

# TC4532BP

C<sup>2</sup>MOS DIGITAL INTEGRATED CIRCUIT  
SILICON MONOLITHIC

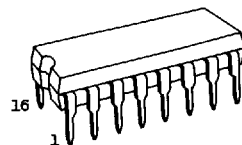
TOSHIBA (LOGIC/MEMORY)

## 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<sub>IN</sub>, and when E<sub>IN</sub> 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<sub>OUT</sub> and G<sub>S</sub> are the outputs to indicate the operational mode of encoder and used when the number of bits is to be increased by cascade connection.



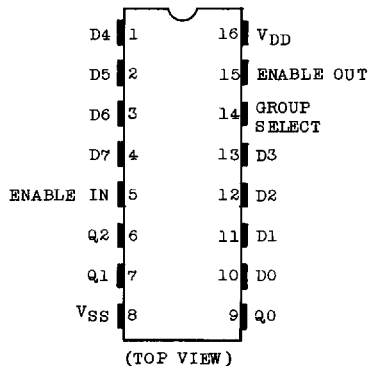
P(DIP16-P-300A)

Weight : 1.0g(Typ.)

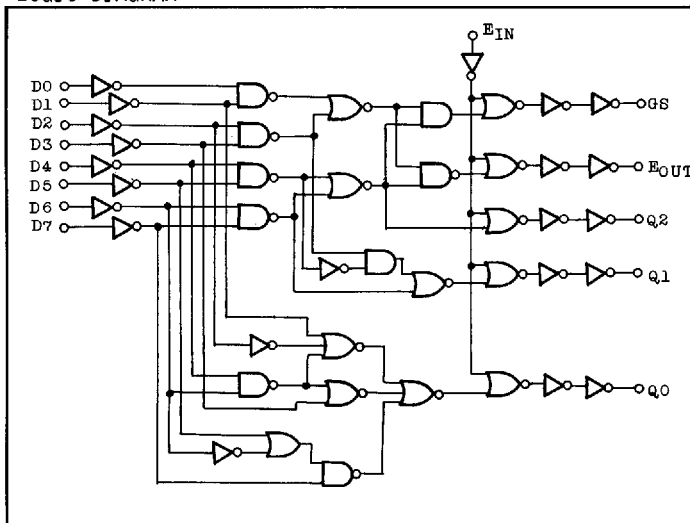
## ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNITS
DC Supply Voltage	V <sub>DD</sub>	V <sub>SS</sub> - 0.5 ~ V <sub>SS</sub> + 20	V
Input Voltage	V <sub>IN</sub>	V <sub>SS</sub> - 0.5 ~ V <sub>DD</sub> + 0.5	V
Output Voltage	V <sub>OUT</sub>	V <sub>SS</sub> - 0.5 ~ V <sub>DD</sub> + 0.5	V
DC Input Current	I <sub>IN</sub>	±10	mA
Power Dissipation	P <sub>D</sub>	300	mW
Operating Temperature Range	T <sub>A</sub>	-40 ~ 85	°C
Storage Temperature Range	T <sub>stg</sub>	-65 ~ 150	°C
Lead Temp./Time	T <sub>sol</sub>	260°C • 10 sec	

## PIN ASSIGNMENT



## LOGIC DIAGRAM



## TRUTH TABLE

E <sub>IN</sub>	INPUT								OUTPUT				
	D7	D6	D5	D4	D3	D2	D1	D0	G <sub>S</sub>	Q <sub>2</sub>	Q <sub>1</sub>	Q <sub>0</sub>	E <sub>OUT</sub>
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	H	L
H	L	L	L	H	*	*	*	*	H	H	L	L	L
H	L	L	L	L	H	*	*	*	H	L	H	H	L
H	L	L	L	L	L	H	*	*	H	L	H	L	L
H	L	L	L	L	L	L	H	*	H	L	L	H	L
H	L	L	L	L	L	L	L	H	H	L	L	L	L

\* Don't Care

RECOMMENDED OPERATING CONDITIONS (V<sub>SS</sub>=0V)

CHARACTERISTIC	SYMBOL		MIN.	TYP.	MAX.	UNITS
DC Supply Voltage	V <sub>DD</sub>		3	-	18	V
Input Voltage	V <sub>IN</sub>		0	-	V <sub>DD</sub>	V

STATIC ELECTRICAL CHARACTERISTICS (V<sub>SS</sub>=0V)

