

# TC4532BP

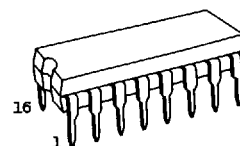
TOSHIBA (LOGIC/MEMORY)

## TC4532BP 8-BIT PRIORITY ENCODER

TC4532BP is eight bit encoder which detects "H" level of the highest order among eight input signals and outputs the corresponding signal position in binary code.

The inputs are eight input signals of D0 through D7 and  $E_{IN}$ , and when  $E_{IN}$  is set to "L" level, the encode operation is inhibited making all the outputs at "L" level.

The encoded output appears on three signal lines Q0 through Q2 in binary.  $E_{OUT}$  and  $G_S$  are the outputs to indicate the operational mode of encoder and used when the number of bits is to be increased by cascade connection.



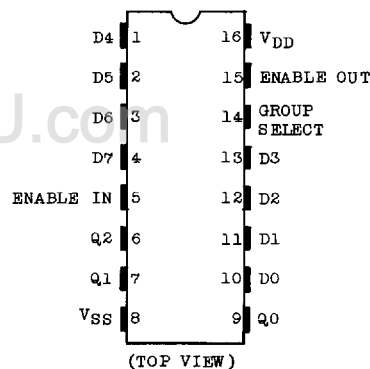
P(DIP16-P-300A)

Weight : 1.0g(Typ.)

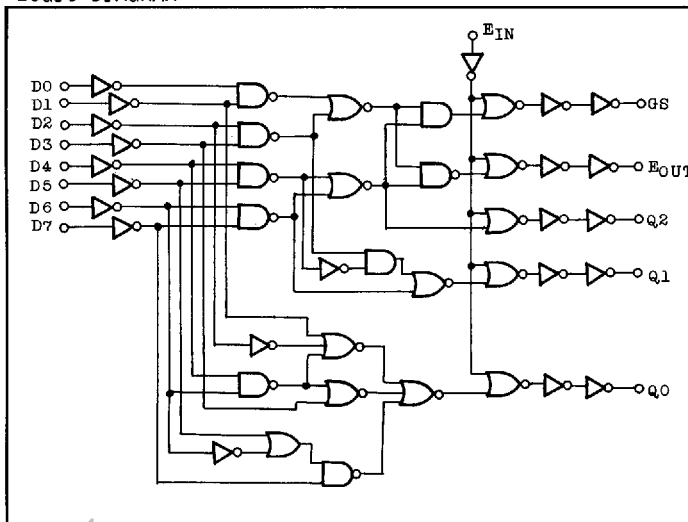
## ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNITS
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	$I_{IN}$	$\pm 10$	mA
Power Dissipation	$P_D$	300	mW
Operating Temperature Range	$T_A$	$-40 \sim 85$	$^{\circ}C$
Storage Temperature Range	$T_{stg}$	$-65 \sim 150$	$^{\circ}C$
Lead Temp./Time	$T_{sol}$	$260^{\circ}C \cdot 10 \text{ sec}$	

## PIN ASSIGNMENT



## LOGIC DIAGRAM



## TRUTH TABLE

		INPUT								OUTPUT				
$E_{IN}$	D7	D6	D5	D4	D3	D2	D1	D0	GS	Q2	Q1	Q0	$E_{OUT}$	
L	*	*	*	*	*	*	*	*	L	L	L	L	L	
H	L	L	L	L	L	L	L	L	L	L	L	L	H	
H	H	*	*	*	*	*	*	*	H	H	H	H	L	
H	L	H	*	*	*	*	*	*	H	H	H	L	L	
H	L	L	H	*	*	*	*	*	H	H	L	L	L	
H	L	L	L	H	*	*	*	*	H	L	H	H	L	
H	L	L	L	L	H	*	*	*	H	L	H	H	L	
H	L	L	L	L	L	H	*	*	H	L	L	L	L	
H	L	L	L	L	L	L	H	*	H	L	L	L	L	
H	L	L	L	L	L	L	L	H	H	L	L	L	L	

