

HEF4073BT-HX High-Voltage Types(20-Volt Rating) Triple 3-Input AND Gate

Description

HEF4073BT-HX is a high-voltage CMOS triple 3-input AND gate, rated up to 20 V. It delivers medium-speed operation, characterized by propagation delay t_{PLH} , and undergoes 100% quiescent current testing at 20 V to ensure stable, low-power performance. Use the Sop-14 package.

Features

- ★ Medium-Speed Operation- t_{PLH}
 $t_{PHL}=60\text{ns}$ (typ) at $V_{DD}=10\text{V}$
- ★ 100% tested for quiescent current at 20V
- ★ Maximum input current of $1\mu\text{A}$ at 18V over full package-temperature range; 100nA at 18V and 25°C
- ★ Noise margin (full package -temperature range)=
1V at $V_{DD}=5\text{V}$
2V at $V_{DD}=10\text{V}$
2.5V at $V_{DD}=15\text{V}$
- ★ Standardized, symmetrical output characteristics
- ★ 5-V, 10-V, and 15-V parametric ratings
- ★ Meets all requirements of JEDEC Tentative Standard No. 13B, "Standard Specifications for Description of 'B' Series CMOS Devices"

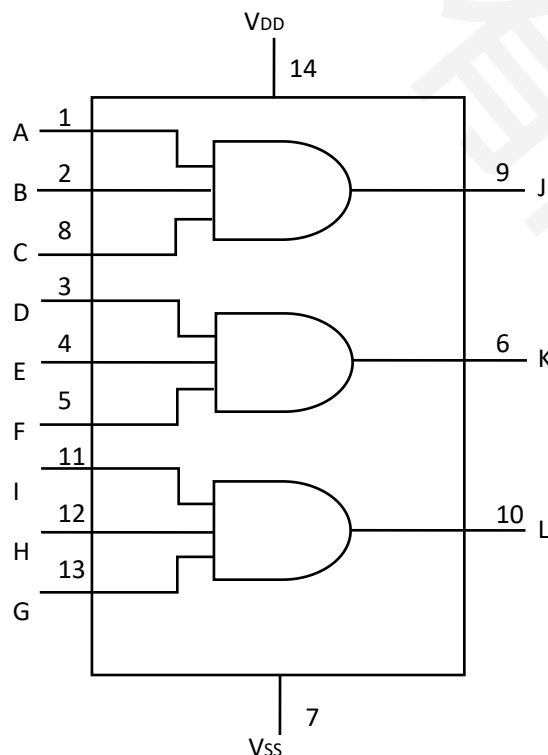
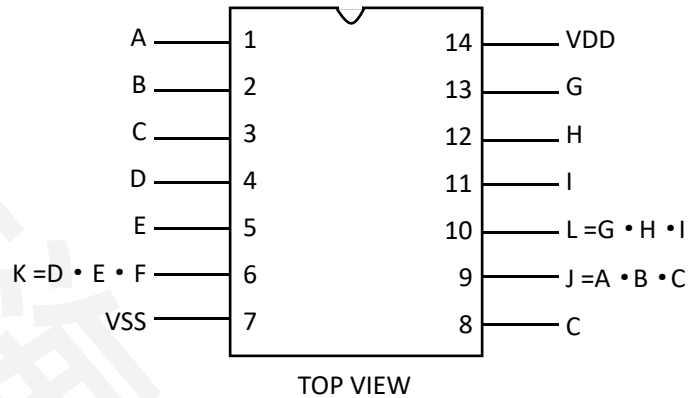


