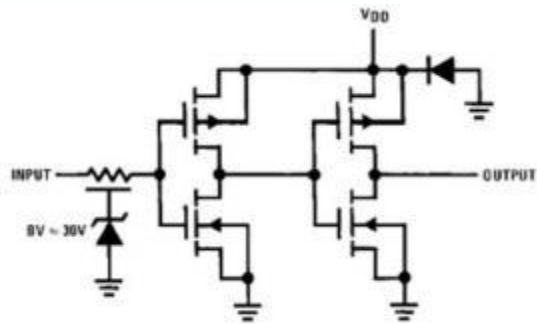


3. Schematic diagram

Order the HEF4049BT 1 / 6 unit



Order the HEF4050BT 1 / 6 unit



4. Limit parameters

parameter	symbol	condition	numeric value		unit
supply voltage	V DD		-0.5 ~ +18		V
input voltage	V IN		-0.5 ~ +18		V
Any output tube pin voltage	V OUT		-0.5 ~ VDD +0.5		V
Storage temperature range	t S		-65 ~ +150		°C
power dissipation	PD		DIP	700	mW
			S OP	500	
welding temperature	t L	10 Seconds	260		°C

5. Recommended working conditions

parameter	symbol	scope	unit
supply voltage	VDD	3~15	V
input voltage	VIN	0~15	V
Output voltage of any pin	VOUT	0~VDD	V
Operating temperature range is HEF4049 BT,HEF4050BT	T A	-10~70	°C

explanatory note:

1. "Absolute maximum value" refers to the near state, under which the safe use of the circuit cannot be guaranteed. The Recommended Working Scope and Electrical Parameters tables provide the actual operating status of the circuit.
2. Unless otherwise specified, $V_{SS} = 0V$

6. DC current parameters

(Note 3)

symbol	parameter	condition	-40°C		25°C			85°C		unit
			minim m	maxim um	minim um	typic al case	maximu m	minimu m	maximu m	
ID D	Static drive current	VDD =5V		4		0.03	4		30	μA
		VDD =10V		8		0.05	8		60	
		VDD =15V		16		0.07	16		120	
V OL	Low-level output voltage	VIH = VDD , VIL=0V , IO < 1μA								V
		VDD =5V		0.05		0	0.05		0.05	
		VDD =10V		0.05		0	0.05		0.05	
		VDD =15V		0.05		0	0.05		0.05	
V OH	high level output voltage	VIH = VDD , VIL=0V , IO < 1μA								V
		VDD =5V	4.95		4.95	5		4.95		
		VDD =10V	9.95		9.95	10		9.95		
		VDD =15V	14.95		14.95	15		14.95		
V IL	Low-level input voltage (HEF4050BT only)	IO < 1μ A								V
		VDD =5V , VO =0.5V		1.5		2.25	1.5		1.5	
		VDD =10V , VO =1.0V		3.		4.5	3.		3.	
		VDD =15V , VO =1.5V		04.		6.75	04.		04.	
V IL	Low-level input voltage (HEF4049BT only)	IO < 1μ A		0			0		0	V
		VDD =5V , VO =4.5V		1.0		1.5	1.0		1.0	
		VDD =10V , VO =9V		2.		2.	2.		2.	
		VDD =15V , VO =13.5V		03.		53.	03.		03.	
VI H	High-level input voltage (HEF4050BT only)	IO < 1μ A		0		5	0		0	V
		VDD =5V , VO =4.5V	3.5		3.5	2.75		3.5		
		VDD =10V , VO =9V	7.0		7.0	5.5		7.0		
		VDD =15V , VO =13.5V	11.0		11.0	8.25		11.0		
VI H	high level input voltage (HEF4049BT only)	IO < 1μ A								V
		VDD =5V , VO =0.5V	4.0		4.0	3.5		4.0		
		VDD =10V , VO =1.0V	8.0		8.0	7.5		8.0		
		VDD =15V , VO =1.5V	12.0		12.0	11.5		12.0		
I OL	Low Level Output current (Note 4)	VDD =5V , VO =0.4V	0.61		0.51	1		0.42		mA
		VDD =10V , VO =0.5V	1.5		1.3	2.8		1.1		
		VDD =15V , VO =1.5V	4		3.4	6.8		2.8		

IO H	High-level output current (Note 4)	VDD =5V,VO =4.6V	-0.61		-0.51	- 1		-0.42		mA
		VDD =10V,VO =9.5V	- 1.5		- 1.3	-2.6		- 1.1		
		VDD =15V,VO=13.5V	-4		-3.4	-6.8		-2.8		
IIN	input currenton	VDD =15V,VIN =0V		-0.30		-0.30	- 10 ⁻⁵		- 1.01	μA
		VDD =15V,VIN =15V		.3		.3	10 ⁻⁵		.0	

explanatory note:

3. Unless otherwise specified, V SS =0V
4. These are the limits of the output current. The continuous output current is rated at 12mA. When IOL and IO H exceed a test output, the output current is not allowed to exceed this value.

