

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

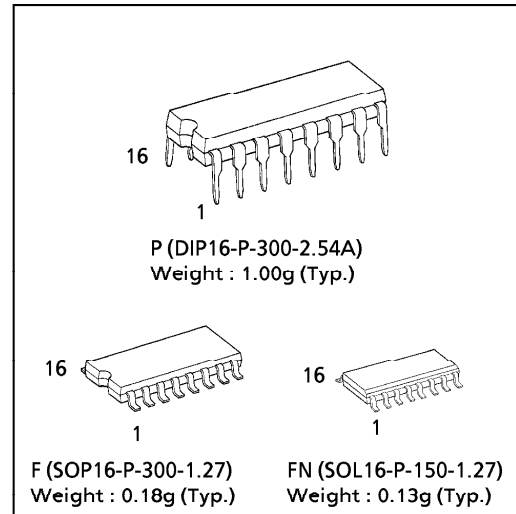
# TC4512BP, TC4512BF, TC4512BFN

## TC4512B 8-CHANNEL DATA SELECTOR

TC4512B is data selector which selects 8 channel data inputs (X0 through X7) 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.



### MAXIMUM RATINGS

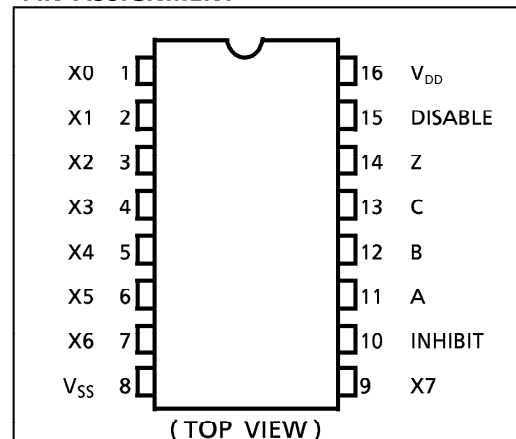
CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	$V_{DD}$	$V_{SS} - 0.5 \sim V_{SS} + 20$	V
Input Voltage	$V_{IN}$	$V_{SS} - 0.5 \sim V_{DD} + 0.5$	V
Output Voltage	$V_{OUT}$	$V_{SS} - 0.5 \sim V_{DD} + 0.5$	V
DC Input Current	$I_{IN}$	$\pm 10$	mA
Power Dissipation	$P_D$	300 (DIP) / 180 (SOIC)	mW
Operating Temperature Range	$T_{opr}$	-40~85	°C
Storage Temperature Range	$T_{stg}$	-65~150	°C