Fig. 1 HEF4073BT-HX FUNCTIONAL DIAGRAM



Maximum Ratings Absolute-Maximum Values

Dc Supply-Voltage Range,(V _{DD})	
Voltages referenced to V _{SS} Terminal	-0.5V to +20V
INPUT VOLTAGE RANGE,ALL INPUTS	-0.5V to V _{DD} +0.5V
DC INPUT CURRENT,ANY ONE INPUT	± 10mA
POWER DISSIPATION PER PACKAGE(P _D)	
For T _A =-55℃ to + 100℃	500mW
For T _A =+100℃ to + 125℃	Derate Linearity at 12mW/℃ to 200mW
DEVIC DISSIPATION PER OUTPUT TRANSISTOR	
FOR T _A =FULL PACKAGE-TEMPERATURE RANGE(All Package Types)	100mW
OPERATING-TEMPERATURE RANGE (T _A)	-55℃ to +125℃
STORAFGE TEMPERATURE RANGE(T _{stg})	-65℃ to +150℃
LEAD TEMPERATURE (DURING SOLDERING)	
At distance 1/16 ± 1/32 inch(1.59 ± 0.79mm)from case for 10s max	± 265℃

Recommended Operating Conditions

For maximum reliability,nominal operating conditions should be selected so that operation is always within the following ranges:

Characteristic	Limits		Units
	Min	Max	
Supply-Volatage Rang(For T _A =Full Package Temperature Range)	3	18	V

DYNAMIC ELECTRICAL CHARACTERISTICS at T_A=25℃,Input t_r,t_f=20ns,and C_L=50pF,RL=200kΩ

Characteristic	Test Conditions		All Types Limits		Units
		V _{DD} Volts	Min	Max	
Propagation Delay time,t _{PHL} ,t _{PLH}		5	125	250	ns
		10	60	120	
		15	45	90	
Transition Delay Time,t _{PHL} ,t _{PLH}		5	100	200	Ns
		10	50	100	
		15	40	80	
Input Capacitance,C _{IN}	Any Input	-	5	7.5	pF

Static electrical characteristics

Character Istic	Conditions			LIMITS AT INDICATED TEMPERATURES(℃)							Units
					+25						
	V _O (V)	V _{IN} (V)	V _{DD} (V)	-55	-40	+85	+125	Min	Typ	Max	
Quiescent Device Current,I _{DD} Max	-	0.5	5	0.25	0.25	7.5	7.5	-	0.01	0.25	
	-	0.10	10	0.5	0.5	15	15	-	0.01	0.5	
	-	0.15	15	1	1	30	30	-	0.01	1	
	-	0.20	20	5	5	150	150	-	0.02	5	
Output Low (Sink) Current I _{OL} Min	0.4	0.5	5	0.64	0.61	0.42	0.36	0.51	1	-	mA
	0.5	0.10	10	1.6	1.5	1.1	0.9	1.3	2.6	-	
	1.5	0.15	15	4.2	4	2.8	2.4	34	6.8	-	
Output High(Source)Current,I _{OH} Min	4.6	0.5	5	-0.64	-0.61	-0.42	-0.36	-0.51	-1	-	
	2.5	0.5	5	-2	-1.8	-1.3	-1.15	-1.6	-3.2	-	
	9.5	0.10	10	-1.6	-1.5	-1.1	-0.9	-1.3	-2.6	-	
	13.5	0.15	15	-4.2	-4	-2.8	-2.4	-3.4	-6.8	-	
Output Voltage:Low-Level,V _{OL} Max	-	0.5	5	0.05				-	0	0.05	V
	-	0.10	10	0.05				-	0	0.05	
	-	0.15	15	0.05				-	0	0.05	
Output Voltage:High-Level,V _{OH} Min	-	0.5	5	4.95				4.95	5	-	
	-	0.10	10	9.95				9.95	10	-	
	-	0.15	15	14.95				14.95	15	-	
Input Low Voltage V _{IL} Max	0.5	-	5	1.5				-	-	1.5	V
	1	-	10	3				-	-	3	
	1.5	-	15	4				-	-	4	
Input High Voltage,V _{IH} Min	0.5,4.5	-	5	3.5				3.5	-	-	
	1,9	-	10	7				7	-	-	
	1.5,13.5	-	15	11				11	-	-	
Input Current I _{IN} Max		0.18	18	±0.1	±0.1	±1	±1	-	±10 ⁻⁵	±0.1	

