

CMOS HEX INVERTER

FEATURES

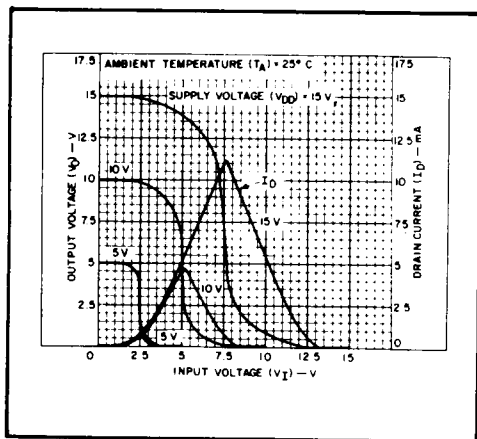
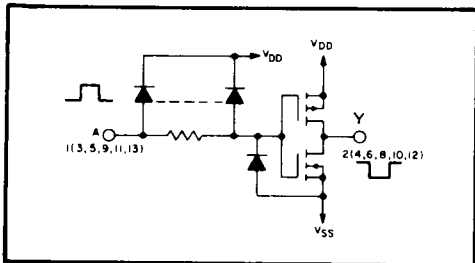
- ◆ Fully "B"-Series Compatible
- ◆ Diode Protection on all Inputs
- ◆ Pin Compatible with 74C04

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).

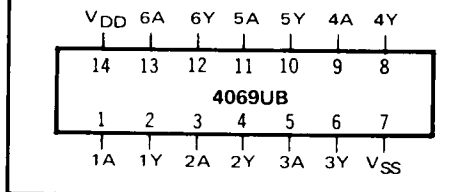
*For pin-to-pin compatibility with the 4009UB and 4049UB, the 4449UB is available.

SCHEMATIC DIAGRAM (one of six inverters)



Typical current and voltage transfer characteristics

CONNECTION DIAGRAM (all packages)

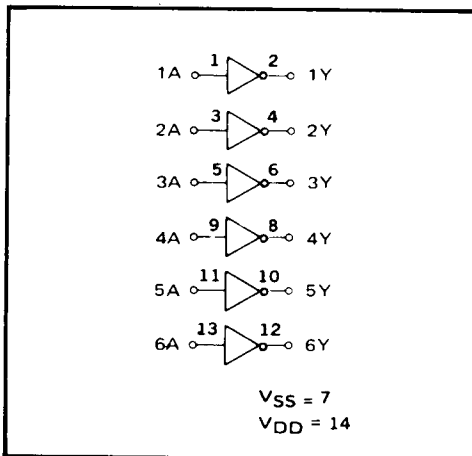


RECOMMENDED OPERATING CONDITIONS

For maximum reliability:

DC Supply Voltage	$V_{DD} - V_{SS}$	3 to 15	Vdc
Operating Temperature	T_A	-55 to +125	°C
C, D, F, H Device		-55 to +125	°C
E Device		-40 to +85	°C

LOGIC DIAGRAM



ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS¹

PARAMETER	V _{DD} (Vdc)	CONDITIONS	T _{LOW} ²		+25°C			T _{HIGH} ²		Units
			Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
QUIESCENT DEVICE CURRENT	V _{DD}	V _{IN} =V _{SS} or V _{DD} All valid input combinations	—	0.05	—	0.0005	0.05	—	1.5	μA _{dc}
			—	0.10	—	0.001	0.10	—	3.0	
			—	0.20	—	0.002	0.20	—	6.0	

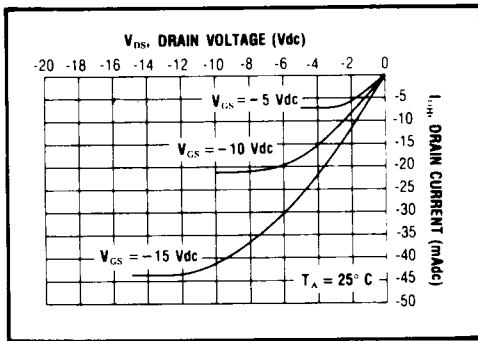
NOTES: ¹ Remaining Static Characteristics are listed under "4000B Series Family Specifications".

² T_{LOW} = -55°C for C, D, F, H device.
= -40°C for E device.

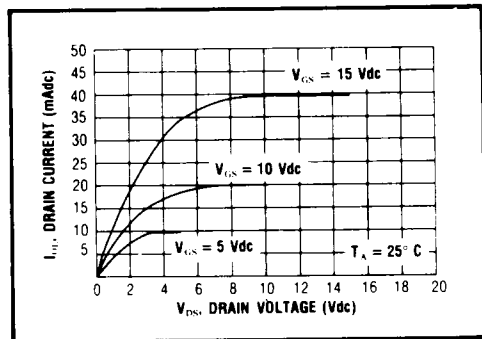
T_{HIGH} = +125°C for C, D, F, H device.
= + 85°C for E device.

DYNAMIC CHARACTERISTICS (C_L = 50pF, T_A = 25°C)

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

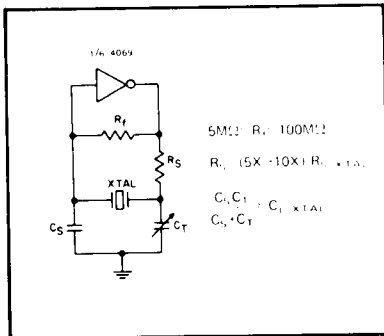


Typical P-Channel
Source Current Characteristics

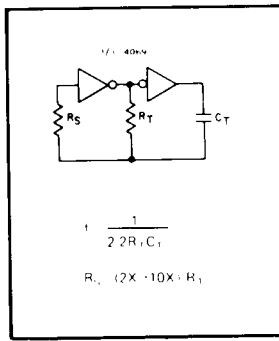


Typical N-Channel
Sink Current Characteristics

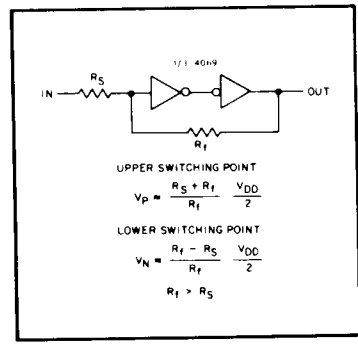
APPLICATIONS INFORMATION



Typical crystal oscillator circuit



Typical RC oscillator circuit



Input pulse shaping circuit (Schmitt
Trigger)

UPPER SWITCHING POINT
 $V_p = \frac{R_s + R_f}{R_f} \frac{V_{DD}}{2}$

LOWER SWITCHING POINT
 $V_N = \frac{R_f - R_s}{R_f} \frac{V_{DD}}{2}$

$R_f > R_s$