### 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

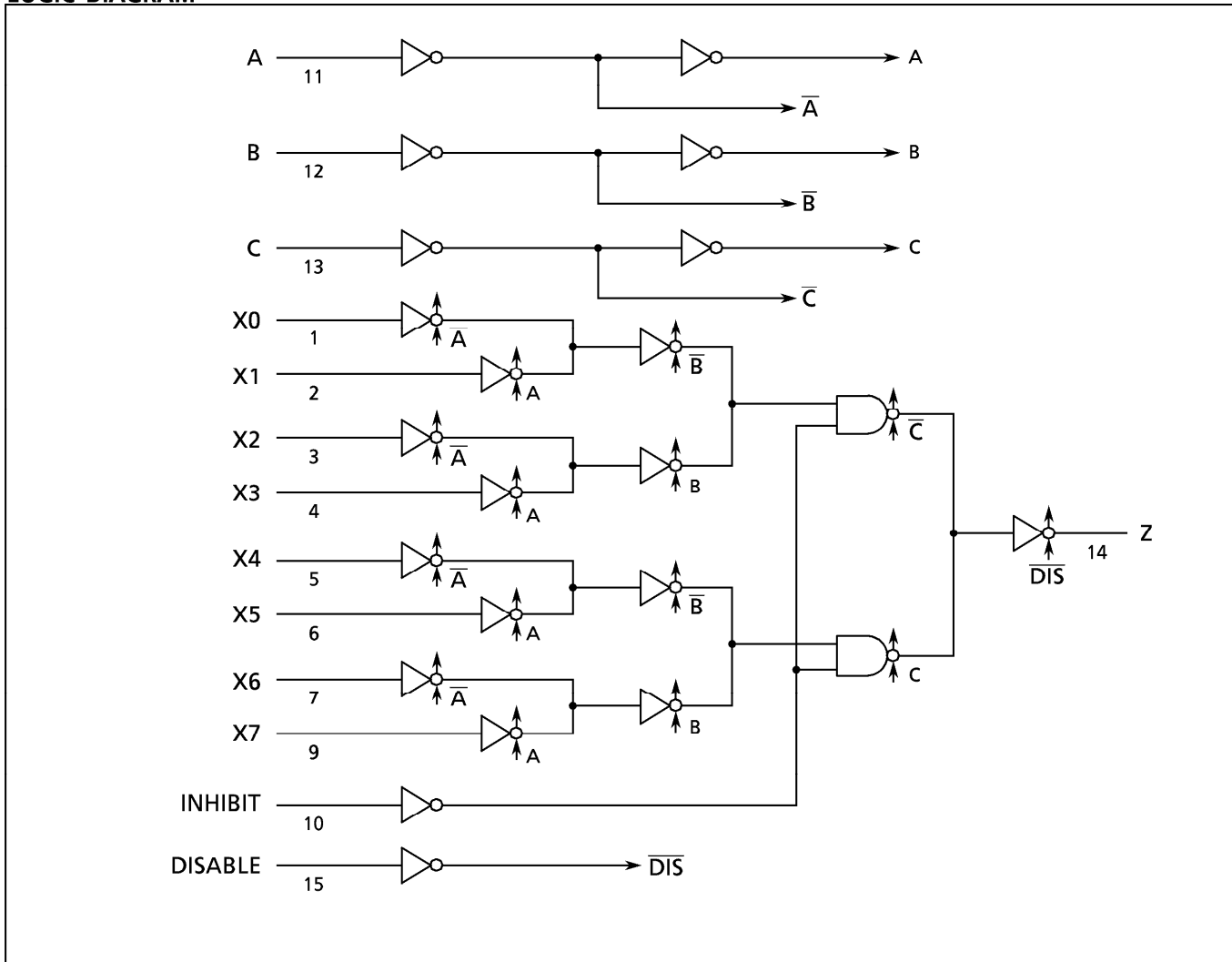
### PIN ASSIGNMENT



961001EBA2

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LOGIC DIAGRAM



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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		25°C			85°C		UNIT
				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	1.2	—	0.42	—	mA
			10	1.5	—	1.3	3.2	—	1.1	—	
			15	4.0	—	3.4	12.0	—	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	—	$\mu A$
	"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
	"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	—	5	—	0.005	5	—	150	$\mu A$
			10	—	10	—	0.010	10	—	300	
			15	—	20	—	0.015	20	—	600	

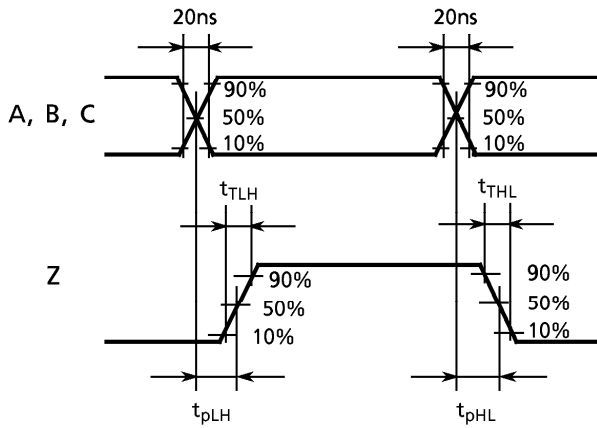
\* All valid input combinations.

