DESCRIPTION

CD4066BM96-CN is a quad bilateral switch intended for the transmission or multiplexing of analog or digital signals. In addition, the on-state resistance is relatively constant over the full input signal range.

The CD4066BM96-CN consists of four independent bilateral switches. A single control signal is required per switch. Both the p and the N device in a given switch are biased on or off simultaneously by the control signal. The well of the N channel device on each switch is either

tied to the input when the switch is on or to V_{SS} when the switch is off. This configuration eliminates the variation of the switch transistor threshold voltage with input signal, and thus keeps the on-state resistance low over the full operating signal range.

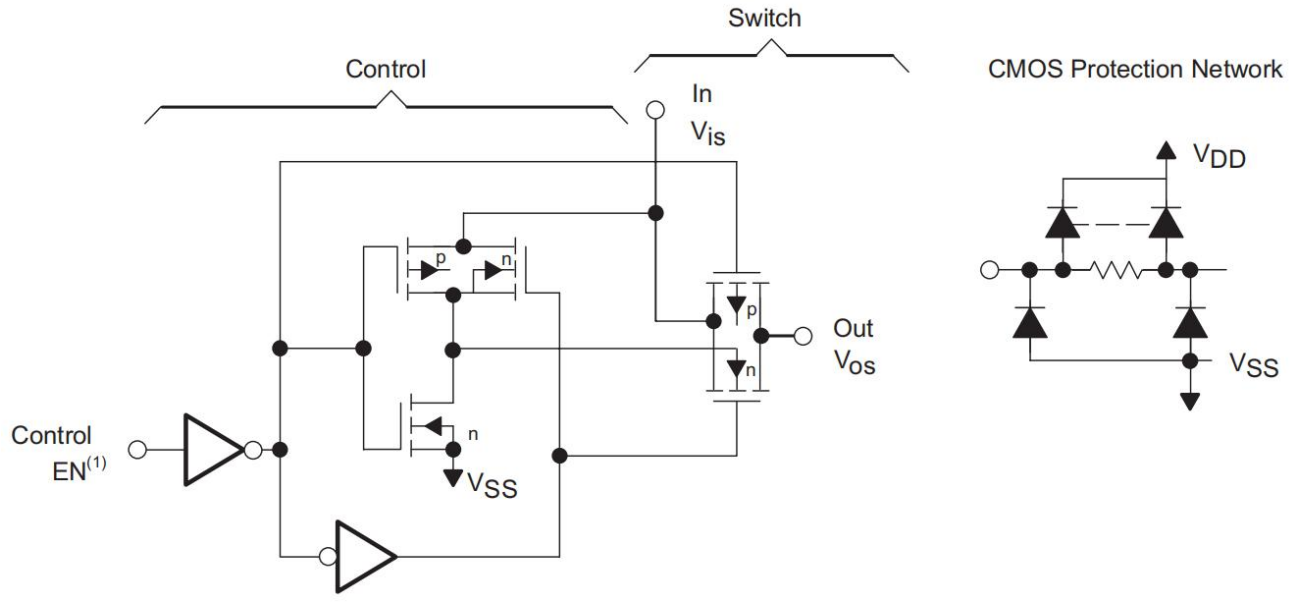
FEATURES

- Wide Supply Voltage Range: 3 ~ 15V
- Low "ON" Resistance: 125Ω(V_{DD}=15V)
- Matched "ON" Resistance: ΔR_{ON}=5Ω(Typ) over 15V signal input
- High noise immunity: 0.45V_{DD}(Typ)
- Low Crosstalk Between Switches
- High On/Off Output Voltage Ratio: 80dB
- Extremely High Control Input Impedance

