Eight alternative to one analog switch
CD 4051

summary:

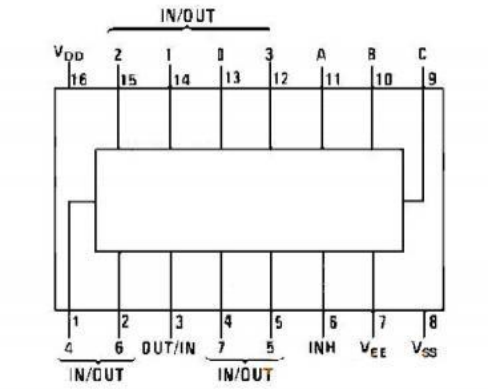
CD 405X Series analog switches use digital signals to control multiplex modulation / selection analog switches, with low on resistance and very low cut-off leakage current. Digital signal with amplitude of 4.5 V to 18V can control the analog signal with peak value of 18 V. For example, select VDD = +5V, Vss=0V, VEE=-13.5V, the digital signal of 0 ~ 5V can control the analog signal of-13.5~4.5V, these switch power, and the road has extremely low static power consumption in the entire power range of VDD-VSS and VDD-VEE.

CD 4051 For A eight choose one analog switch, A, B, C three binary control input and INH input, the three binary signals can be any 8 analog channel for conduction state, INH input input "1" peacetime analog switch all channels to off state, input "0" electricity at ordinary times will analog switch all channels to conduction state.

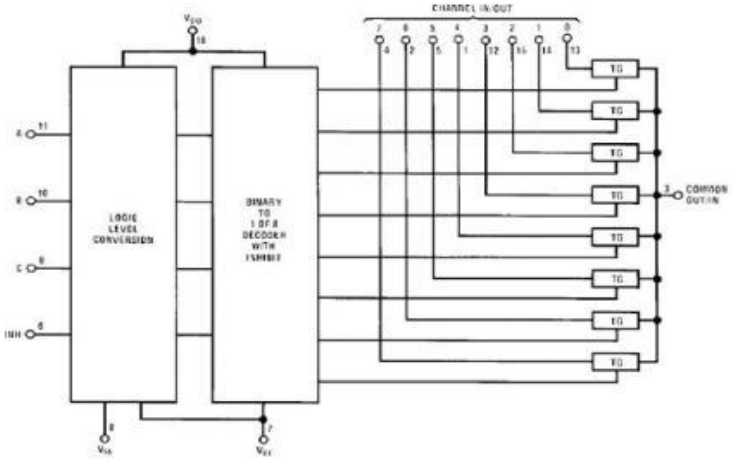
main features:

- Very wide digital control and transmission of analog signal voltage range: digital 4.5V~18V, analog 18V;
- Low-on resistance: 80 Ω (VDD-VEE = 15 V, signal greater than 15 Vpp);
- Very low static voltage and power consumption;
- High-off-state resistance;
- Digital address signal 4.5V~18V logic level conversion to switch the analog signal 18 Vpp;
- Built-in binary address decoder.

Stool description:



logic diagram:



truth table:

input mode				Output situation
I NH	C	B	A	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	×	×	×	None

absolute rating:

symbol	description		extreme	unit
VD D	DC current, and the source voltage		-0.5~+18	V
VI N	input voltage		-0.5~VDD +0.5	V
Tst g	Package to the operating temperature range		0—70	℃
Pt ot	power dissipation	DI P	700	m W
		SO P	500	m W
T L	welding temperature		260	℃

Recommended working conditions:

symbol	description	extreme	unit
VD D	DC current, and the source voltage	+5~+15	V
VI N	input voltage	0~VDD	V