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

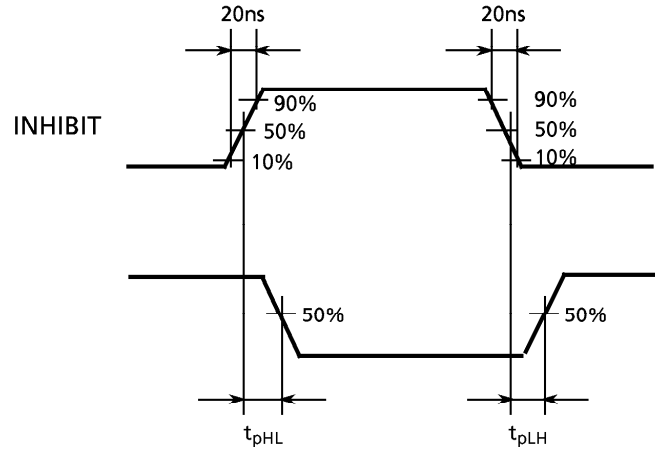
CHARACTERISTIC	SYMBOL	TEST CONDITION	V <sub>DD</sub> (V)	MIN.	TYP.	MAX.	UNIT
Output Transition Time (Low to High)	t <sub>TLH</sub>		5	—	80	200	ns
			10	—	50	100	
			15	—	40	80	
Output Transition Time (High to Low)	t <sub>THL</sub>		5	—	80	200	
			10	—	50	100	
			15	—	40	80	
Propagation Delay Time (INHIBIT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

WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

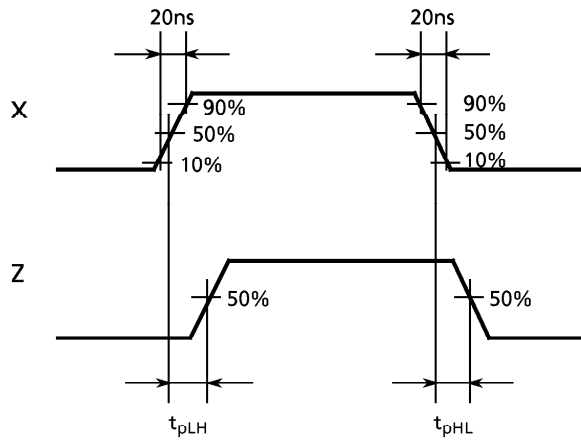
WAVEFORM 1



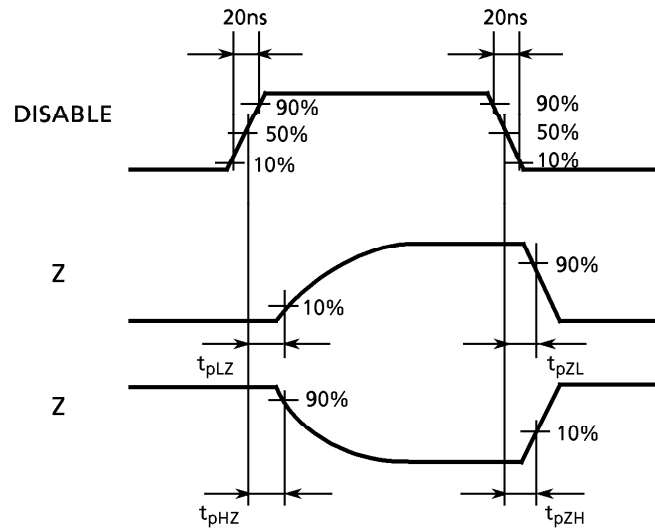
WAVEFORM 2 (X = "H")