APPLICATIONS

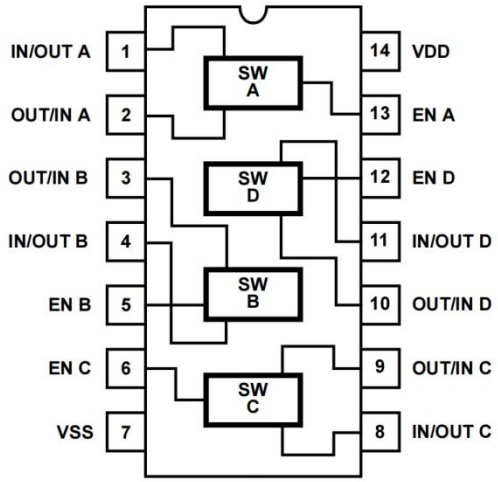
- Analog Signal Switching/Multiplexing
  - Signal gating
  - Squelch control
- Digital Signal Switching/Multiplexing
- Transmission Gate Logic Implementation
- Analog to Digital & Digital to Analog Conversion
- Digital Control of Frequency, Impedance, Phase, and Analog Signal Gain

Functional Diagram



Normal Operation Control Line Biasing: Switch On(EN="I"=V_{DD}) ; Switch Off(EN="O"=V_{SS})

Pin Configuration & Truth Table



Switch Truth Table/Each Channel		
Input		Output
EN	VIS	VOS
1	0	0
1	1	1
0	0	X
0	1	X
Note: X=High Impedance		

Absolute Maximum Ratings

Over operating free-air temperature range (unless otherwise noted) (1)

PARAMETER	MIN	MAX	UNIT
Supply Voltage (V_{DD})	-0.5	+18	V
Input Voltage (V_{IN})	-0.5	V_{DD} + 0.5	V
Input Current (I_{IN})	-10	+10	mA
Maximum junction temperature(T_J)		150	℃
Storage Temperature Range (T_S)	-65	+150	℃
Lead Temperature,10sec (T_W)		260	℃

Note : These values beyond which the safety of the device cannot be guaranteed. They are not meant to imply that the devices should be operated at these limits.

Recommended Operating Conditions

Over operating free-air temperature range (unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNIT
Supply Voltage	3		15	V
Input Voltage	0		V_{DD}	V
Operating Temperature Range	-20	25	+85	℃

DC ELECTRICAL CHARACTERISTICS

(At TA=+25℃, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent Device Current	I_{DD}	V_{DD}=5V, V_{IS}=0~5V	0		1	uA
		V_{DD}=10V, V_{IS}=0~10V	0		1	uA
		V_{DD}=15V, V_{IS}=0~15V	0		1	uA
Input Current	I_{IN}	V_{DD}=15V, V_{SS}≤V_{IS}≤V_{DD}, V_{SS}≤EN≤V_{DD}	0		1	uA
"ON" Output Voltage	V_{OS}	V_{DD}=5V, V_{IS}=0V			0.4	V
		V_{DD}=5V, V_{IS}=5V	4.6			V
		V_{DD}=10V, V_{IS}=0V			0.5	V
		V_{DD}=10V, V_{IS}=10V	9.5			V
		V_{DD}=15V, V_{IS}=0V			1.5	V
		V_{DD}=15V, V_{IS}=15V	13.5			V
"ON" Input Current	I_{IS}	V_{DD}=5V, V_{IS}=0V		0.51		mA
		V_{DD}=10V, V_{IS}=0V		1.3		mA
		V_{DD}=15V, V_{IS}=0V		3.4		mA
		V_{DD}=5V, V_{IS}=5V		-0.51		mA
		V_{DD}=10V, V_{IS}=10V		-1.3		mA
		V_{DD}=15V, V_{IS}=15V		-3.4		mA
"ON" Resistance	R_{ON}	V_{DD}=EN=5V, V_{IS}=V_{DD}/2, R_L=10kΩ		470	1050	Ω
		V_{DD}=EN=10V, V_{IS}=V_{DD}/2, R_L=10kΩ		180	400	Ω
		V_{DD}=EN=15V, V_{IS}=V_{DD}/2, R_L=10kΩ		125	240	Ω
Δ"ON" Resistance	ΔR_{ON}	V_{DD}=EN=5V, V_{IS}=V_{DD}/2, R_L=10kΩ		15		Ω
		V_{DD}=EN=10V, V_{IS}=V_{DD}/2, R_L=10kΩ		10		Ω
		V_{DD}=EN=15V, V_{IS}=V_{DD}/2, R_L=10kΩ		5		Ω
Control Input High Voltage	V_{IHC}	V_{DD}=5V	3.5			V
		V_{DD}=10V	7.0			V
		V_{DD}=15V	11			V
Control Input Low Voltage	V_{ILC}	V_{DD}=5V		1		V
		V_{DD}=10V		2		V
		V_{DD}=15V		2		V

