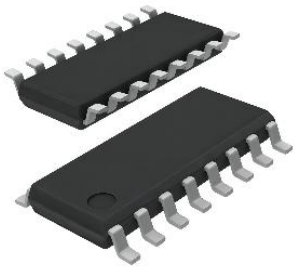
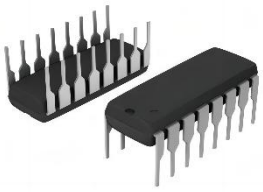
HX4053-S 3 2 Optional 1 Analog switch

The HX4053-S series analog switches are multi-modulated/selective analog switches controlled by digital signals, with low on-resistance and very low cut-off leakage current. The digital signal with amplitude of 4.5V ~ 18V can control the analog signal with peak-to-peak value of 18V. For example, if VDD=+5V, Vss=0V, VEE=-13.5V, then the digital signal of 0 ~ 5V can control the analog signal of -13. 5 ~ 4.5V, and these switching circuits have poles in the entire VDD-VSS and VDD-VEE power supply range
Low static power consumption.
The HX4053-S is a three-group 2-select 1 bidirectional analog switch, equivalent to three groups of single-pole double-throw switches. It has three independent sets of binary digital control inputs A, B, C and INH suppression inputs, and the binary digital control signal can set either of the two analog channels to the on-state. INH input "1" power to set all channels of the 3 groups of 2 optional 1 analog switches to Off state, input "0" power to set all channels of the 3 groups of 2 optional 1 analog switches to on state.



SOP-16



DIP-16

Main feature

Very wide digital control and transmission of analog signal voltage Range: digital 4.5V ~ 18V, analog 18V

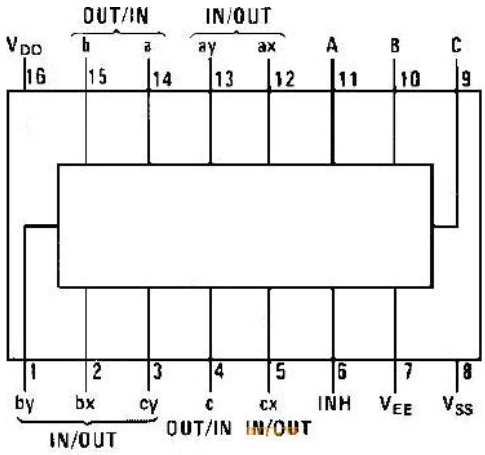
Low on-resistance: 80Ω (VDD-VEE=15V, signal greater than 15Vpp)

Very low static voltage consumption
High off resistance

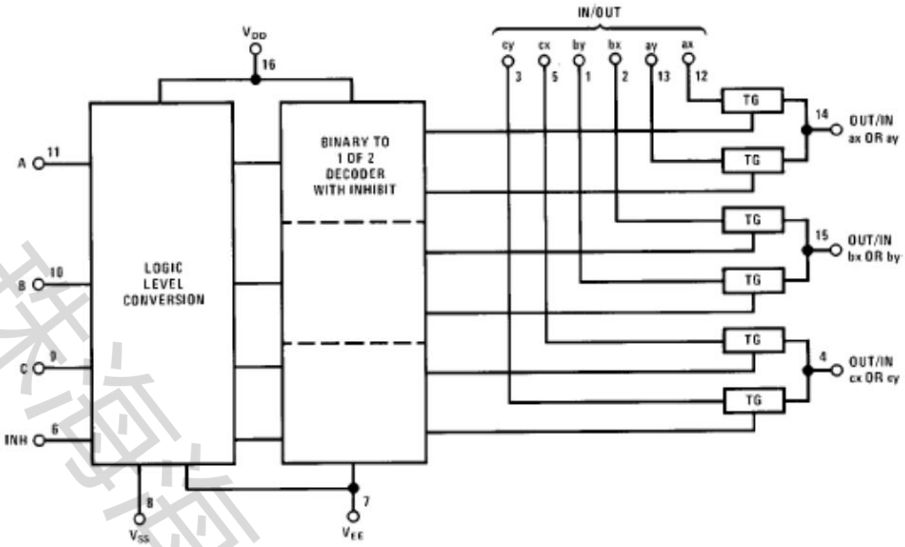
Digital address signal 4.5V ~ 18V logic level conversion to switch analog signal 18Vpp

Built-in binary address decoder

Leg specification



Logic diagram



Truth table

Input state		Output situation
INH	A or B or C	
0	0	ax or bx or cx
0	1	ay or by or cy
1	×	None

Limiting parameter

Symbol	Description		Limiting value	Unit
VDD	Dc supply voltage		-0.5～+18	V
VIN	Input voltage		-0.5～VDD+0.5	V
Ta	Operating temperature range		-20~85	℃
Ptot	Power dissipation	DIP	700	mW
		SOP	500	mW
TL	Welding temperature		260	℃

