TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

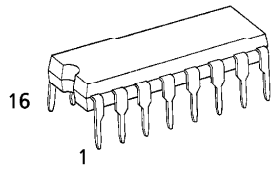
TC4512BP, TC4512BF, TC4512BFN

TC4512B 8 – CHANNEL DATA SELECTOR

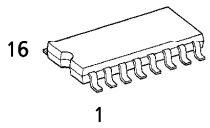
TC4512B is data selector which selects 8 channel data inputs (X0 through×7) according to binary address inputs A, B and C. Since high impedance can be given to output Z by setting DISABLE input to "H", the wired-OR arrangement can be achieved. DISABLE input takes precedence over other inputs giving the output high impedance.

If DISABLE="L" and INHIBIT="H", the data select operation is inhibited and output Z becomes "L" Level.

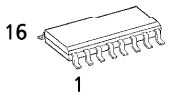
(Note) The JEDEC SOP (FN) is not available in Japan.



P (DIP16-P-300-2.54A)
Weight : 1.00g (Typ.)



F (SOP16-P-300-1.27)
Weight : 0.18g (Typ.)

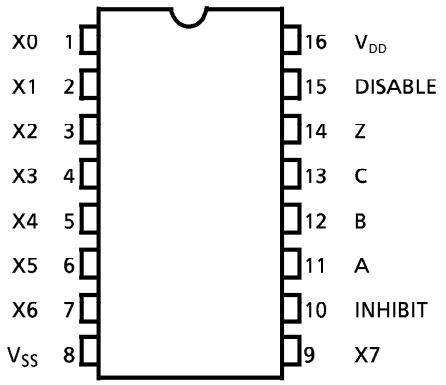


FN (SOL16-P-150-1.27)
Weight : 0.13g (Typ.)

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 (DIP) / 180 (SOIC)	mW
Operating Temperature Range	T_{opr}	– 40~85	°C
Storage Temperature Range	T_{stg}	– 65~150	°C

PIN ASSIGNMENT



(TOP VIEW)