AC ELECTRICAL CHARACTERISTICS

(At TA=+25℃, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay （Input to Output）	t_{PHL}	$V_{IS}=V_{DD}$, tr,tf=20ns, Square, C_L=50pF, R_L=1 kΩ	V_{DD}=5V		35	70	ns
			V_{DD}=10V		20	40	ns
			V_{DD}=15V		15	30	ns
Propagation Delay （Input to Output）	t_{PLH}	$V_{IS}=V_{DD}$, tr,tf=20ns, Square, C_L=50pF, R_L=1 kΩ	V_{DD}=5V		35	70	ns
			V_{DD}=10V		20	40	ns
			V_{DD}=15V		15	30	ns
Propagation Delay （EN to Output）	t_{PZH}	$V_{IS}=V_{DD}$, tr,tf=20ns, Square, C_L=50pF, R_L=1 kΩ	V_{DD}=5V		20	40	ns
			V_{DD}=10V		10	20	ns
			V_{DD}=15V		7	15	ns
Propagation Delay （EN to Output）	t_{PZL}	$V_{IS}=V_{DD}$, tr,tf=20ns, Square, C_L=50pF, R_L=1 kΩ	V_{DD}=5V		20	40	ns
			V_{DD}=10V		10	20	ns
			V_{DD}=15V		7	15	ns
Maximum Control Input Frequency	t_{RP}	$V_{IS}=V_{DD}$, tr,tf=20ns, Square, C_L=50pF, R_L=1 kΩ	V_{DD}=5V		6		MHz
			V_{DD}=10V		9		MHz
			V_{DD}=15V		9.5		MHz

TEST CIRCUIT

(V_{SS}=0V, T_A=25℃, unless otherwise noted.)