Recommended working environment

Symbol	Description	Limiting value	Unit
VDD	Dc supply voltage	+5～+15	V
VIN	Input voltage	0～VDD	V

Direct current parameters（Tamp=25℃,Special cases are explained separately）

Symbol	Item	Conditions		+25℃			Unit
				Min	Typ	Max	
IDD	Static current	VDD=5V		—	—	5	uA
		VDD=10V		—	—	10	
		VDD=15V		—	—	20	
Signal input VIS and output VOS							
RON	on-resistance（Peak value VEE ≦VIS≦VDD）	RL=10KΩ（Any channel）	VDD=2.5V VEE=-2.5V or VDD=5V VEE=0V	—	270	1050	Ω
			VDD=5V VEE=-5V or VDD=10V VEE=0V	—	120	400	
			VDD=7.5V VEE=-7.5V or VDD=15V VEE=0V	—	80	240	
			VDD=2.5V VEE=-2.5V or VDD=5V VEE=0V	—	10	—	

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△RON	The on-resistance gain between either channel	RL=10KΩ）（Any channel）	VDD=5V VEE=-5V or VDD=10V VEE=0V	—	10	—	Ω
			VDD=7.5V VEE=-7.5V or VDD=15V VEE=0V	—	5	—	
	Off channel Leakage current, any channel is in the off state	VDD=7.5V, VEE=-7.5V O/I=±7.5V, I/O=0V		—	±0.01	±50	nA
	Off channel Leakage current. All channels are in Off state	INH=7.5V		—	±0.08	±200	nA
Control inputs A, B, C and INH							
VIL	Low-level input voltage	VEE=VSS RL=1KΩ All channels are off	VDD=5V	—	—	1.5	V
			VDD=10V	—	—	3.0	
			VDD=15V	—	—	4.0	
VIH	High level input voltage	VDD=5V		3.5	—	—	V
		VDD=10V		7	—	—	
		VDD=15V		11	—	—	
IIN	Input current	VDD=15V VEE=0V	VIN=0V	—	-10-5	-0.1	uA
			VIN=15V	—	10-5	0.1	

Alternating current parameter

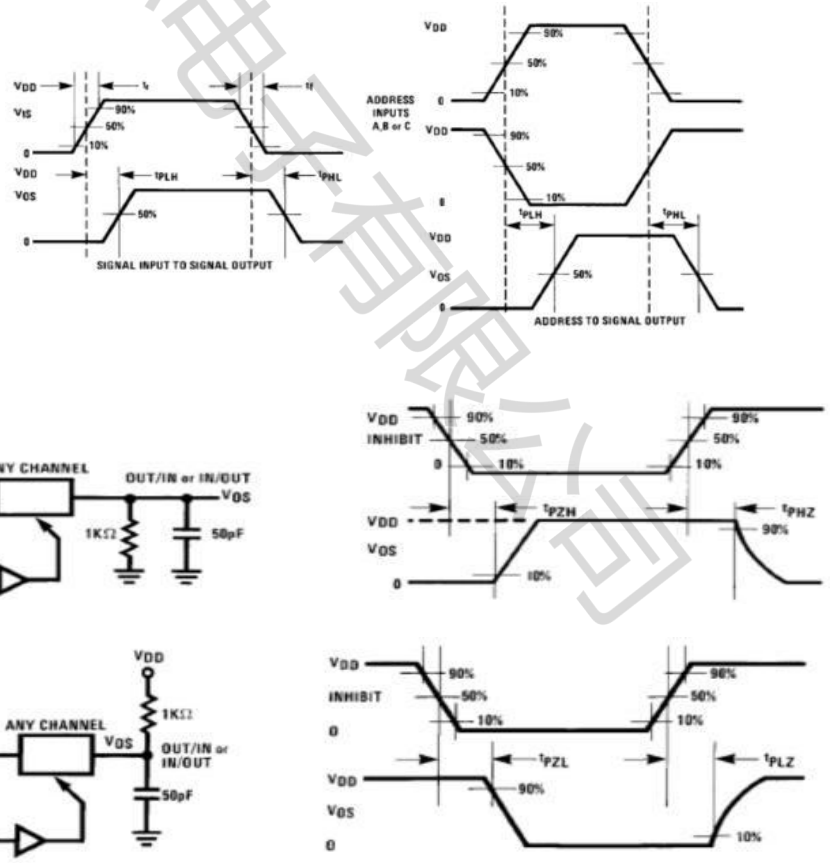
Symbol	Item	Conditions	VDD	Min	Typ	Max	Unit
		VEE=VSS=0V	5V	—	600	1200	