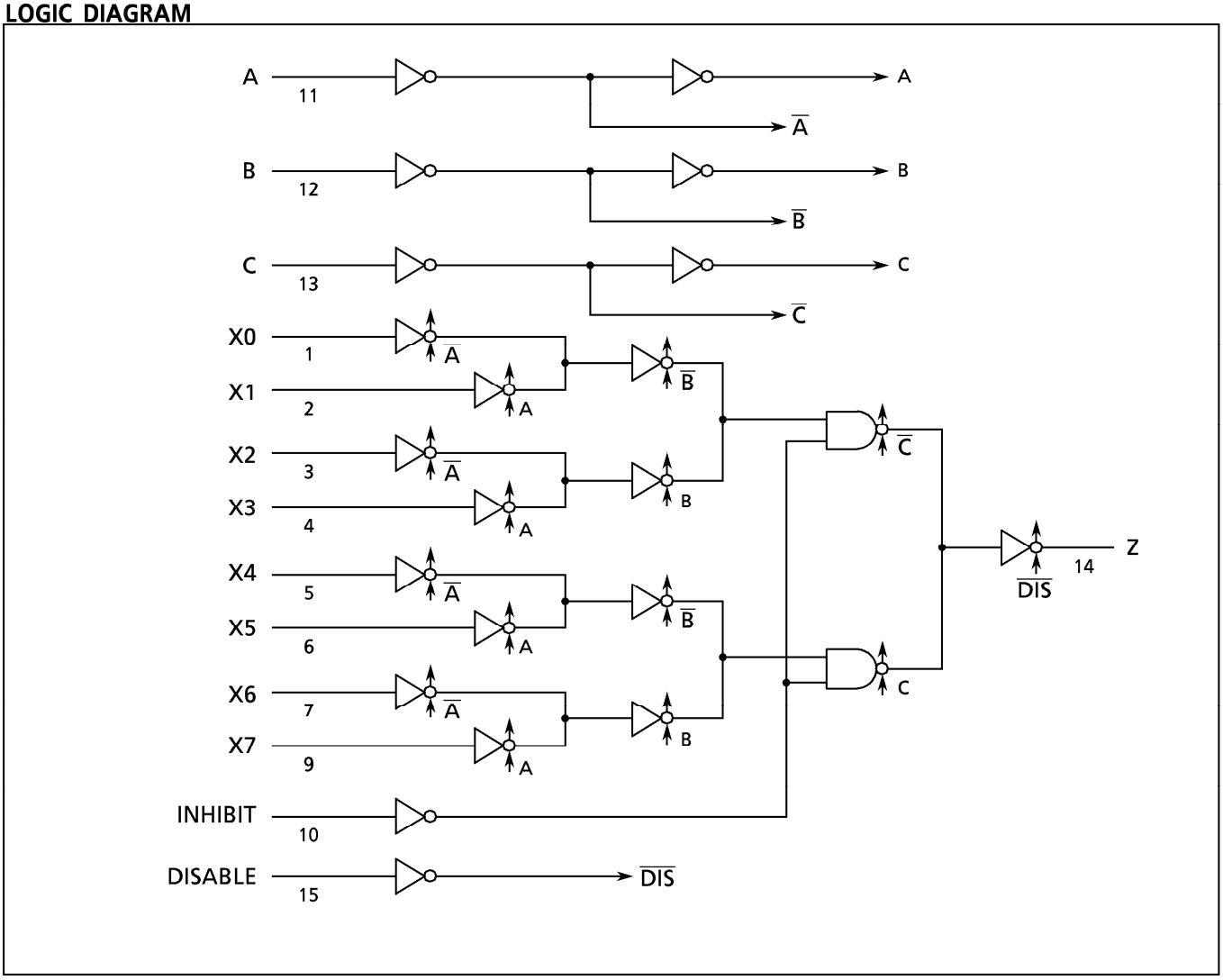
TRUTH TABLE

INPUTS					OUTPUT
A	B	C	INHIBIT	DISABLE	Z
L	L	L	L	L	X0
H	L	L	L	L	X1
L	H	L	L	L	X2
H	H	L	L	L	X3
L	L	H	L	L	X4
H	L	H	L	L	X5
L	H	H	L	L	X6
H	H	H	L	L	X7
*	*	*	H	L	L
*	*	*	*	H	HZ

* : DON'T CARE
HZ : HIGH IMPEDANCE

961001EBA2

LOGIC DIAGRAM



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

CHARACTERISTIC	SYMBOL	TEST CONDITION	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 CONDITION	V_{DD} (V)	−40°C MIN.	−40°C MAX.	25°C MIN.	25°C TYP.	25°C MAX.	85°C MIN.	85°C MAX.	UNIT
High-Level Output Voltage		V_{OH}	$\|I_{OUT}\| < 1\mu A$ $V_{IN} = V_{SS}, V_{DD}$	5 10 15	4.95 9.95 14.95	— — —	4.95 9.95 14.95	5.00 10.00 15.00	— — —	4.95 9.95 14.95	— — —	V
Low-Level Output Voltage		V_{OL}	$\|I_{OUT}\| < 1\mu A$ $V_{IN} = V_{SS}, V_{DD}$	5 10 15	— — —	0.05 0.05 0.05	— — —	0.00 0.00 0.00	0.05 0.05 0.05	— — —	0.05 0.05 0.05	V
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 5 10 15	−0.61 −2.5 −1.5 −4.0	— — — —	−0.51 −2.1 −1.3 −3.4	−1.0 −4.0 −2.2 −9.0	— — — —	−0.42 −1.7 −1.1 −2.8	— — — —	mA
Output Low Current		I_{OL}	V_{OL} = 0.4V V_{OL} = 0.5V V_{OL} = 1.5V $V_{IN} = V_{SS}, V_{DD}$	5 10 15	0.61 1.5 4.0	— — —	0.51 1.3 3.4	1.2 3.2 12.0	— — —	0.42 1.1 2.8	— — —	mA
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 10 15	3.5 7.0 11.0	— — —	3.5 7.0 11.0	2.75 5.5 8.25	— — —	3.5 7.0 11.0	— — —	V
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 10 15	— — —	1.5 3.0 4.0	— — —	2.25 4.5 6.75	1.5 3.0 4.0	— — —	1.5 3.0 4.0	V
Input Current	"H"Level	I_{IH}	V_{IH} = 18V	18	—	0.1	—	10^{-5}	0.1	—	1.0	μA
	"L" Level	I_{IL}	V_{IL} = 0V	18	—	−0.1	—	-10^{-5}	−0.1	—	−1.0	
3-State Output Leakage Current	"H"Level	I_{DH}	V_{OH} = 18V	18	—	0.4	—	10^{-4}	0.4	—	12	μA
	"L" Level	I_{DL}	V_{OL} = 0V	18	—	−0.4	—	-10^{-4}	−0.4	—	−12	
Quiescent Supply Current		I_{DD}	$V_{IN} = V_{SS}, V_{DD}$ *	5 10 15	— — —	5 10 20	— — —	0.005 0.010 0.015	5 10 20	— — —	150 300 600	μA

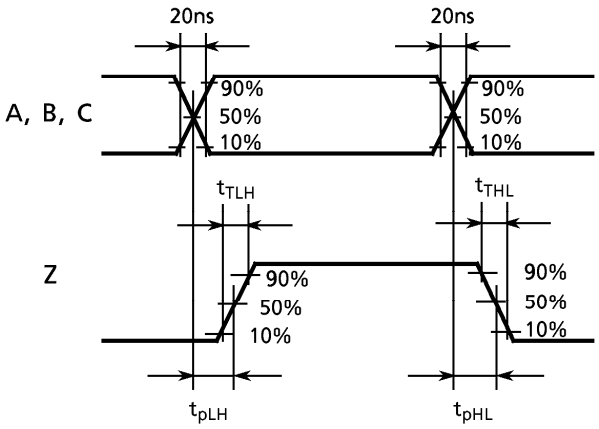
* All valid input combinations.

DYNAMIC ELECTRICAL CHARACTERISTICS (Ta = 25°C, Vss = 0V, C_L = 50pF)

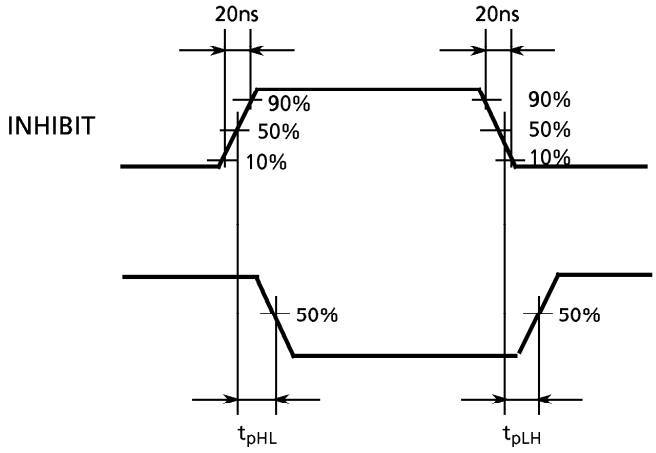
CHARACTERISTIC	SYMBOL	TEST CONDITION	V_{DD}(V)	MIN.	TYP.	MAX.	UNIT
Output Transition Time (Low to High)	t_{TLH}		5	—	80	200	ns
			10	—	50	100	
			15	—	40	80	
Output Transition Time (High to Low)	t_{THL}		5	—	80	200	
			10	—	50	100	
			15	—	40	80	
Propagation Delay Time (INHIBIT - Z)	t_{pLH} t_{pHL}		5	—	140	280	
			10	—	60	140	
			15	—	40	100	
Propagation Delay Time (A, B, C - Z)	t_{pLH} t_{pHL}		5	—	240	400	
			10	—	95	170	
			15	—	65	120	
Propagation Delay Time (X - Z)	t_{pLH} t_{pHL}		5	—	210	360	
			10	—	85	150	
			15	—	60	110	
Three State Disable Time (DISABLE - Z)	t_{pZL} , t_{pLZ} t_{pHZ} , t_{pZH}	R_L = 1kΩ	5	—	60	120	
			10	—	25	60	
			15	—	20	40	
Input Capacitance	C_{IN}			—	5	7.5	pF

WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

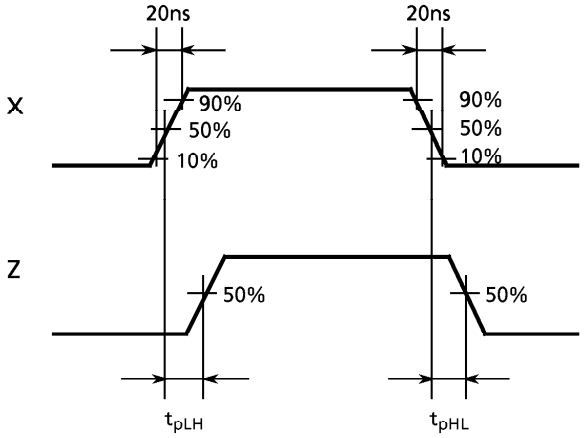
WAVEFORM 1



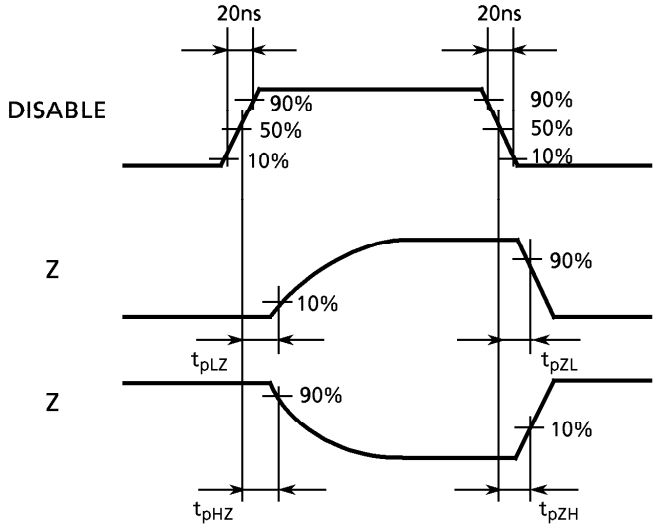
WAVEFORM 2 (X = "H")



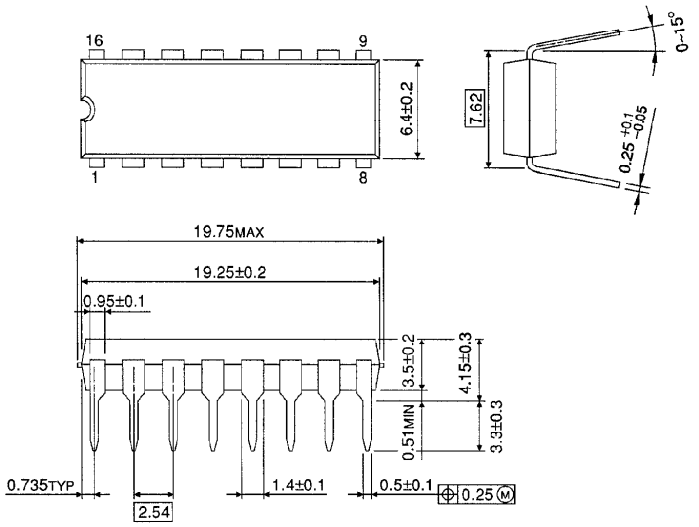
WAVEFORM 3



WAVEFORM 4

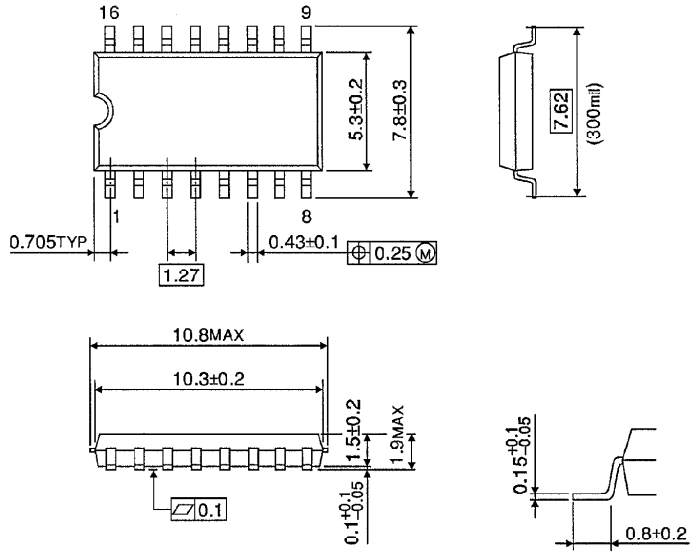


DIP 16PIN OUTLINE DRAWING (DIP16-P-300-2.54A) Unit in mm



Weight : 1.00g (Typ.)

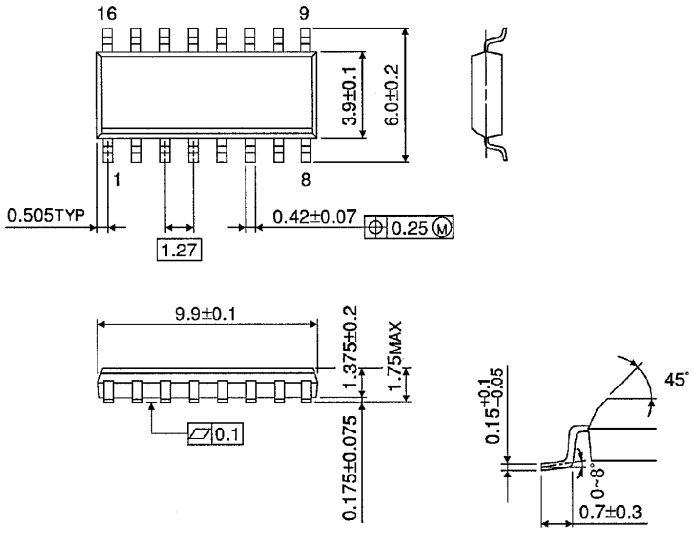
SOP 16PIN (200mil BODY) OUTLINE DRAWING (SOP16-P-300-1.27) Unit in mm



Weight : 0.18g (Typ.)

SOP 16PIN (150mil BODY) OUTLINE DRAWING (SOL16-P-150 -1.27) Unit in mm

(Note) This package is not available in Japan.



Weight : 0.13g (Typ.)