DESCRIPTION

The CD4069UMB96-CN consists of six inverter circuits and is manufactured using complementary MOS(CMOS) to achieve wide power supply operating range, low power consumption, high noise immunity, and symmetric controlled rise and fall times. This device can be use ingeneral-purpose inverter applications that do not require circuit medium power TTL driver and logic level switching.All inputs are protected from damage due to static discharge by diode clamps to VDD and VSS.

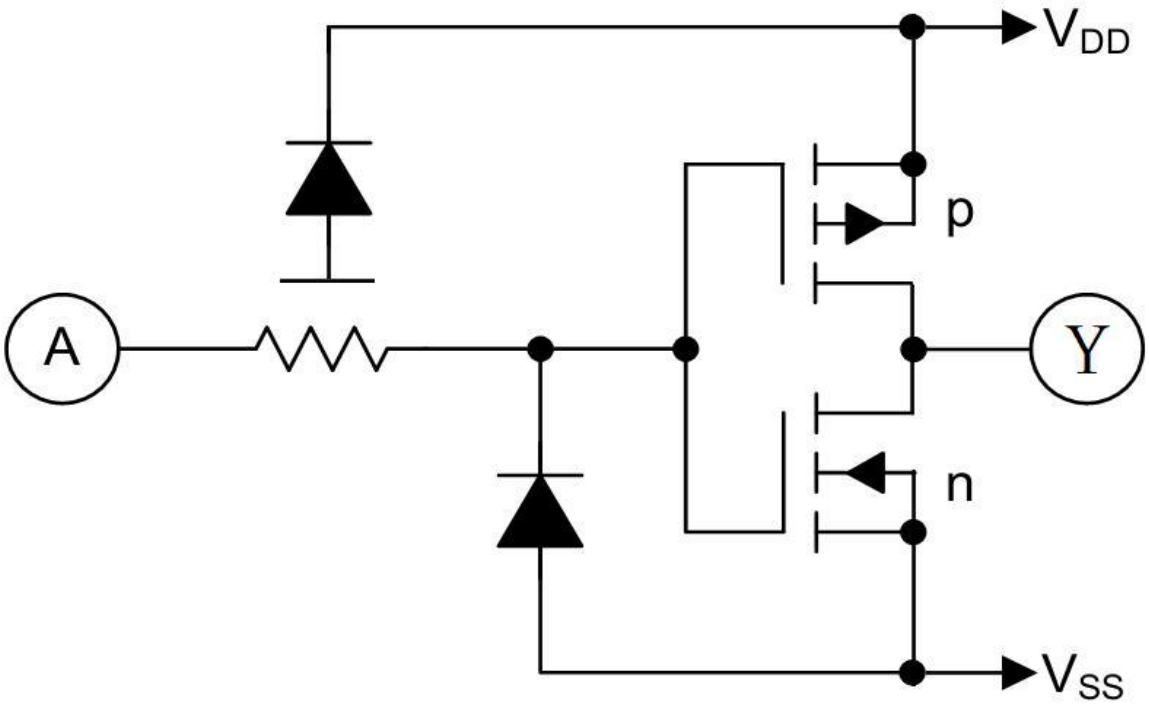
FEATURES

- Wide Supply Voltage Range: 3 ~ 15V
- High Noise Immunity: 0.45V_{DD}(Typ)
- Low Power TTL Compatibility
- Standardized Symmetrical Output Characteristics
- Packages: SOP14

APPLICATIONS

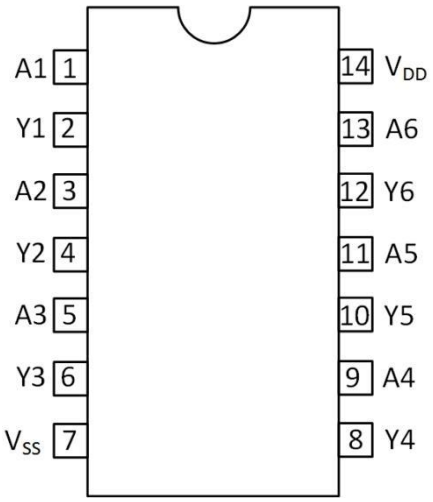
- Logical Reversal
- Pulse Shaping
- Oscillator
- High Input Impedance Amplifier

