

1. DESCRIPTION

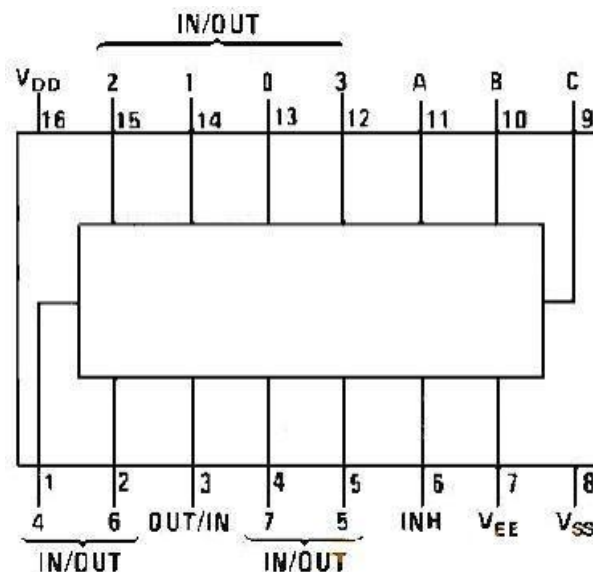
The XD/XL4051 series analog switches are multi-modulated/selective analog switches controlled by digital signals with low on-resistance and low cut-off leakage current. The digital signal with amplitude of 4.5V ~ 18V can control the analog signal with peak-to-peak value of 18V. For example, if $V_{DD}=+5V$, $V_{SS}=0V$, $V_{EE}=-13.5V$, the digital signal from 0 to 5V can control the analog signal from -13.5 to 4.5V, and these switching circuits have very low static power consumption in the entire V_{DD} - V_{SS} and V_{DD} - V_{EE} power supply range.

XD/XL4051 is an eight-choice analog switch, with A, B, C three binary control input and INH input, these three binary signals can be set to any of the 8 analog channels as on-state, INH input "1" power level will be set to all channels of the analog switch as off state. Enter "0" power level to set all channels of the analog switch to the on-state.

2. FEATURES

- Very wide digital control and transmission analog signal voltage range: digital 4.5V ~ 18V, analog 18V
- Low on-resistance: 80Ω (V_{DD} - $V_{EE}=15V$, 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