\* Don't Care

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 ( $V_{SS}=0V$ )

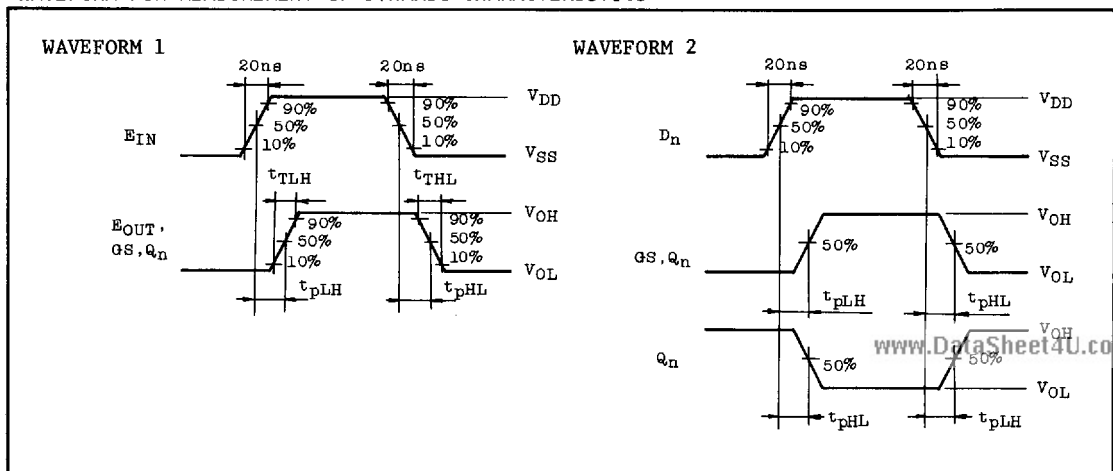
CHARACTERISTIC	SYMBOL	TEST CONDITIONS	$V_{DD}$ (V)	-40°C		25°C			85°C		UNITS	
				MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.		
High-Level Output Voltage	$V_{OH}$	$ I_{OUT}  < 1\mu A$ $V_{IN}=V_{SS}, V_{DD}$	5	4.95	-	4.95	5.00	-	4.95	-	V	
			10	9.95	-	9.95	10.00	-	9.95	-		
			15	14.95	-	14.95	15.00	-	14.95	-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

\* All valid input combinations.

DYNAMIC ELECTRICAL CHARACTERISTICS (Ta=25°C, V<sub>SS</sub>=0V, C<sub>L</sub>=50pF)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	V <sub>DD</sub> (V)	MIN.	TYP.	MAX.	UNITS
Output Transition Time (Low to High)	$t_{TLH}$		5	-	80	200	ns
			10	-	50	100	
			15	-	40	80	
Output Transition Time (High to Low)	$t_{THL}$		5	-	80	200	
			10	-	50	100	
			15	-	40	80	
Propagation Delay Time (E <sub>IN</sub> - E <sub>OUT</sub> )	$t_{pLH}$		5	-	140	280	
	$t_{pHL}$		10	-	60	120	
			15	-	45	90	
Propagation Delay Time (E <sub>IN</sub> - GS)	$t_{pLH}$		5	-	150	300	
	$t_{pHL}$		10	-	65	130	
			15	-	50	100	
Propagation Delay Time (E <sub>IN</sub> - Q <sub>n</sub> )	$t_{pLH}$		5	-	150	340	
	$t_{pHL}$		10	-	60	170	
			15	-	45	125	
Propagation Delay Time (D <sub>n</sub> - Q <sub>n</sub> )	$t_{pLH}$		5	-	270	540	
	$t_{pHL}$		10	-	90	220	
			15	-	65	160	
Propagation Delay Time (D <sub>n</sub> - GS)	$t_{pLH}$		5	-	200	400	
	$t_{pHL}$		10	-	90	180	
			15	-	70	140	
Input Capacitance	C <sub>IN</sub>			-	5	7.5	pF

## WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS



## APPLICATION CIRCUIT

Two TC4532B's Cascaded for 4-Bit Output