tPZHtPZL	Transmission delay time from disable to signal output (open channel)	RL=1KΩ CL=50pF	10V	—	225	450	ns
			15V		160	320	
tPHZ tPLZ	Transmission delay time from disable to signal output (closed channel)	VEE=VSS=0V RL=1KΩ CL=50pF	5V	—	210	420	ns
			10V	—	100	200	
			15V	—	75	150	
Cin	Input capacitance	Control input	—	—	5	7.5	pF
		Signal input	—	—	10	15	
Cout	Output capacitance (total input/output) VEE=VSS=0V	—	10V	—	30	—	pF
CIOS	Bypass capacitance	—	10V	—	0.2	—	pF
CPO	Power dissipation capacitance	—	10V	—	110	—	pF
Signal input VIS and output VOS							
	Degree of sine wave distortion	RL=10KΩ fIS=1KHz VIS=5Vp-p VEE=VSI=0V	10V	—	0.04	—	%
Symbol	Item	Conditions	VDD	Min	Typ	Max	Unit
	Sine wave frequency response	RL=1KΩ VEE=0V VIS=5Vp-p 20log10VOS/VIS=-40dB	10V	—	40	—	MHz
	Off state crosstalk frequency	RL=1KΩ VEE=0V VIS=5Vp-p 20log10VOS/VIS=-40dB	10V	—	10	—	MHz
	Signal crosstalk frequency	RL=1KΩ VEE=0V VIS=5Vp-p 20log10VOS/VIS=-40dB	10V	—	3	—	MHz
tPHL tPLH	The transmission delay of a signal from input to output	VEE=VSS=0V CL=50pF	5V	—	25	55	ns
			10V	—	15	35	
			15V	—	10	25	
Control inputs A, B, C and INH							

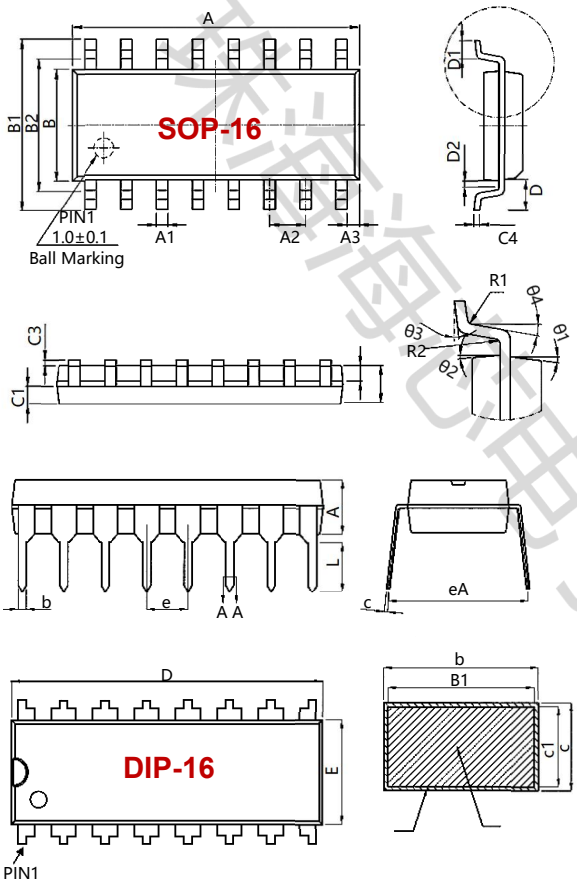
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	Control input to signal response	VEE=VSS=0V RL=10KΩ Input square wave amplitudes at the ends of all channels 10V	10V	—	65	—	mV
tPHL tPLH	The transmission delay time from the access to the signal output channel is on or off	VEE=VSS=0V CL=50pF	5V	—	500	1000	ns
			10V	—	160	350	
			15V	—	120	240	

Oscillogram



Encapsulation information



Mark \ Size	Min(mm)	Max(mm)	Mark \ Size	Min(mm)	Max(mm)
A	9.80	10.00	C4	0.203	0.233
Al	0.356	0.456	D	1.05TYP	
A2	1.27TYP		D1	0.40	0.70
A3	0.302TYP		D2	0.15	0.25
B	3.85	3.95	R1	0.20TYP	
B1	5.84	6.24	R2	0.20TYP	
B2	5.00TYP		θ1	8°~ 12° TYP4	
C	1.40	1.60	θ2	8°~ 12° TYP4	
Cl	0.61	0.71	θ3	0°~ 8°	
Cp	0.54	0.64	θ4	4°~12°	
C3	0.05	0.25			

Symbol	millimeter		
	Min	Nom	Max
A	3.20	3.30	3.40
b	0.44		0.53
bl	0.43	0.46	0.49
C	0.25		0.30
cl	0.24	0.25	0.26
D	18.95	19.05	19.15
E	6.25	6.35	6.45
e	2.54BSC		
eA	8.30	8.80	9.30
L	3.00		

Part Number	Package Type	Package	quantity
HX4053-S	SOP-16	Taping	2500

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