## TC4519BP 4-BIT AND/OR SELECTOR

The TC4519BP is a combined gate available as 4-bit AND/OR select gate, quad 2-channel data selector or quad exclusive-NOR gate according to the conditions of two control inputs A and B.

Since all the outputs are provided with the buffers of two-stage inverters, the input/output transmission characteristics have been improved and the noise immunity has been elevated. Thus, as increase in propagation delay time caused by an increase in load capacity is kept to a minimum.
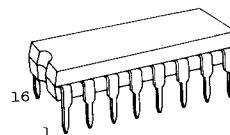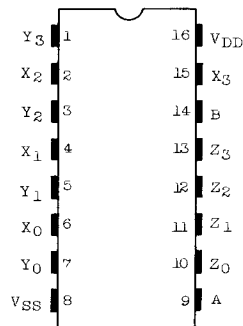
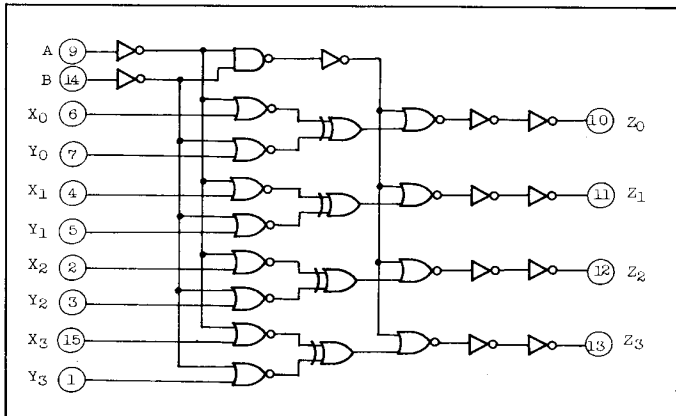DIP16(3D16A-P)

ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	V_{DD}	$V_{SS} - 0.5 \sim V_{SS} + 20$	V
Input Voltage	V_{IN}	$V_{SS} - 0.5 \sim V_{DD} + 0.5$	V
Output Voltage	V_{OUT}	$V_{SS} - 0.5 \sim V_{DD} + 0.5$	V
DC Input Current	I_{IN}	± 10	mA
Power Dissipation	P_D	300	mW
Operating Temperature Range	T_A	$-40 \sim 85$	°C
Storage Temperature Range	T_{stg}	$-65 \sim 150$	°C
Lead Temp./Time	T_{sol}	260°C · 10 sec	

PIN ASSIGNMENT

Y_3 1	16	V_{DD}
X_2 2	15	X_3
Y_2 3	14	B
X_1 4	13	Z_3
Y_1 5	12	Z_2
X_0 6	11	Z_1
Y_0 7	10	Z_0
V_{SS} 8	9	A

(TOP VIEW)

LOGIC DIAGRAM

TRUTH TABLE

CONTROL	INPUTS	OUTPUT
A	B	Z_n
L	L	L
L	H	Y_n
H	L	X_n
H	H	$X_n \odot Y_n$

$X_n \odot Y_n \equiv X_n \, (\text{Exclusive} - \text{NOR}) \, Y_n$

$= X_n \cdot Y_n + \overline{X}_n \cdot \overline{Y}_n$

TC4519BP

RECOMMENDED OPERATING CONDITIONS ($V_{SS}=0V$)

CHARACTERISTIC	SYMBOL		MIN.	TYP.	MAX.	UNITS
DC Supply Voltage	V_{DD}		3	–	18	V
Input Voltage	V_{IN}		0	–	V_{DD}	V

STATIC ELECTRICAL CHARACTERISTICS ($V_{SS}=0V$)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	V_{DD} (V)	−40°C		25°C			85°C		UNITS
				MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.	
High–Level Output Voltage	V_{OH}	$\mid I_{OUT} \mid <1\mu A$ $V_{IN}=V_{SS}$, V_{DD}	5	4.95	–	4.95	5.00	–	4.95	–	V
			10	9.95	–	9.95	10.00	–	9.95	–	
			15	14.95	–	14.95	15.00	–	14.95	–	
Low–Level Output Voltage	V_{OL}	$\mid I_{OUT} \mid <1\mu A$ $V_{IN}=V_{SS}$, V_{DD}	5	–	0.05	–	0.00	0.05	–	0.05	V
			10	–	0.05	–	0.00	0.05	–	0.05	
			15	–	0.05	–	0.00	0.05	–	0.05	
Output High Current	I_{OH}	$V_{OH}=4.6V$	5	−0.61	–	−0.51	−1.0	–	−0.42	–	mA
		$V_{OH}=2.5V$	5	−2.5	–	−2.1	−4.0	–	−1.7	–	
		$V_{OH}=9.5V$	10	−1.5	–	−1.3	−2.2	–	−1.1	–	
		$V_{OH}=13.5V$	15	−4.0	–	−3.4	−9.0	–	−2.8	–	
		$V_{IN}=V_{SS}$, V_{DD}									
Output Low Current	I_{OL}	$V_{OL}=0.4V$	5	0.61	–	0.51	1.5	–	0.42	–	mA
		$V_{OL}=0.5V$	10	1.5	–	1.3	3.8	–	1.1	–	
		$V_{OL}=1.5V$	15	4.0	–	3.4	15.0	–	2.8	–	
		$V_{IN}=V_{SS}$, V_{DD}									
Input High Voltage	V_{IH}	$V_{OUT}=0.5V$, 4.5V	5	3.5	–	3.5	2.75	–	3.5	–	V
		$V_{OUT}=1.0V$, 9.0V	10	7.0	–	7.0	5.5	–	7.0	–	
		$V_{OUT}=1.5V$, 13.5V	15	11.0	–	11.0	8.25	–	11.0	–	
		$\mid I_{OUT} \mid <1\mu A$									
Input Low Voltage	V_{IL}	$V_{OUT}=0.5V$, 4.5V	5	–	1.5	–	2.25	1.5	–	1.5	V
		$V_{OUT}=1.0V$, 9.0V	10	–	3.0	–	4.5	3.0	–	3.0	
		$V_{OUT}=1.5V$, 13.5V	15	–	4.0	–	6.75	4.0	–	4.0	
		$\mid I_{OUT} \mid <1\mu A$									
Input Current "H" Level	I_{IH}	$V_{IH}=18V$	18	–	0.1	–	10^{-5}	0.1	–	1.0	μA
Input Current "L" Level	I_{IL}	$V_{IL}=0V$	18	–	−0.1	–	-10^{-5}	−0.1	–	−1.0	
Quiescent Device Current	I_{DD}	$V_{IN}=V_{SS}$, V_{DD} ★	5	–	5	–	0.005	5	–	150	μA
			10	–	10	–	0.010	10	–	300	
			15	–	20	–	0.015	20	–	600	

★ All valid input combinations.

DYNAMIC ELECTRICAL CHARACTERISTICS   (Ta=25°C, V_{SS}=0V, C_L=50pF)

CHARACTERISTIC	SYMBOL	TEST CONDITION	V_{DD}(V)	MIN.	TYP.	MAX.	UNITS
Output Transition Time (Low to High)	t_{TLH}		5	.–	80	200	
			10	–	50	100	
			15	–	40	80	
Output Transition Time (High to Low)	t_{THL}		5	–	80	200	ns
			10	–	50	100	
			15	–	40	80	
Propagation Delay Time (A, B, Xn, Yn – Zn)	t_{pLH} t_{pHL}		5	–	190	500	
			10	–	80	225	
			15	–	60	165	
Input Capacitance	C_{IN}			–	5	7.5	pF

WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS