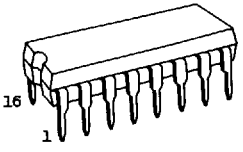
TC4532BP

C²MOS 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_{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.



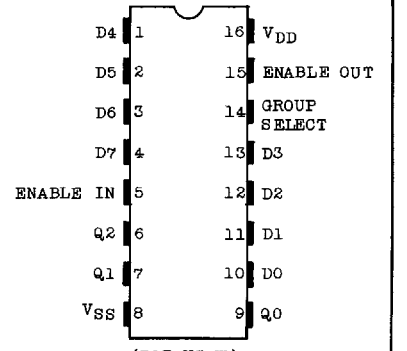
P(DIP16-P-300A)

Weight : 1.0g(Typ.)

ABSOLUTE MAXIMUM RATINGS

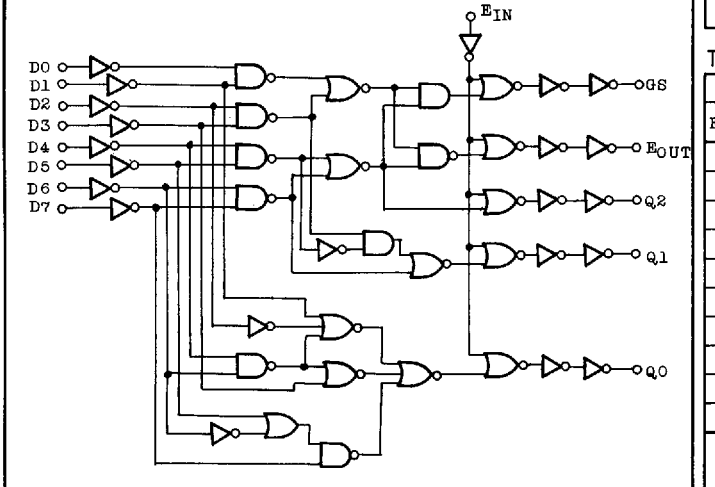
CHARACTERISTIC	SYMBOL	RATING	UNITS
DC Supply Voltage	V_{DD}	$V_{SS}-0.5 \sim V_{SS}+20$	V
Input Voltage	V_{IN}	$V_{SS}-0.5 \sim V_{DD}+0.5$	V
Output Voltage	V_{OUT}	$V_{SS}-0.5 \sim V_{DD}+0.5$	V
DC Input Current	I_{IN}	±10	mA
Power Dissipation	P_D	300	mW
Operating Temperature Range	T_A	-40 ∿ 85	°C
Storage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

PIN ASSIGNMENT



(TOP VIEW)

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	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_{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}	$\|I_{OUT}\|$<1μA $V_{IN}=V_{SS}$, 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}	$\|I_{OUT}\|$<1μA $V_{IN}=V_{SS}$, V_{DD}	5	-	0.05	-	0.00	0.05	-	0.05	
			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	-	
		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	-	
		$\|I_{OUT}\|$<1μA									
Input Low Voltage	V_{IL}	V_{OUT}=0.5V, 4.5V	5	-	1.5	-	2.25	1.5	-	1.5	
		V_{OUT}=1.0V, 9.0V	10	-	3.0	-	4.5	3.0	-	3.0	
		VOUT=1.5V,13.5V	15	-	4.0	-	6.75	4.0	-	4.0	
		$\|I_{OUT}\|$<1μA									
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	

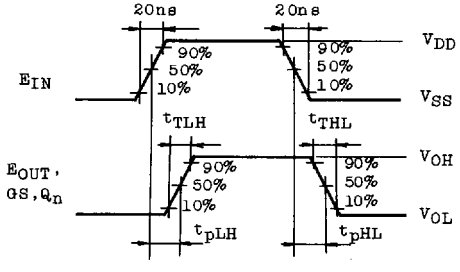
* All valid input combinations.

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

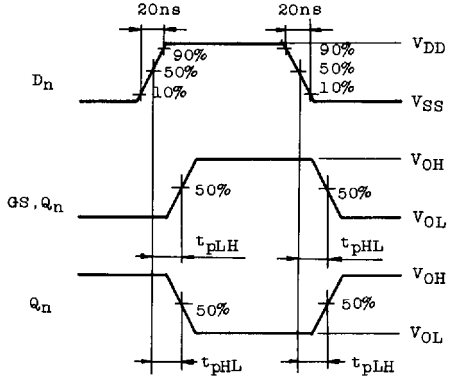
CHARACTERISTIC	SYMBOL	TEST CONDITIONS	V_{DD}(V)	MIN.	TYP.	MAX.	UNITS
Output Transition Time (Low to High)	t_{TLH}		5	-	80	200	ns
			10	-	50	100	
			15	-	40	80	
Output Transition Time (High to Low)	t_{THL}		5	-	80	200	
			10	-	50	100	
			15	-	40	80	
Propagation Delay Time (E_{IN} - E_{OUT})	t_{pLH} t_{pHL}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

WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

WAVEFORM 1



WAVEFORM 2



APPLICATION CIRCUIT

Two TC4532B's Cascaded for 4-Bit Output