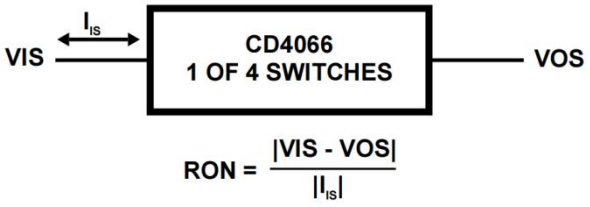


Figure 1. “ON” Resistance Test

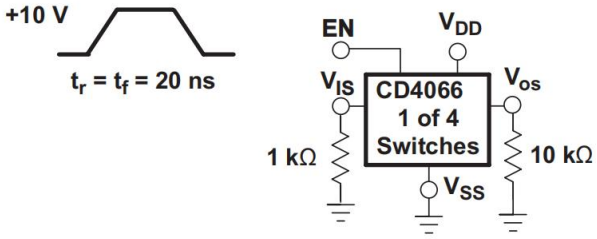


Figure 2. Crosstalk Control Input To Output

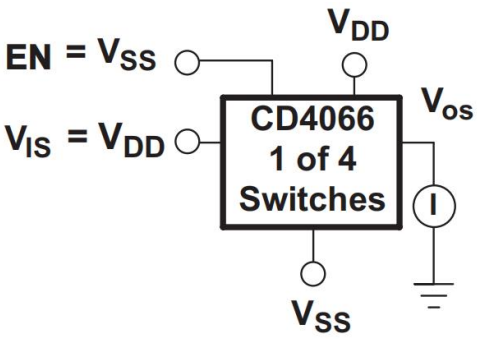


Figure 3. Turn Off Switch Input Or Output Leakage

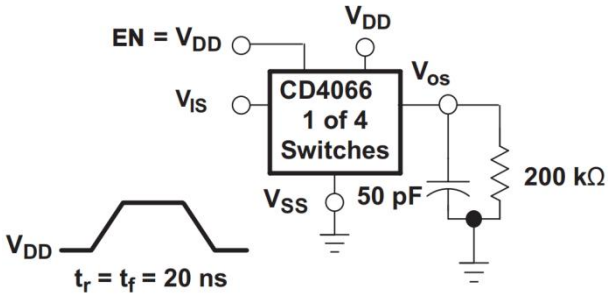


Figure 4. Propagation Delay Test

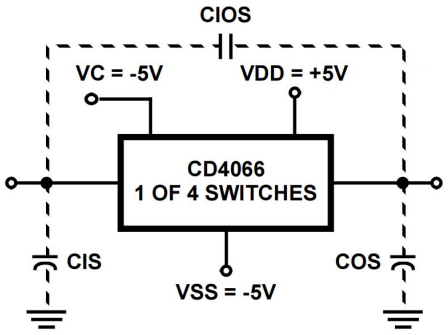


Figure 5. Capacitance Test

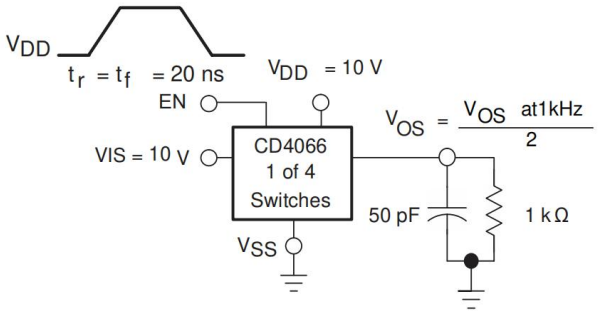


Figure 6. Maximum Control Input Frequency

TYPICAL APPLICATION