WAVEFORM 3

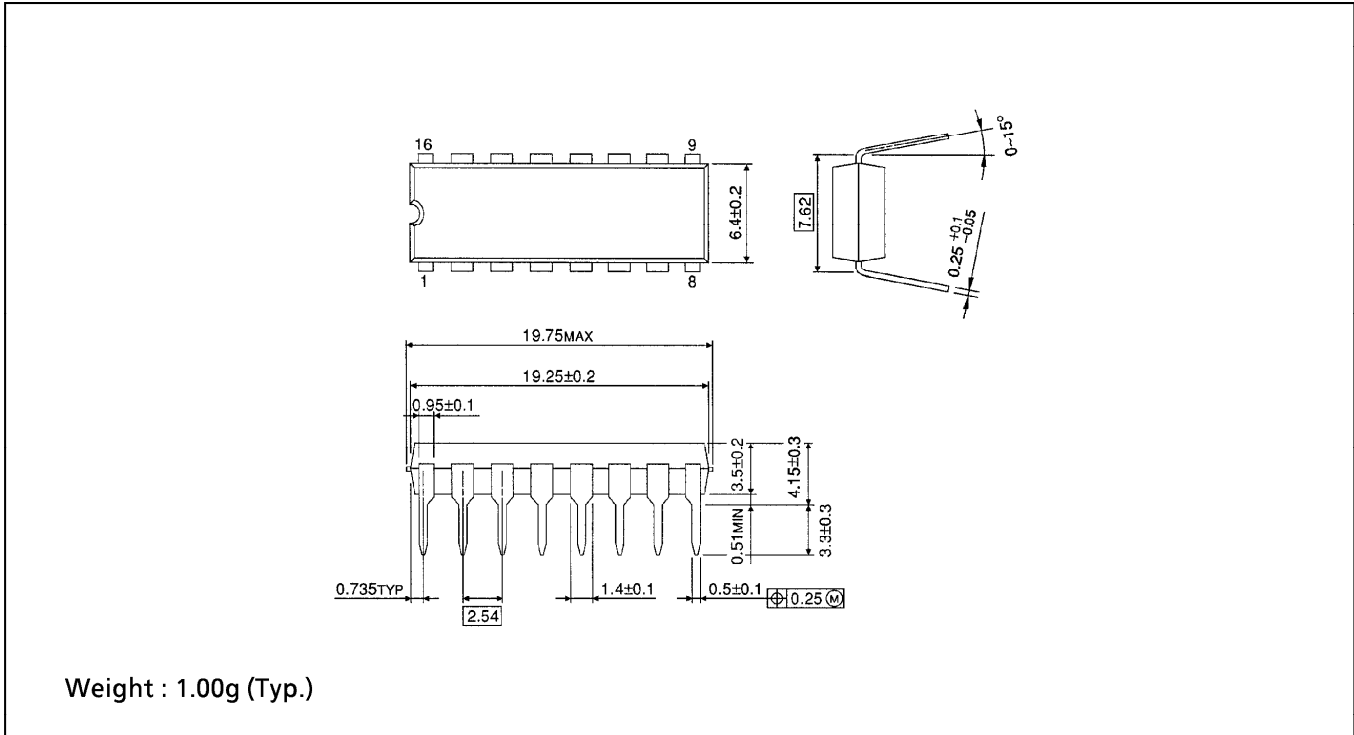


WAVEFORM 4



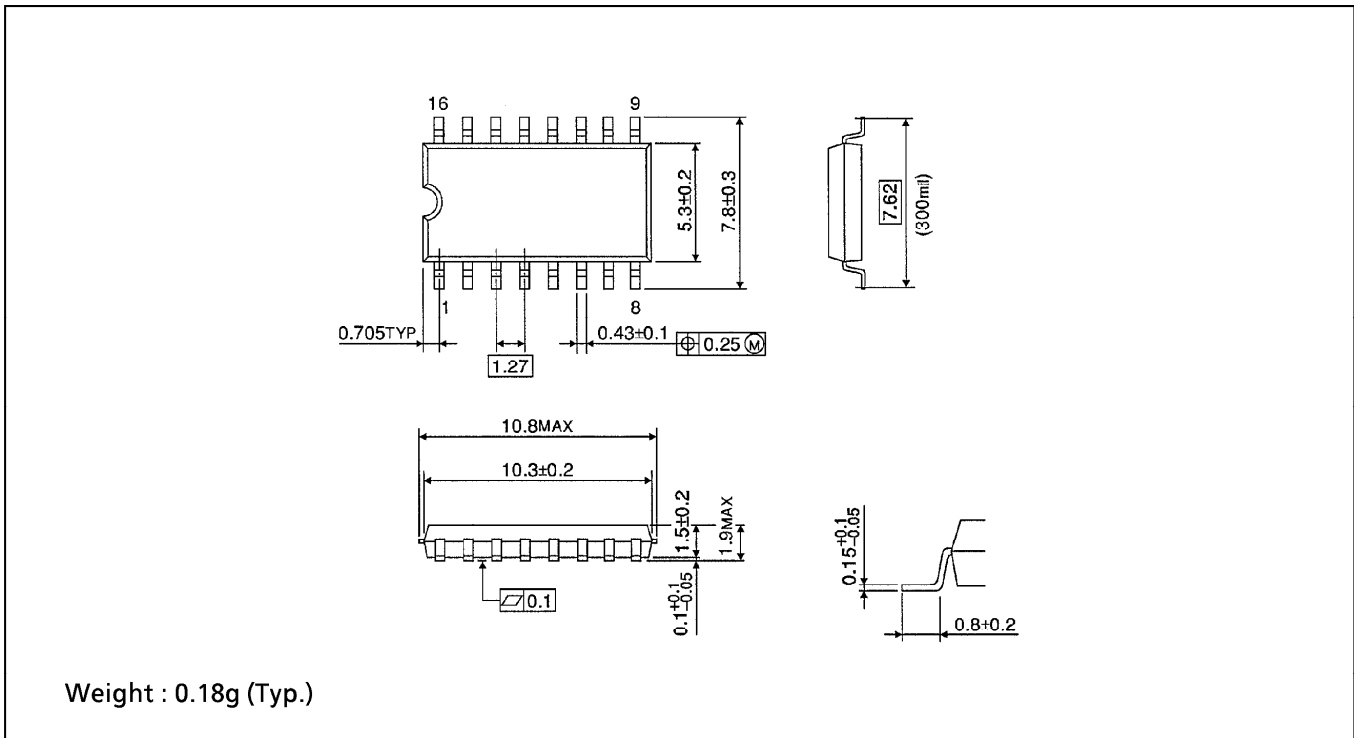
**DIP 16PIN OUTLINE DRAWING (DIP16-P-300-2.54A)**

Unit in mm