Functional Diagram(Single Channel)



Output Logical Expression: Y = $\overline{A}$

Pin Configuration & Function Table



Truth Table/Each Channel	
Input	**Output**
A	**Y**
L	H
H	L
"L" = Low Voltage Level "H" = High Voltage Level	

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

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent Device Current	I_{DD}	V_{DD}=5V, V_{IN} = 0V or 5V	0	-	1	uA
		V_{DD}=10V, V_{IN} = 0V or 10V	0	-	1	uA
		V_{DD}=15V, V_{IN} = 0V or 15V	0	-	1	uA
Input Current	I_{IN}	V_{DD}=15V, V_{IN} = 0 ~ 15V	-1	-	1	uA
Input Low-Level Voltage	V_{IL}	V_{DD} = 5V, V_O = 4.5V	-	-	1	V
		V_{DD} = 10V, V_O = 9.5V	-	-	2	
		V_{DD} = 15V, V_O = 13.5V	-	-	2.5	
Input How-Level Voltage	V_{IH}	V_{DD} = 5V, V_O = 0.5V	4	-	-	V
		V_{DD} = 10V, V_O = 1V	8	-	-	
		V_{DD} = 15V, V_O = 1.5V	12.5	-	-	
Low-Level Output Voltage	V_{OL}	V_{DD} = 5V, V_{IN} = 5V	-	0	0.05	V
		V_{DD} = 10V, V_{IN} = 10V	-	0	0.05	
		V_{DD} = 15V, V_{IN} = 15V	-	0	0.05	
How-Level Output Voltage	V_{OH}	V_{DD} = 5V, V_{IN} = 0V	4.95	5	-	V
		V_{DD} = 10V, V_{IN} = 0V	9.95	10	-	
		V_{DD} = 15V, V_{IN} = 0V	14.95	15	-	
Output Low(sink) Current	I_{OL}	V_{DD} = 5V, V_O = 0.4V	1.1	2.2	-	mA
		V_{DD} = 10V, V_O = 0.5V	2.5	5	-	
		V_{DD} = 15V, V_O = 1.5V	9	18	-	
Output How(source) Current	I_{OH}	V_{DD} = 5V, V_O = 4.6V	-	-1.2	-0.6	mA
		V_{DD} = 10V, V_O = 9.5V	-	-2.6	-1.3	
		V_{DD} = 15V, V_O = 13.5V	-	-7.2	-3.6	

AC ELECTRICAL CHARACTERISTICS

(T_A=25℃, V_{SS}=0V, C_L=50pF, R_L=200KΩ, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay (Input to Output)	t_{PHL}	V_{DD}=5V	-	35	110	ns
		V_{DD}=10V	-	22	60	ns
		V_{DD}=15V	-	32	50	ns
Propagation Delay (Input to Output)	t_{PLH}	V_{DD}=5V	-	46	110	ns
		V_{DD}=10V	-	30	60	ns
		V_{DD}=15V	-	20	50	ns
Transition Time	t_{THL}	V_{DD}=5V	-	52	200	ns
		V_{DD}=10V	-	26	100	ns
		V_{DD}=15V	-	54	80	ns

Transition Time	t_{TLH}	V_{DD}=5V	-	75	200	ns
		V_{DD}=10V	-	40	100	ns
		V_{DD}=15V	-	36	80	ns
Input Capacitance	C_{IN}	Any Input	-	-	15	pF