7. AC current parameters

(Note 5)

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$T_A = 25^\circ\text{C}$, $R_L = 200\text{K } \Omega$, $C_L = 50\text{pF}$, $t_r = t_f = 20\text{ns}$, unless any other note:

symbol	parameter	condition	least value	representative value	crest value	unit
t_{PHL}	Transmission delay time (high level to low level)	VDD = 5V		30	65	nS
		VDD = 10V		20	40	
		VDD = 15V		15	30	
t_{PLH}	Transmission delay time (low to high level)	VDD = 5V		45	85	nS
		VDD = 10V		25	45	
		VDD = 15V		20	35	
t_{THL}	Transition time (high level to low level)	VDD = 5V		30	60	nS
		VDD = 10V		20	40	
		VDD = 15V		15	30	
C IN	input capacitance	Enter any value		15	22.5	p F

Note: 5. The AC current parameters depend on the relevant DC test.

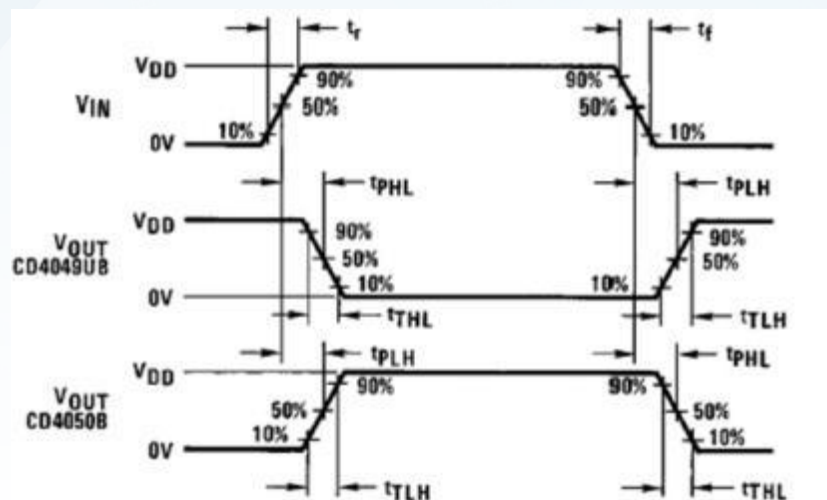
Order the HBT4050BT

$T_A = 25^\circ\text{C}$, $R_L = 200\text{K } \Omega$, $C_L = 50\text{pF}$, $t_r = t_f = 20\text{ns}$, unless any other note:

symbol	parameter	condition	least value	representative value	crest value	unit
t_{PHL}	Transmission delay time (high level to low level)	VDD = 5V		60	110	nS
		VDD = 10V		25	55	
		VDD = 15V		20	30	
t_{PLH}	Transmission delay time (low to high level)	VDD = 5V		60	120	nS
		VDD = 10V		30	55	
		VDD = 15V		25	45	
t_{THL}	Transition time (high level to low level)	VDD = 5V		30	60	nS
		VDD = 10V		20	40	
		VDD = 15V		15	30	
C IN	input capacitance	Enter any value		5	7.5	p F

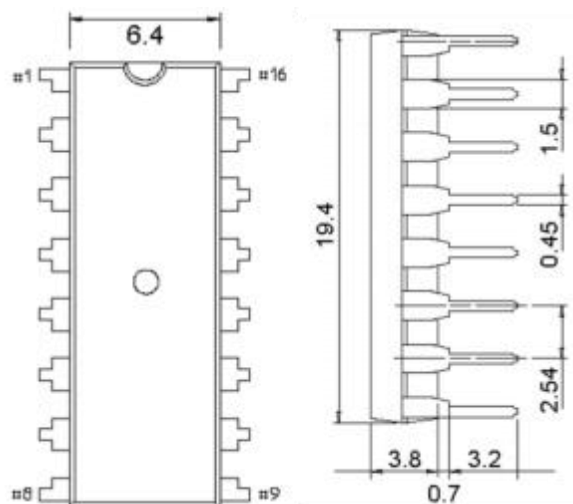
Note: 6. The AC current parameters depend on the relevant DC test.

8. The Waveform chart

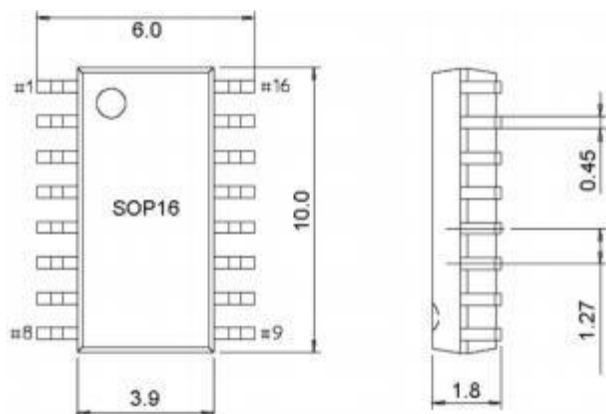


9. Package size diagram

Make the DIP 16 package dimension diagram



Make the SOP 16 package dimension diagram



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