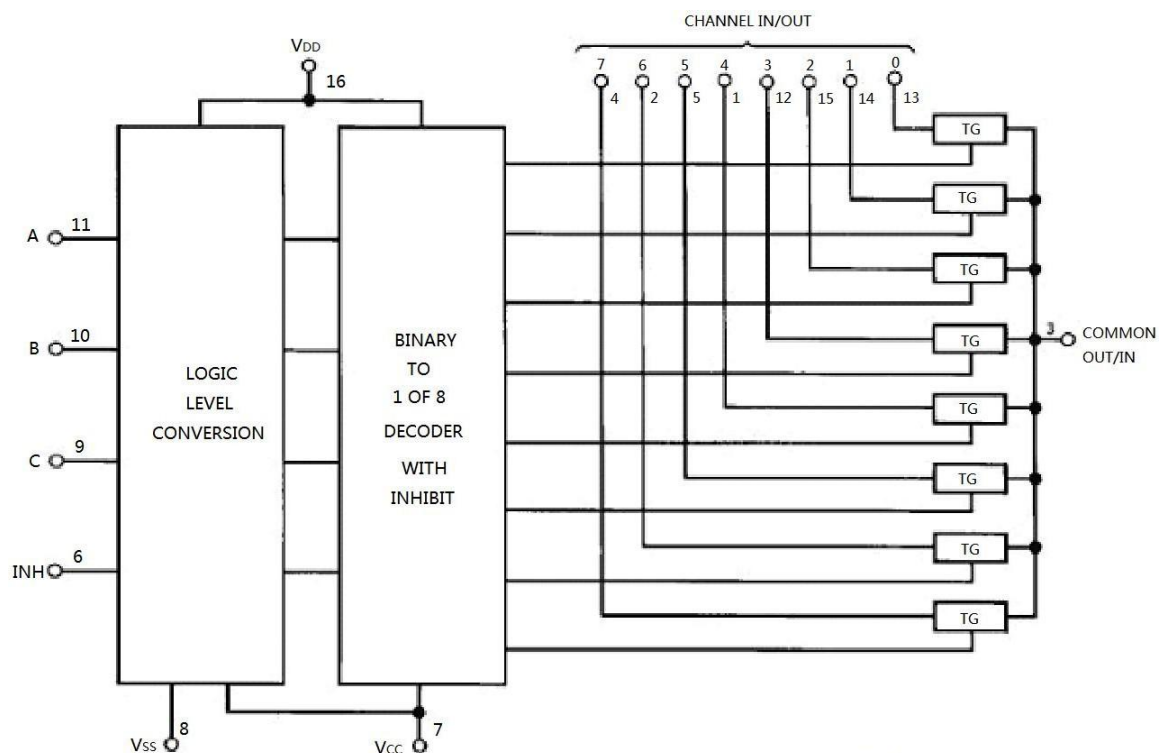
3. PIN CONFIGURATIONS



4. FUNCTION TRUTH TABLE

Input state				Output situation
INH	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	x	x	x	None

5. LOGIC BLOCK DIAGRAM



6. DC ELECTRICAL PARAMETER

6.1 Absolute Maximum Ratings (Ta = 25°C) :

Symbol	Description		Limiting value	Units
VDD	Dc supply voltage		-0.5~+18	V
VIN	Input voltage		-0.5~VDD+0.5	V
Ta	Operating temperature range		-40~85	°C
Ptot	Power dissipation	DIP	700	mW
		SOP	500	mW
TL	Welding temperature		260	°C

6.2 Recommended Operating Conditions

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

6.3 Dc characteristic :T=25°C