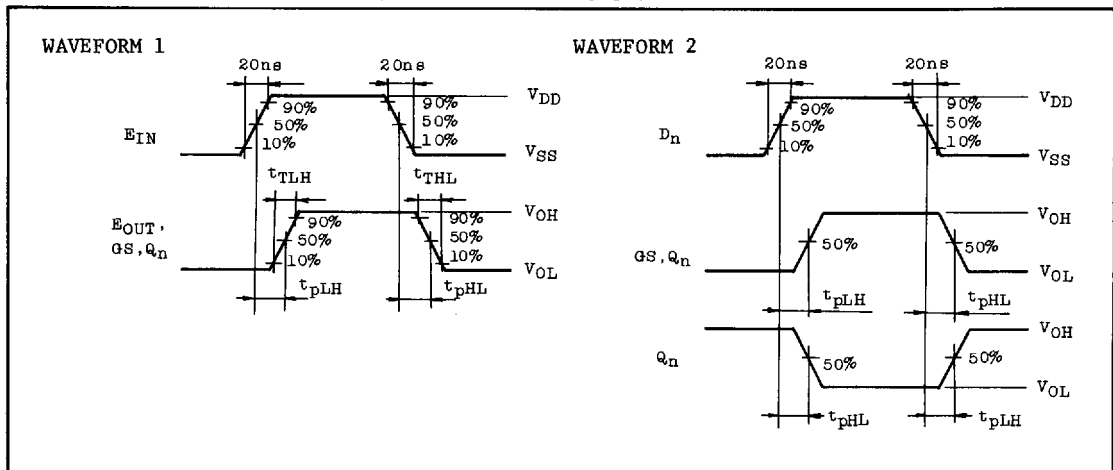
CHARACTERISTIC	SYMBOL	TEST CONDITIONS	V <sub>DD</sub> (V)	-40°C		25°C			85°C		UNITS
				MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.	
High-Level Output Voltage	V <sub>OH</sub>	I <sub>OUT</sub>   < 1μA V <sub>IN</sub> =V <sub>SS</sub> , V <sub>DD</sub>	5	4.95	-	4.95	5.00	-	4.95	-	V
			10	9.95	-	9.95	10.00	-	9.95	-	
			15	14.95	-	14.95	15.00	-	14.95	-	
Low-Level Output Voltage	V <sub>OL</sub>	I <sub>OUT</sub>   < 1μA V <sub>IN</sub> =V <sub>SS</sub> , V <sub>DD</sub>	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 <sub>OH</sub>	V <sub>OH</sub> =4.6V	5	-0.61	-	-0.51	-1.0	-	-0.42	-	mA
		V <sub>OH</sub> =2.5V	5	-2.5	-	-2.1	-4.0	-	-1.7	-	
		V <sub>OH</sub> =9.5V	10	-1.5	-	-1.3	-2.2	-	-1.1	-	
		V <sub>OH</sub> =13.5V	15	-4.0	-	-3.4	-9.0	-	-2.8	-	
		V <sub>IN</sub> =V <sub>SS</sub> , V <sub>DD</sub>									
Output Low Current	I <sub>OL</sub>	V <sub>OL</sub> =0.4V	5	0.61	-	0.51	1.5	-	0.42	-	mA
		V <sub>OL</sub> =0.5V	10	1.5	-	1.3	3.8	-	1.1	-	
		V <sub>OL</sub> =1.5V	15	4.0	-	3.4	15.0	-	2.8	-	
		V <sub>IN</sub> =V <sub>SS</sub> , V <sub>DD</sub>									
Input High Voltage	V <sub>IH</sub>	V <sub>OUT</sub> =0.5V, 4.5V	5	3.5	-	3.5	2.75	-	3.5	-	V
		V <sub>OUT</sub> =1.0V, 9.0V	10	7.0	-	7.0	5.5	-	7.0	-	
		V <sub>OUT</sub> =1.5V, 13.5V	15	11.0	-	11.0	8.25	-	11.0	-	
		I <sub>OUT</sub>   < 1μA									
Input Low Voltage	V <sub>IL</sub>	V <sub>OUT</sub> =0.5V, 4.5V	5	-	1.5	-	2.25	1.5	-	1.5	V
		V <sub>OUT</sub> =1.0V, 9.0V	10	-	3.0	-	4.5	3.0	-	3.0	
		V <sub>OUT</sub> =1.5V, 13.5V	15	-	4.0	-	6.75	4.0	-	4.0	
		I <sub>OUT</sub>   < 1μA									
Input Current	"H" Level	I <sub>IH</sub>	V <sub>IH</sub> =18V	18	-	0.1	-	10 <sup>-5</sup>	0.1	-	μA
	"L" Level	I <sub>IL</sub>	V <sub>IL</sub> =0V	18	-	-0.1	-	-10 <sup>-5</sup>	-0.1	-	
Quiescent Device Current	I <sub>DD</sub>	V <sub>IN</sub> =V <sub>SS</sub> , V <sub>DD</sub> *	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<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 <sub>TLH</sub>		5	-	80	200	ns
			10	-	50	100	
			15	-	40	80	
Output Transition Time (High to Low)	t <sub>THL</sub>		5	-	80	200	
			10	-	50	100	
			15	-	40	80	
Propagation Delay Time (E <sub>IN</sub> - E <sub>OUT</sub> )	t <sub>pLH</sub> t <sub>pHL</sub>		5	-	140	280	
			10	-	60	120	
			15	-	45	90	
Propagation Delay Time (E <sub>IN</sub> - GS)	t <sub>pLH</sub> t <sub>pHL</sub>		5	-	150	300	
			10	-	65	130	
			15	-	50	100	
Propagation Delay Time (E <sub>IN</sub> - Q <sub>n</sub> )	t <sub>pLH</sub> t <sub>pHL</sub>		5	-	150	340	
			10	-	60	170	
			15	-	45	125	
Propagation Delay Time (D <sub>n</sub> - Q <sub>n</sub> )	t <sub>pLH</sub> t <sub>pHL</sub>		5	-	270	540	
			10	-	90	220	
			15	-	65	160	
Propagation Delay Time (D <sub>n</sub> - GS)	t <sub>pLH</sub> t <sub>pHL</sub>		5	-	200	400	
			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

