CMOS QUAD BUFFER-DRIVER

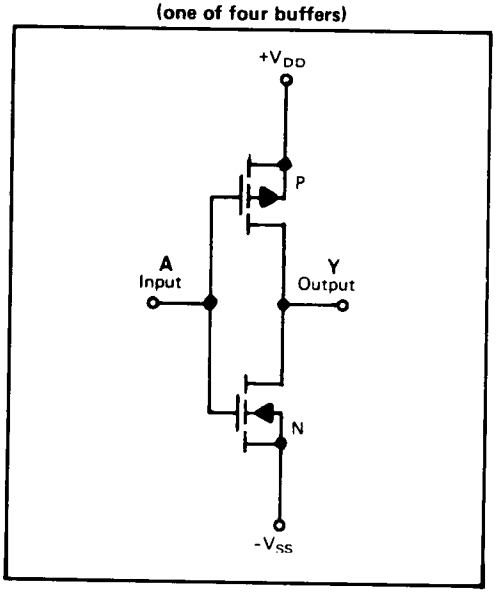
FEATURES

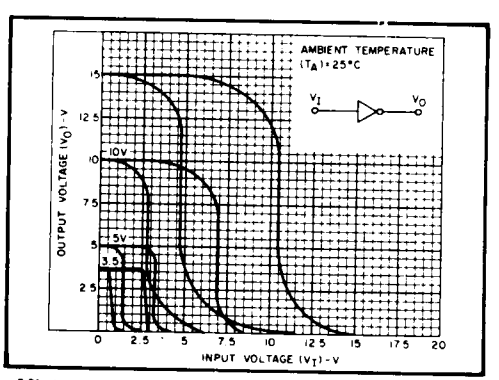
- Symmetrical High-Current Outputs
- High-Speed Operation with Large Capacitive Loads
- Low Output Impedance
- Diode Protection on all Inputs

DESCRIPTION

The 4441UB is a monolithic N-channel and P-channel enhancement-mode integrated circuit consisting of four large buffers for very high current capability. This device is useful as a line driver, low-power resistor-network driver for A/D and D/A conversion, display and clock drivers.

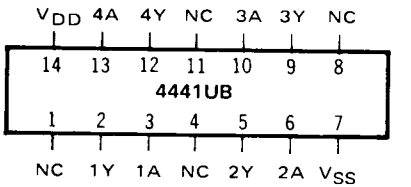
SCHEMATIC DIAGRAM
(one of four buffers)





Minimum and maximum transfer characteristics.

CONNECTION DIAGRAM
(all packages)



Add suffix for package:

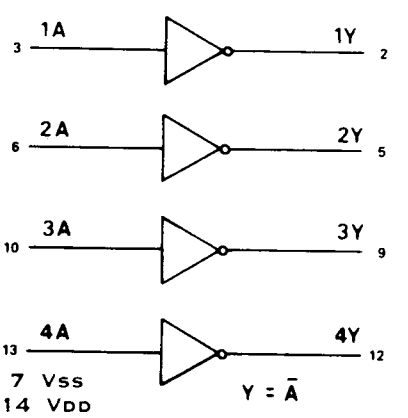
C	14-pin Cerdip	F	14-pin Flat
D	14-pin Ceramic	H	Chip
E	14-pin Epoxy		

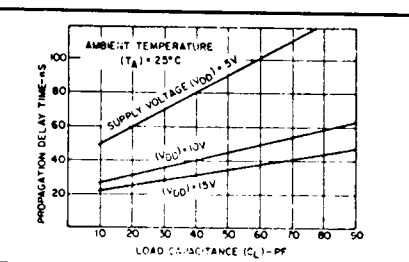
RECOMMENDED OPERATING CONDITIONS

For maximum reliability:

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

LOGIC DIAGRAM





Typical propagation delay time vs. C_L

ELECTRICAL CHARACTERISTICS

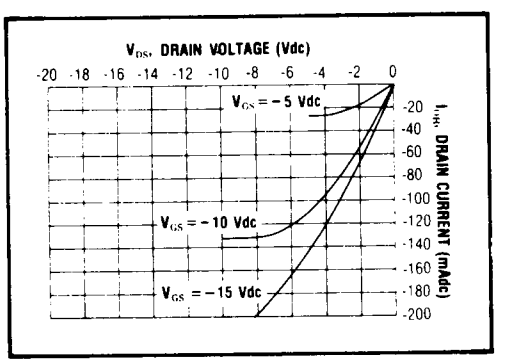
STATIC CHARACTERISTICS [1]

PARAMETER		V_{DD} (Vdc)	CONDITIONS	T_{LOW} [2]		+25°C			T_{HIGH} [2]		Units
				Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
QUIESCENT DEVICE CURRENT	I_{DD}	5	$V_{IN} = V_{SS}$ or V_{DD}	–	1.0	–	0.005	1.0	–	30	μAdc
		10	All valid input	–	2.0	–	0.01	2.0	–	60	
		15	combinations	–	4.0	–	0.02	4.0	–	120	
OUTPUT HIGH (SOURCE) CURRENT	I_{OH}	5	V_{OH} = 4.6V	-2.5	–	-2.0	-4.5	–	-1.4	–	mAdc
		10	V_{OH} = 9.5V	-7.3	–	-5.8	-14.0	–	-4.0	–	
		15	V_{OH} = 13.5V	-23.1	–	-18.5	-45	–	-13.0	–	
			$V_{IN} = V_{SS}$								
OUTPUT LOW (SINK) CURRENT	I_{OL}	5	V_{OL} = 0.4V	2.4	–	2.4	4.5	–	1.7	–	mAdc
		10	V_{OL} = 0.5V	7.0	–	7.0	14.0	–	4.9	–	
		15	V_{OL} = 1.5V	22.2	–	27	45	–	19	–	
			$V_{IN} = V_{DD}$								

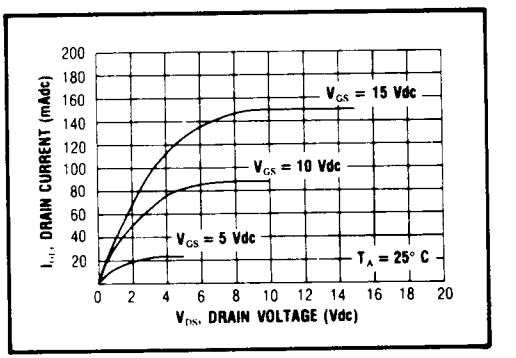
NOTES: [1] Remaining Static Electrical Characteristics are listed under "4000B Series Family Specifications".
[2] T_{LOW} = -55°C for C, D, F, H device.
= -40°C for E device.
T_{HIGH} = +125°C for C, D, F, H device.
= + 85°C for E device.

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	–	90	180	ns
		10	–	45	90	
		15	–	35	70	
OUTPUT TRANSITION TIME	t_{TLH}, t_{THL}	5	–	90	180	ns
		10	–	45	90	
		15	–	35	70	



Typical P-Channel
Source Current Characteristics



Typical N-Channel
Sink Current Characteristics