

HX4011-S four and not gate

General situation

HX4011-S is a monolithic complementary CMOS integrated circuit composed of enhanced N-channel and P-channel. They have equal source current and current absorption capabilities and comply with the B-Series output driver standard. The device has an output buffer that improves transmission characteristics by providing very high gain.

To prevent electrostatic breakdown, all inputs have protective diodes for VDD and VSS

Main feature

Low power consumption

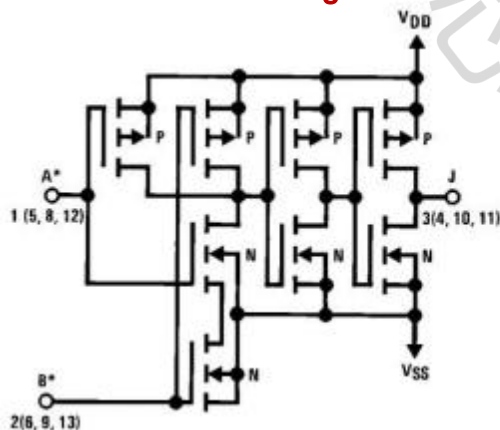
Compatible TTL

Symmetrical output characteristic

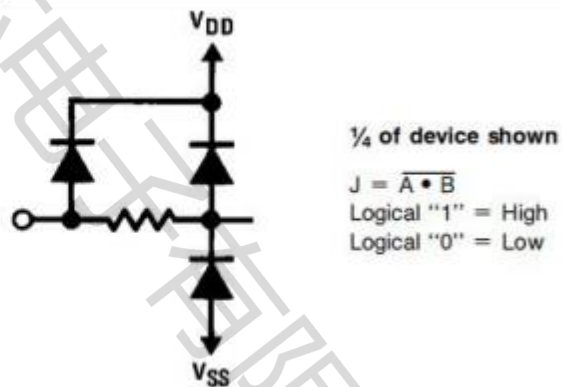
Low input leakage

Can drive 2 74L or 1 74LS device

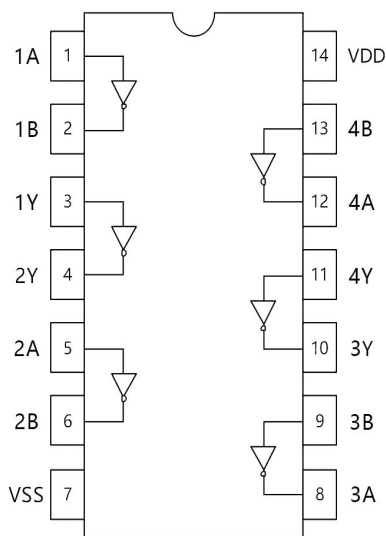
Internal block diagram



Protection circuit



Pin specification



Pin	Symbol	Feature	Pin	Symbol	Feature
1	1A	Input1A	8	3A	Input3A
2	1B	Input1B	9	3B	Input3B
3	1Y	Input1Y	10	3Y	Exportatio n3Y
4	2Y	Input2Y	11	4Y	Exportatio n4Y
5	2A	Input2A	12	4A	Input4A
6	2B	Input2B	13	4B	Input4B
7	VSS	Ground	14	VDD	Power source

Limiting parameter

Symbol	Description	Parameter value	Unit
VDD	Supply voltage	-0.5~15	V
VIN	Input voltage	-0.5~VDD	V
Toper	Operating temperature	-20~85	°C
TS	Storage temperature	-65~150	°C
TJ	Welding temperature (10s)	260	°C

Recommended working conditions

Symbol	Description	Parameter value	Unit
VDD	Supply voltage	3~13	V
VIN	Input voltage	0~VDD	V

Dc electrical characteristic (TA=25°C)