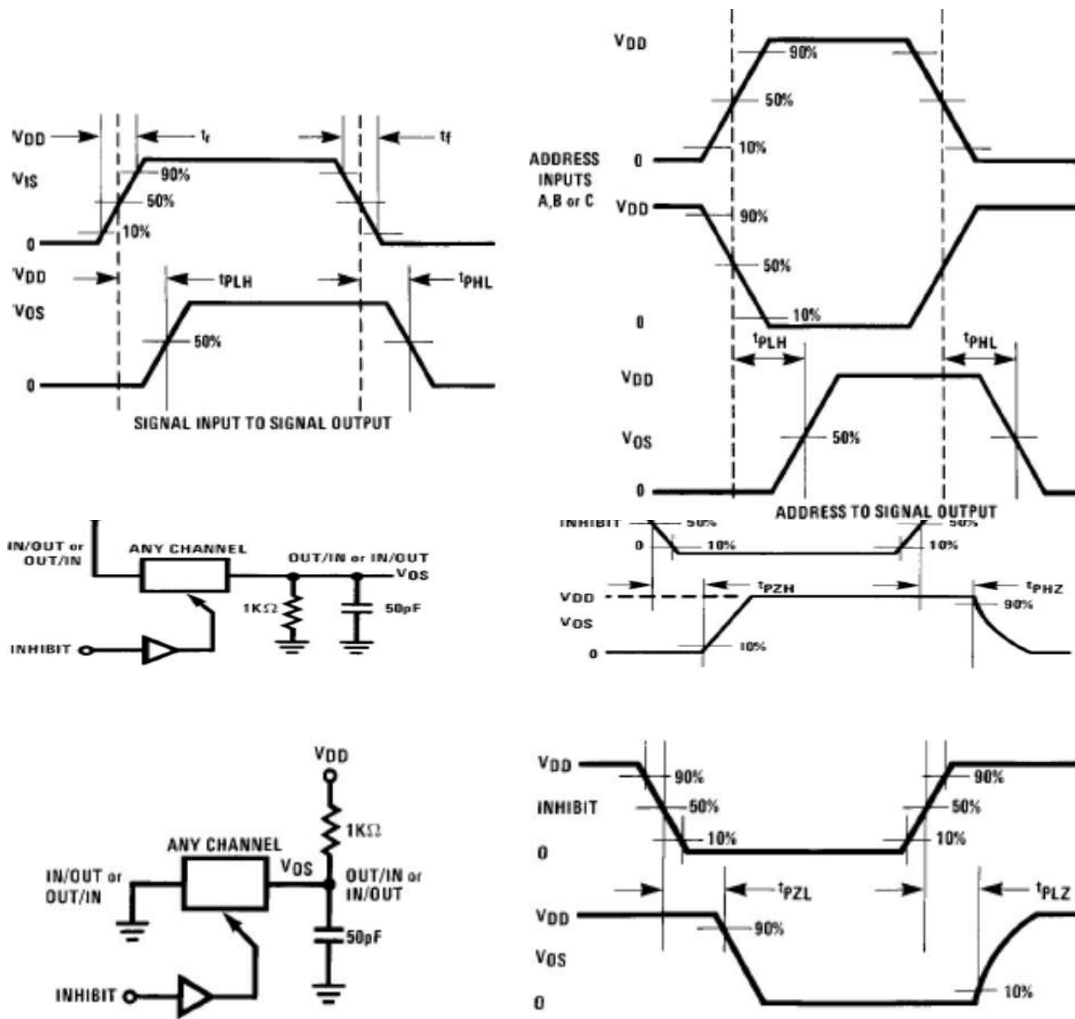
Symbol	Item	Conditions	+25°C			Units	
			Min	Typ.	Max		
IDD	Static current	VDD=5V	—	—	5	uA	
		VDD=10V	—	—	10		
		VDD=15V	—	—	20		
Signal input VIS and output VOS							
RON	On-resistance (peakVEE ≡ VIS ≡ VDD)	RL=10KΩ(either channel)	VDD=2.5V VEE=-2.5V or VDD=5V VEE=0V	—	270	1050	Ω
			VDD=5V VEE=-5V or VDD=10V VEE=0V	—	120	400	
			VDD=7.5V VEE=-7.5V orVDD=15V VEE=0V	—	80	240	
△RON	The on-resistance gain between either channel	RL=10KΩ (either channel)	VDD=2.5V VEE=-2.5V or VDD=5V VEE=0V	—	10	—	Ω
			VDD=5V VEE=-5V or VDD=10V VEE=0V	—	10	—	
			VDD=7.5V VEE=-7.5V orVDD=15V VEE=0V	—	5	—	