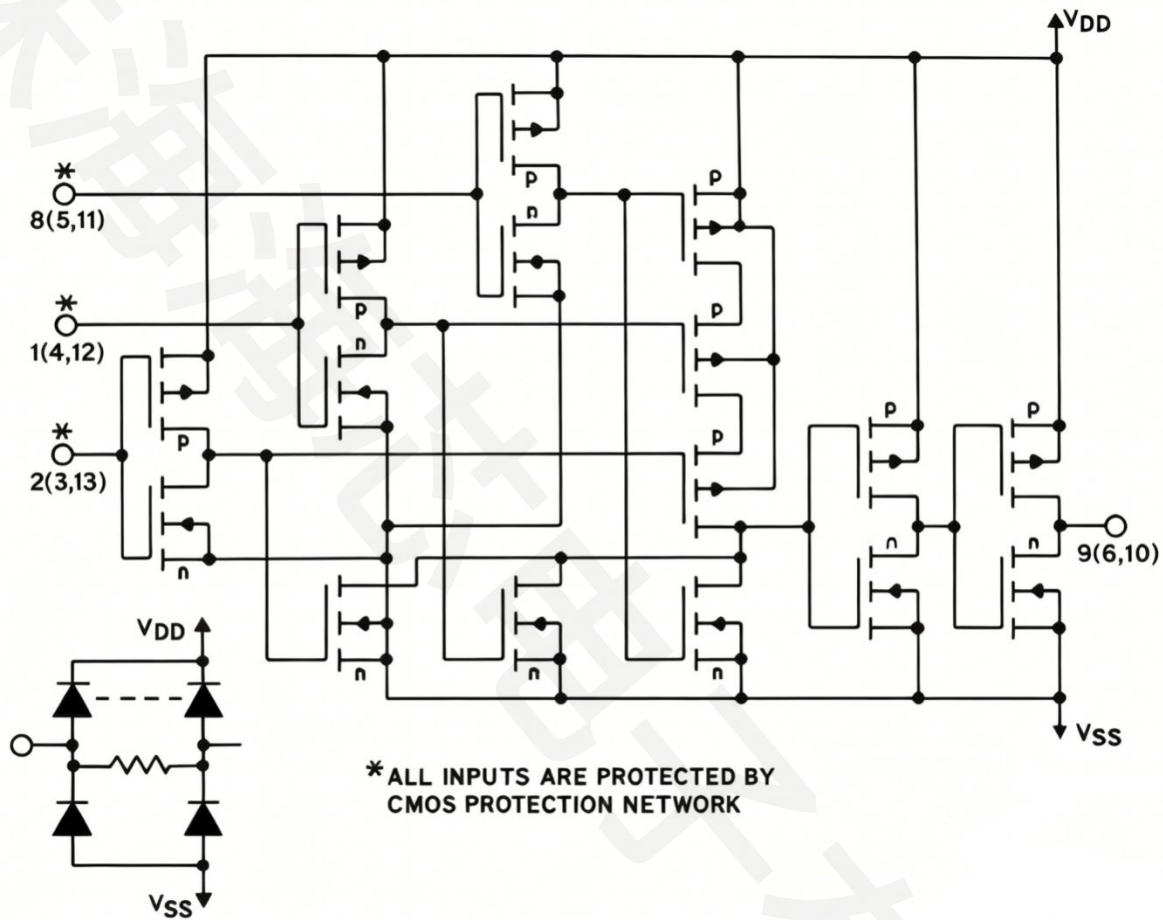


Fig. 2 Schematic diagram for HEF4073BT-HX(1 of 3 identical gates)