Symbol	Argument	Test condition	Min	Typ	Max	Unit
IDD	Static current	VDD=5V, VIN=VDD or VSS			0.25	uA
		VDD=10V, VIN=VDD or VSS			0.5	uA
		VDD=15V, VIN=VDD or VSS			1	uA
VOL	Output low	VDD=5V, $ I_o < 1\mu A$		0	0.05	V
		VDD=10V, $ I_o < 1\mu A$		0	0.05	V
		VDD=15V, $ I_o < 1\mu A$		0	0.05	V
		VDD=5V, $ I_o < 1\mu A$	4.95	5		V

VOH	Output high level	VDD=10V, $ I_o < 1\mu A$	9.95	10		V
		VDD=15V, $ I_o < 1\mu A$	14.95	15		V
VIL	Input low level	VDD=5V, $V_o=4.5V$			1.5	V
		VDD=10V, $V_o=9V$			3	V
		VDD=15V, $V_o=13.5V$			4	V
VIH	Input high level	VDD=5V, $V_o=0.5V$	3.5			V
		VDD=10V, $V_o=1V$	7			V
		VDD=15V, $V_o=1.5V$	11			V
IOL	Output low level current	VDD=5V, $V_o=0.4V$		0.88		mA
		VDD=10V, $V_o=0.5V$		2.25		mA
		VDD=15V, $V_o=1.5V$		8.8		mA
IOH	Output high level current	VDD=5V, $V_o=4.6V$		-0.88		mA
		VDD=10V, $V_o=9.5V$		-2.25		mA
		VDD=15V, $V_o=13.5V$		-8.8		mA
IIN	Input current	VDD=15V, $V_{IN}=0V$		-10^{-5}	-0.1	μA
		VDD=15V, $V_{IN}=15V$		10^{-5}	0.1	μA

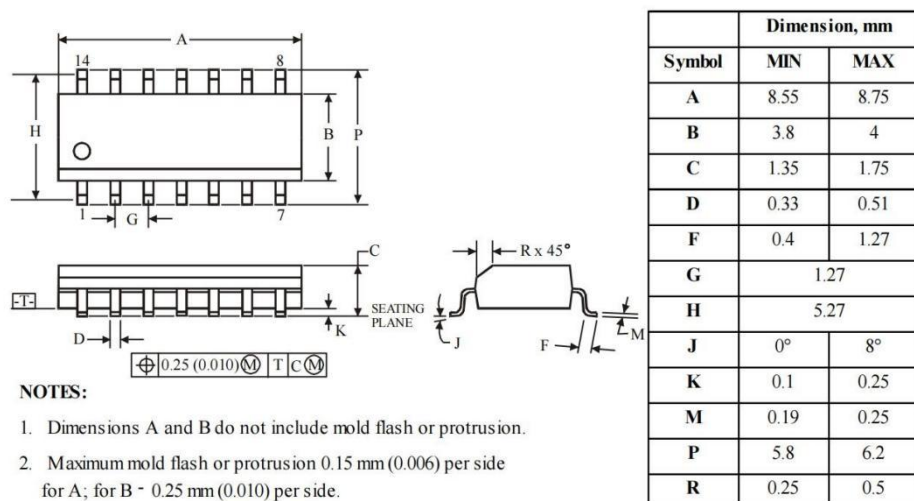
Ac electrical characteristic (TA=25°C, CL=50pF, RL=200K)

Symbol	Argument	Test condition	Typ	Max	Unit
TPHL	Transmission delay - high to low	VDD=5V	120	250	ns
		VDD=10V	50	100	ns
		VDD=15V	35	70	ns
TPLH	Transmission delay - low to high	VDD=5V	85	250	ns
		VDD=10V	40	100	ns
		VDD=15V	30	70	ns
TTHL	Output conversion time	VDD=5V	90	200	ns
		VDD=10V	50	100	ns
		VDD=15V	40	80	ns

TTLH					
C_{IN}	Input capacitance	Arbitrary input	5	7.5	pF
C_{PD}	Power capacitance	Any way	14		pF

Encapsulation

SOP14 (Package Outline Dimensions)



Part Number	Package Type	Package	Quantity
HX4011-S	SOP-14	Taping	2500