6.4 Ac characteristic: T=25°C

Symbol	Item	Conditions	VDD	Min	Typ.	Max	Units
tPZH tPZL	Transmission delay time from disable to signal output (open channel)	VEE=VSS=0V RL=1KΩ CL=50pF	5V	—	600	1200	ns
			10V	—	225	450	
			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	Units
	Sine wave frequency response	RL=1KΩ VEE=0VVIS=5Vp-p 20log10VOS/VIS=-40dB	10V	—	40	—	MHz
	Off state crosstalk frequency	RL=1KΩ VEE=0VVIS=5Vp-p 20log10VOS/VIS=-40dB	10V	—	10	—	MHz
	Signal crosstalk frequency	RL=1KΩ VEE=0VVIS=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							
	Control input to signal response	VEE=VSS=0V RL=10KΩ Input square wave amplitude 10V at the end of all channels	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	

7. WAVEFORM DIAGRAM

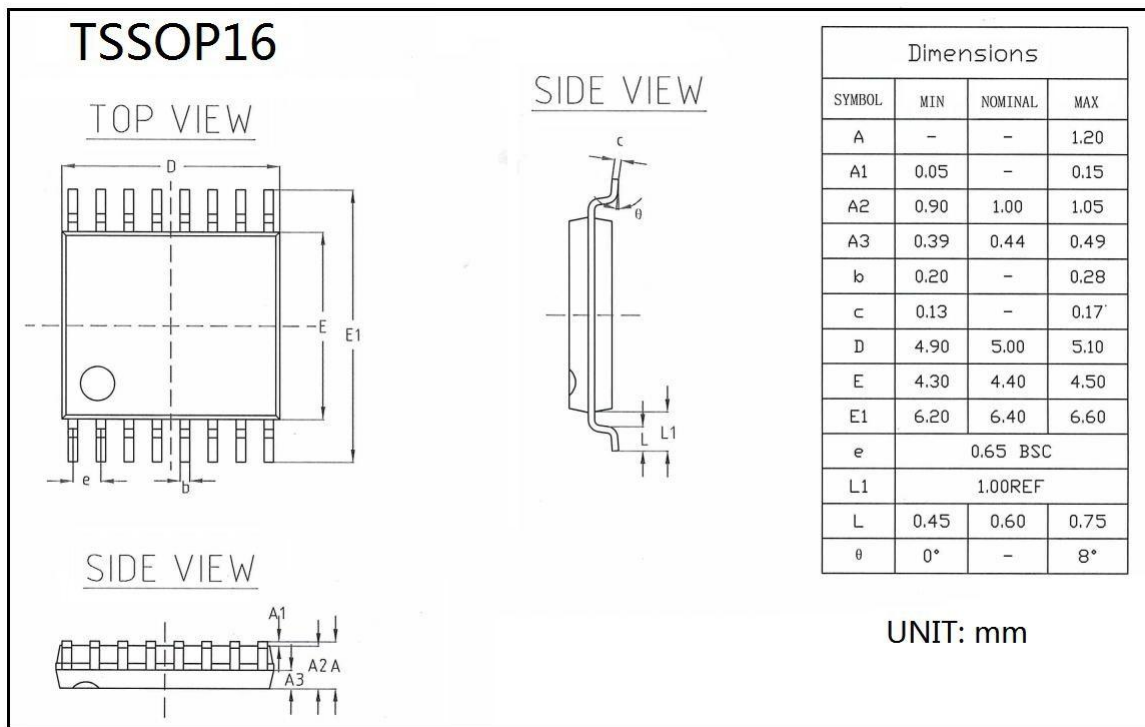


8. ORDERING INFORMATION

Ordering Information

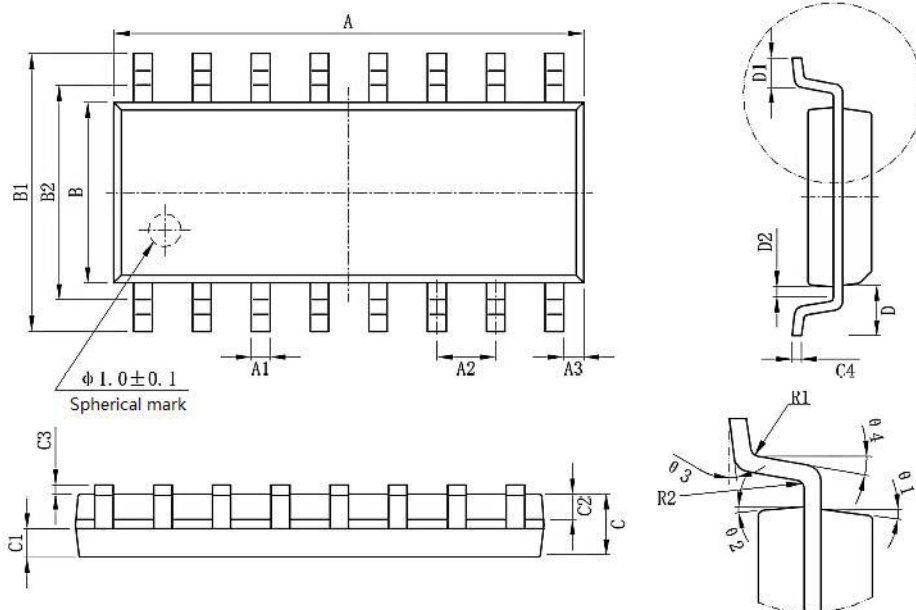
Part Number	Device Marking	Package Type	Body size (mm)	Temperature (°C)	MSL	Transport Media	Package Quantity
XL4051BPWR	XL4051	TSSOP16	5.00 * 4.40	- 40 to +85	MSL3	T&R	2500
XL4051BM	XL4051BM	SOP16	10.00 * 3.95	- 40 to +85	MSL3	T&R	2500
XD4051	XD4051	DIP16	19.05 * 6.35	- 40 to +85	MSL3	Tube 25	1000

9. DIMENSIONAL DRAWINGS

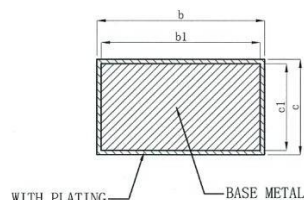
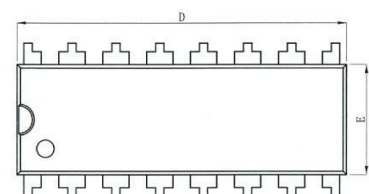
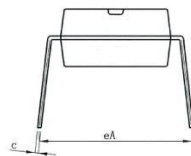
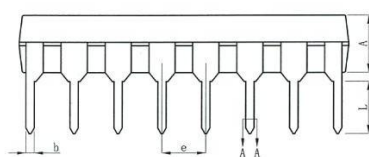


SOP16

MARK	SYM	MIN (mm)	MAX (mm)	MARK	SYM	MIN (mm)	MAX (mm)
A		9.80	10.00	C4		0.203	0.233
A1		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		θ 1		8° ~ 12° TYP4	
C		1.40	1.60	θ 2		8° ~ 12° TYP4	
C1		0.61	0.71	θ 3		0° ~ 8°	
C2		0.54	0.64	θ 4		4° ~ 12°	
C3		0.05	0.25				



DIP16



symbol	millimeter		
	Min	Nom	Max
A	3.20	3.30	3.40
b	0.44	---	0.53
b1	0.43	0.46	0.49
c	0.25	---	0.30
c1	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	---	---

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