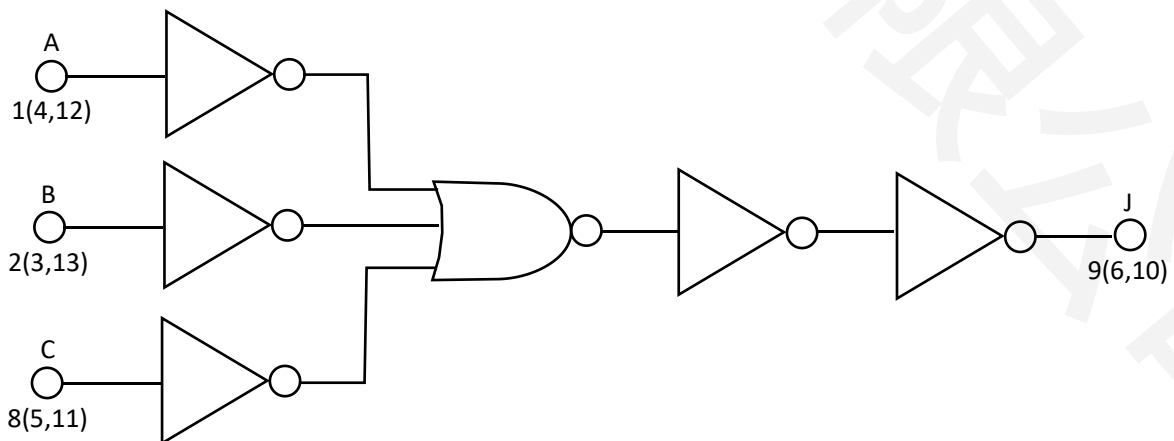
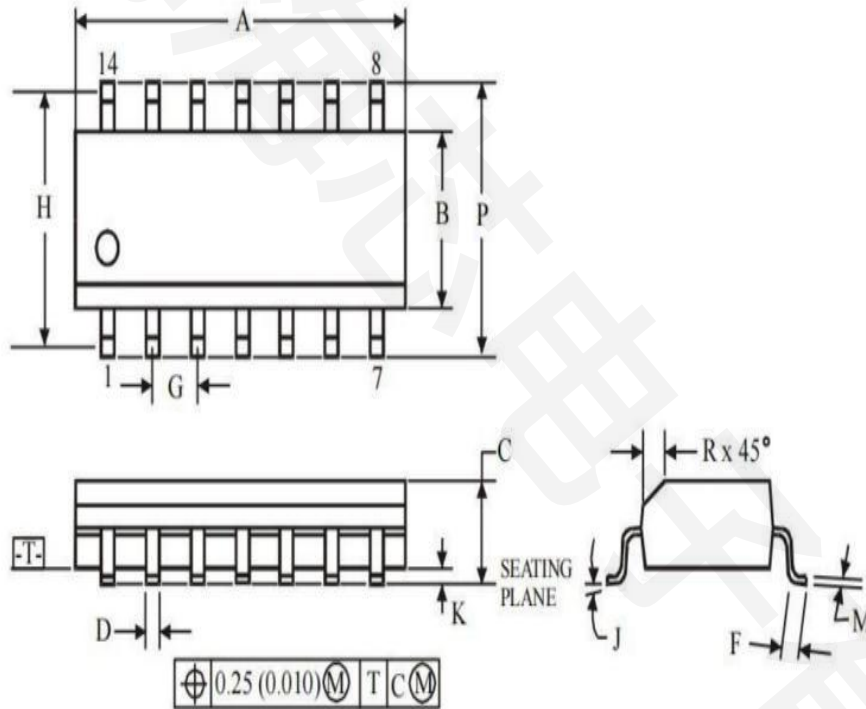


Fig. 3 Logic diagram for HEF4073BT-HX (1 of 3 identical gates)

Packaging

SOP14 (Package Outline Dimensions)



NOTES:

1. Dimensions A and B do not include mold flash or protrusion.
2. Maximum mold flash or protrusion 0.15 mm (0.006) per side for A; for B - 0.25 mm (0.010) per side.