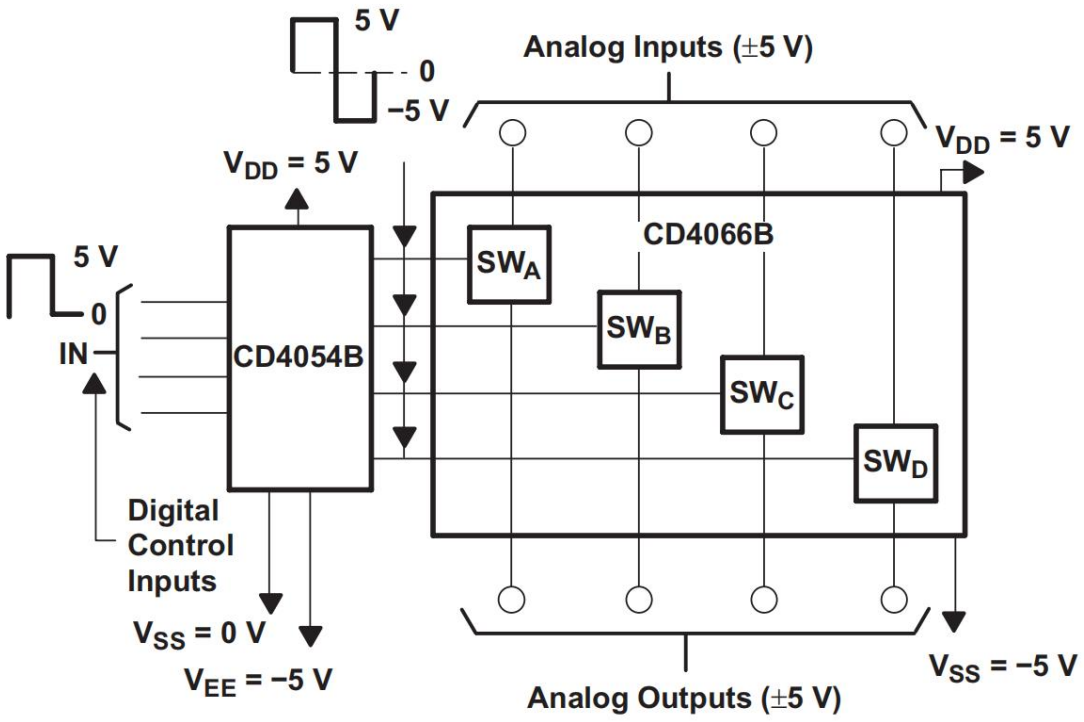
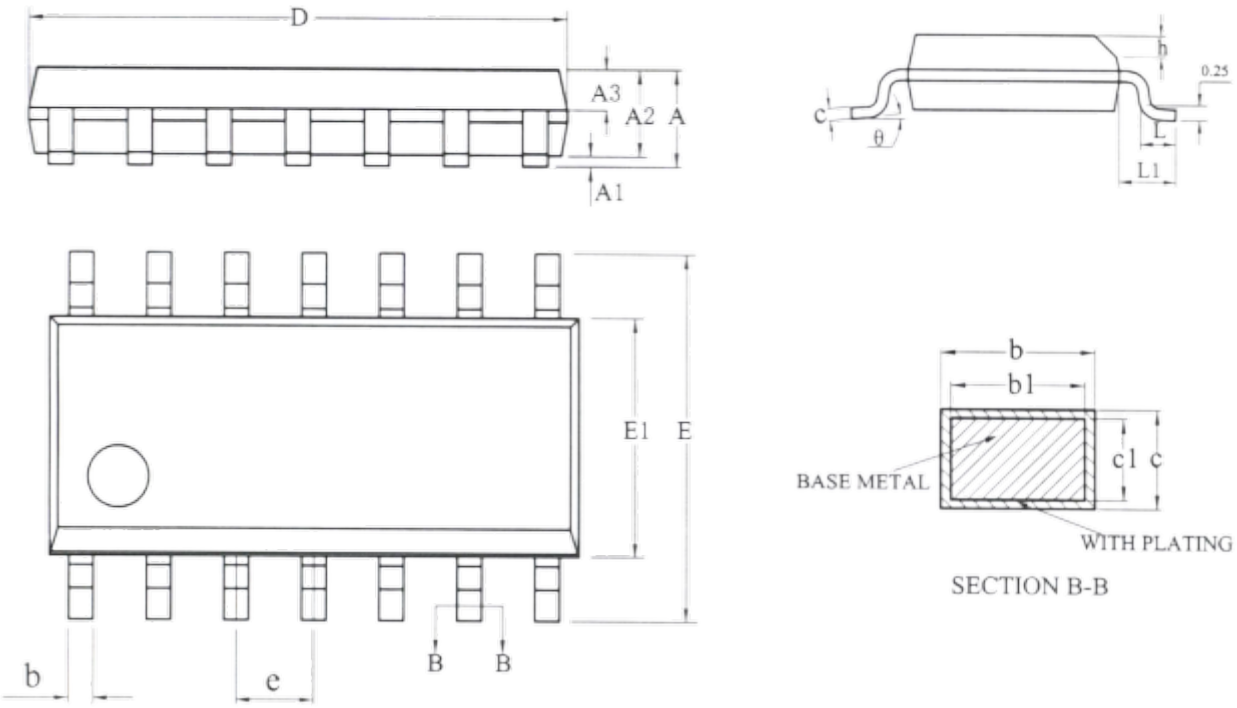


Figure 7. Bidirectional Transmission Via Digital Control Logic

PACKAGE OUTLINE DIMENSIONS

SOP14



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	-	-	1.75
A1	0.10	-	0.225
A2	1.30	1.40	1.50
A3	0.60	0.65	0.70
b	0.39	-	0.47
b1	0.38	0.41	0.44
c	0.20	-	0.24
c1	0.19	0.20	0.21
D	8.55	8.65	8.75
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
h	0.25	-	0.50
L	0.50	-	0.80
L1	1.05REF		
θ	0	-	8°

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