TEST CIRCUIT

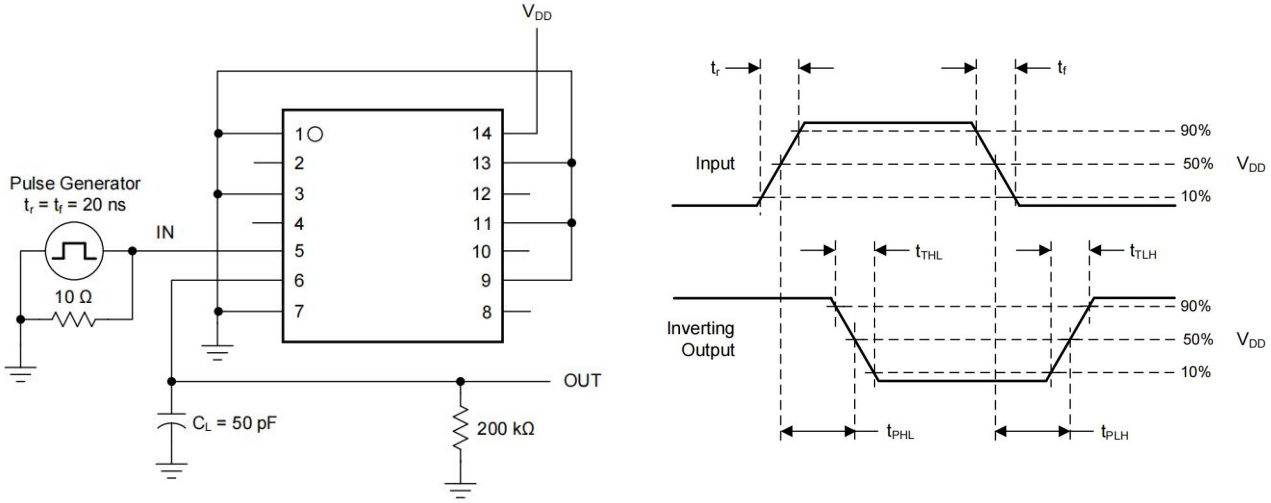


Figure 1. Dynamic Electrical Characteristics Test Circuit and Waveform

TYPICAL APPLICATION

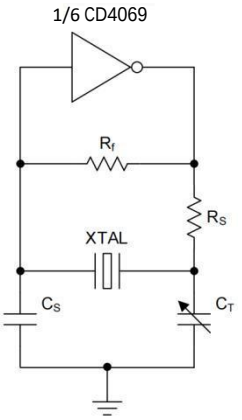


Figure 2. Typical Crystal Oscillator Circuit

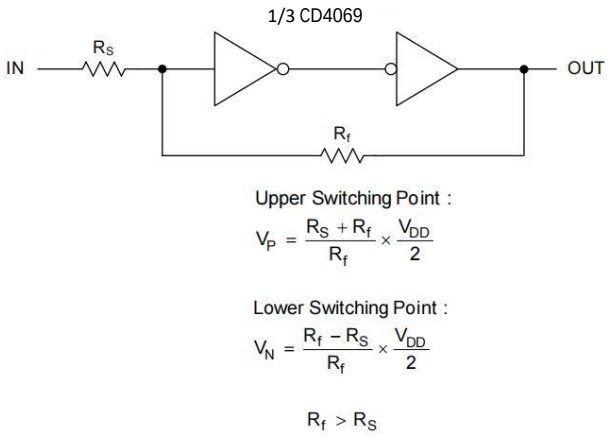


Figure 3. Input Pulse Shaping Circuit