DC parameters:

symbol	project	condition		+25℃ least value	+25℃ representative value	+25℃ crest value	unit
I DD	quiescent current	VDD=5V		_	_	5	uA
		VDD=10V		_	_	10	
		VDD=15V		_	_	20	
Signal input VIS, and output VOS							
R ON	Oon resistance (peak VEEVIS V DD)	RL =10KΩ (Either channel)	VDD =2.5V VEE =-2.5V Or VDD = 5 V VEE=0V	_	270	1050	Ω
			VDD=5V VEE = -5V or VDD=10V VEE=0V	_	120	400	
			VDD =7.5V VEE =-7.5V Or VDD = 15 V VEE=0V	_	80	240	
			VDD =2.5V VEE =-2.5V Or VDD = 5 V VEE=0V	_	10	_	

△RON	Between any two channels The conduction resistance increases benefit	RL =10KΩ (Either channel)	VDD=5V VEE = -5V or VDD=10V VEE=0V	–	10	–	Ω
			VDD =7.5V VEE =-7.5V Or VDD = 15 V VEE=0V	–	5	–	
	Close channel leakage Flow, either channel In the state	VDD =7.5V , VEE =-7.5V O /I =±7.5V , I/O=0V		–	±0.01	±50	n A
	Close channel leakage Flow, at all of the channels In the state	INH =7.5V		–	±0.08	±200	n A
Control inputs A, B, C, and INH							
VI L	Low-level input voltage	VEE=VSS RL =1KΩ All channels are OFF state	VDD=5V	–	–	1.5	V
			VDD=10V	–	–	3.0	
			VDD=15V	–	–	4.0	
VI H	High-level input voltage	VDD=5V		3.5	–	–	V
		VDD=10V		7	–	–	
		VDD=15V		11	–	–	
I IN	input currenton	VDD=15V VEE=0V	VIN=0V	–	-10-5	-0.1	uA
			VIN=15V	–	10-5	0.1	

AC current parameters:

symbol	project	condition	VDD	least value	representative value	crest value	unit
t PZH t PZL	Transmission delay time from forbidden to signal output (open channel)	VEE =VSS =0V RL =1KΩ CL =50pF	5V	–	600	1200	ns
			10V	–	225	450	
			15V	–	160	320	
t PHZ t PLZ	Transmission delay time from forbidden to signal output (closed channel)	VEE =VSS =0V RL =1KΩ CL =50pF	5V	–	210	420	ns
			10V	–	100	200	
			15V	–	75	150	
C in	input capacitance	control input	–	–	5	7.5	pF
		signal input	–	–	10	15	
Cout	Output capacitance (total input / output) VEE = VSS = 0 V	–	10V	–	30	–	pF
CIOS	shunt capacity	–	10V	–	0.2	–	pF
C PO	Power supply dissipation capacitance	–	10V	–	110	–	pF
Signal input VIS, and output VOS							
	Sine-wave distortion degree	RL =10KΩ fIS=1KHz VIS =5Vp-p VEE=VSI=0V	10V	–	0.04	–	%

	Sine-wave frequency response	RL =1KΩ VEE =0V VIS=5Vp-p 20log 10VOS /VIS=-40dB	10V	–	40	–	MHz
	Cross-state crosstalk frequency	RL =1KΩ VEE =0V VIS=5Vp-p 20log 10VOS /VIS=-40dB	10V	–	10	–	MHz
	Signal crosstalk frequency	RL =1KΩ VEE =0V VIS=5Vp-p 20log 10VOS /VIS=-40dB	10V	–	3	–	MHz
t PHL t PLH	The signal is input to the output	VEE =VSS =0V CL =50pF	5V	–	25	55	n s
			10V	–	15	35	
			15V	–	10	25	
Control inputs A, B, C, and INH							
	Control the input to the signal response	VEE =VSS =0V RL=10KΩ Input at the ends of all channels Square-wave amplitude of 10V	10V	–	65	–	m V
t PHL t PLH	propagation delay time From addressing to the signal output channel Is on, or off	VEE =VSS =0V CL =50pF	5V	–	500	1000	n s
			10V	–	160	350	
			15V	–	120	240	

oscillogram: