

## CMOS HEX INVERTER

### FEATURES

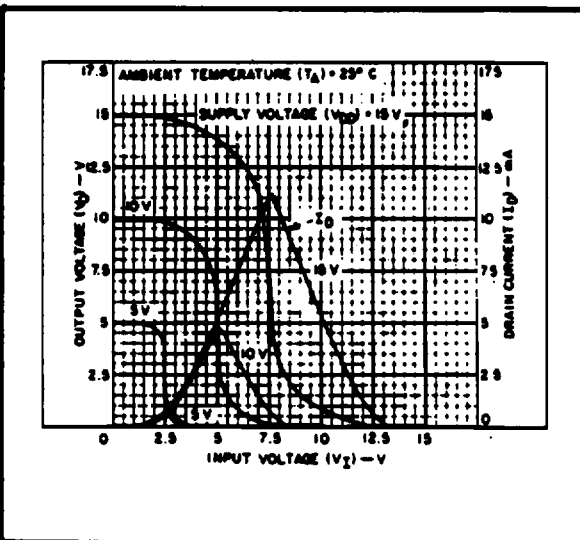
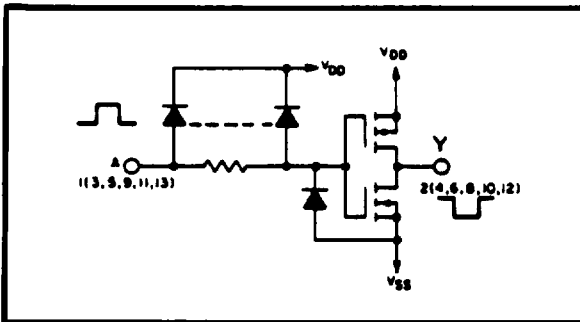
- ◆ Fully "B"-Series Compatible
- ◆ Diode Protection on all Inputs
- ◆ Pin Compatible with 74C04

### DESCRIPTION

The 4069UB consists of six CMOS inverter circuits. The device is intended for general-purpose inverter applications where the higher output drive and level-shifting feature of the 4009UB and 4049UB are not required.\* The 4069UB is particularly useful for quasi-linear circuits such as oscillators (See Applications Information).

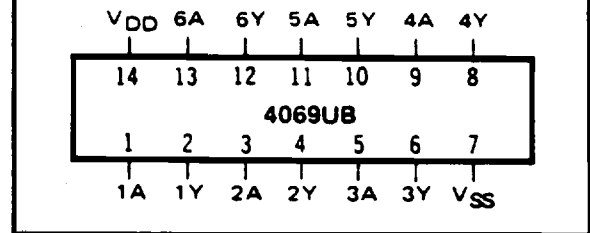
\*For pin-to-pin compatibility with the 4009UB and 4049UB, the 4449UB is available.

### SCHEMATIC DIAGRAM (one of six inverters)



Typical current and voltage transfer characteristics

### CONNECTION DIAGRAM (all packages)

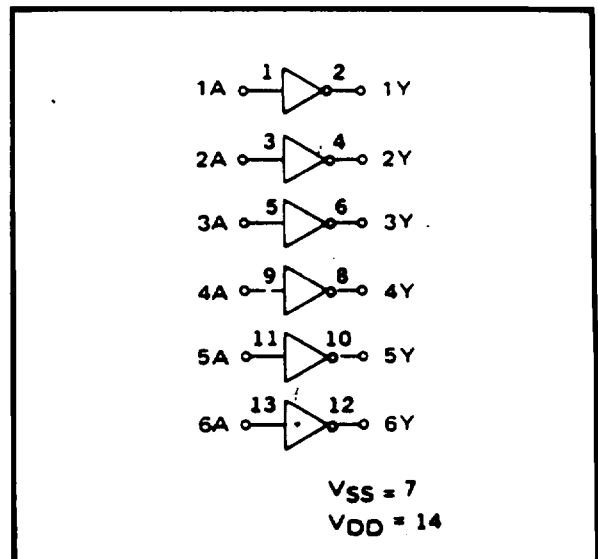


### RECOMMENDED OPERATING CONDITIONS

For maximum reliability:

DC Supply Voltage	V <sub>DD</sub> - V <sub>SS</sub>	3 to 15	Vdc
Operating Temperature	T <sub>A</sub>		
C		-55 to +125	°C
E		-40 to +85	°C

### LOGIC DIAGRAM



## ELECTRICAL CHARACTERISTICS

### STATIC CHARACTERISTICS<sup>1</sup>

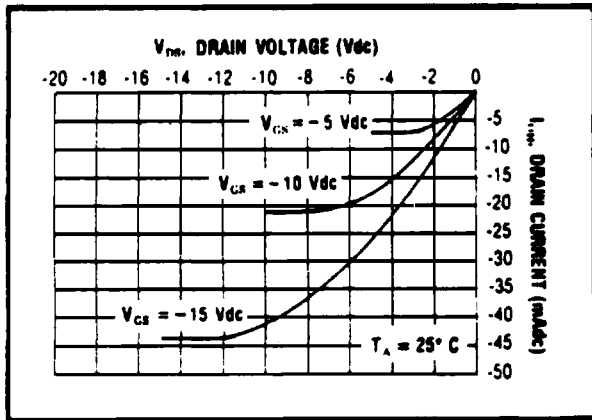
PARAMETER	V <sub>DD</sub> (Vdc)	CONDITIONS	T <sub>LOW</sub> <sup>2</sup>		+25°C			T <sub>HIGH</sub> <sup>2</sup>		Units
			Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
QUIESCENT DEVICE CURRENT	I <sub>DD</sub>	V <sub>IN</sub> =V <sub>SS</sub> or V <sub>DD</sub> All valid input combinations	-	0.05	-	0.0005	0.05	-	1.5	μA <sub>dc</sub>
			-	0.10	-	0.001	0.10	-	3.0	
			-	0.20	-	0.002	0.20	-	6.0	

NOTES: <sup>1</sup> Remaining Static Characteristics are listed under "4000B Series Family Specifications".

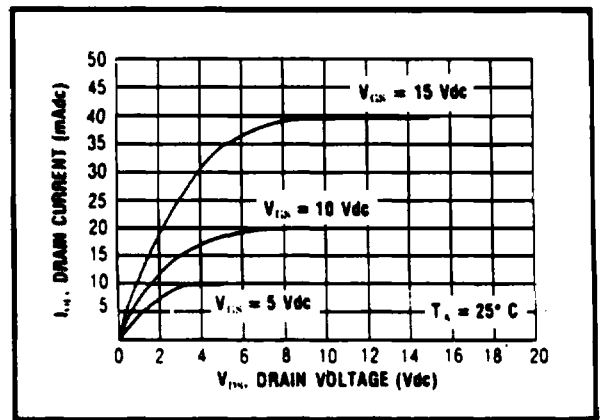
<sup>2</sup> T<sub>LOW</sub> = -55°C for C  
 = -40°C for E  
 T<sub>HIGH</sub> = +125°C for C  
 = + 85°C for E

### DYNAMIC CHARACTERISTICS (C<sub>L</sub> = 50pF, T<sub>A</sub> = 25°C)

PARAMETER		V <sub>DD</sub> (Vdc)	Min.	Typ.	Max.	Units
PROPAGATION DELAY TIME	t <sub>PLH</sub> , t <sub>PHL</sub>	5	-	50	100	ns
		10	-	25	50	
		15	-	20	40	
OUTPUT TRANSITION TIME	t <sub>TLH</sub> , t <sub>THL</sub>	5	-	75	150	ns
		10	-	35	70	
		15	-	30	60	

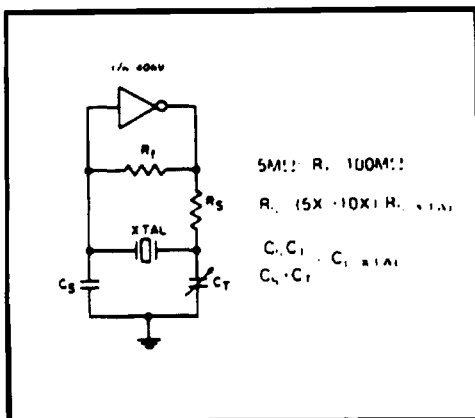


Typical P-Channel  
Source Current Characteristics

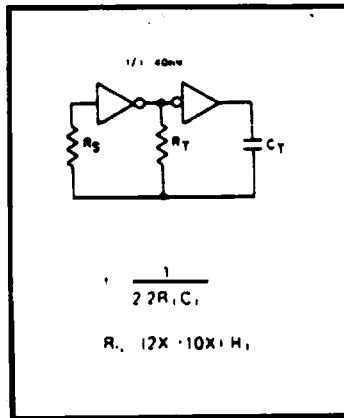


Typical N-Channel  
Sink Current Characteristics

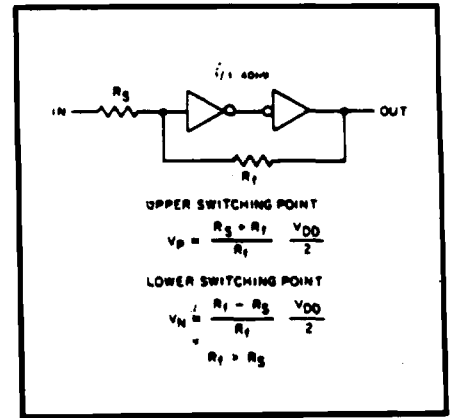
## APPLICATIONS INFORMATION



Typical crystal oscillator circuit



Typical RC oscillator circuit



Input pulse shaping circuit (Schmitt Trigger)