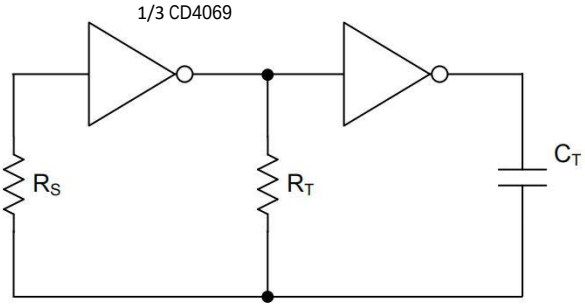


Figure 4. Typical RC Oscillator Circuit

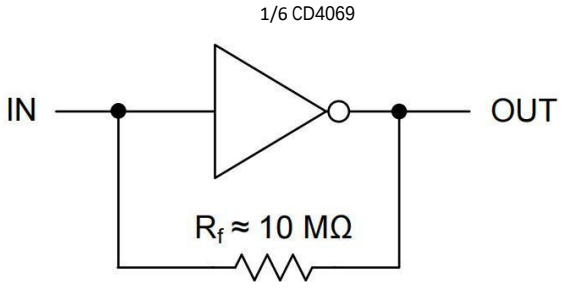
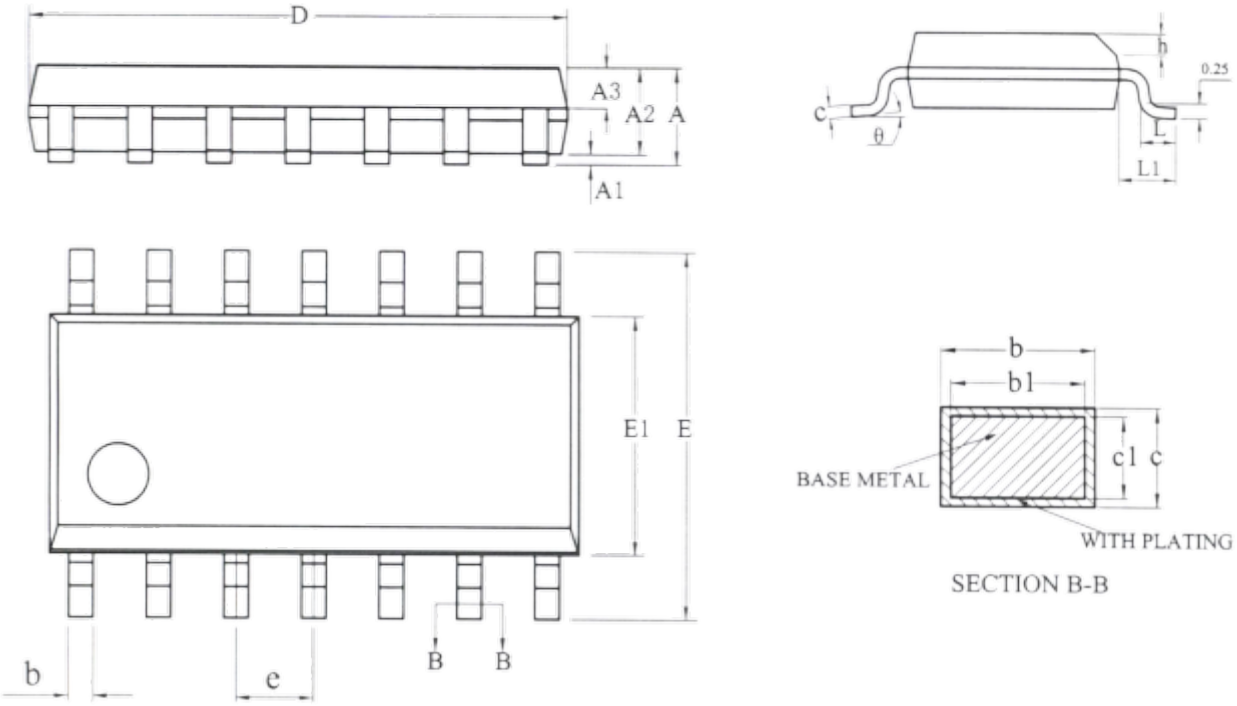


Figure 5. High-Input Impedance Amplifier

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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