**SOP 16PIN (200mil BODY) OUTLINE DRAWING (SOP16-P-300-1.27)**

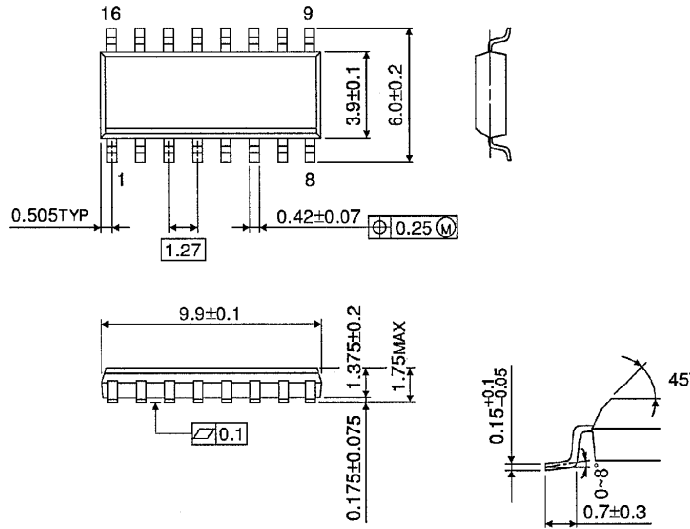
Unit in mm



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.)