

# TC4584BP, TC4584BF, TC4584BFN

## TC4584B Hex Schmitt Trigger

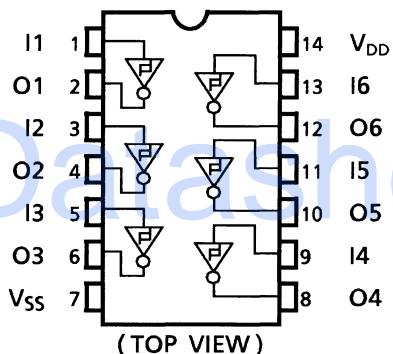
The TC4584B is the 6-circuit inverter having the Schmitt trigger function at the input terminal.

That is, since the circuit threshold level voltages at the leading and trailing edges of input waveform are different ( $V_P$ ,  $V_N$ ), the TC4584B can be used in the broad range application including line receiver, waveform shaping circuit, astable multivibrator, monostable multivibrator, etc.

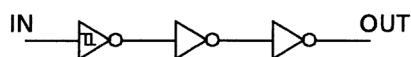
In addition to ordinary inverter.

Since the pins are compatible with the TC4069UB, the substitution is also possible.

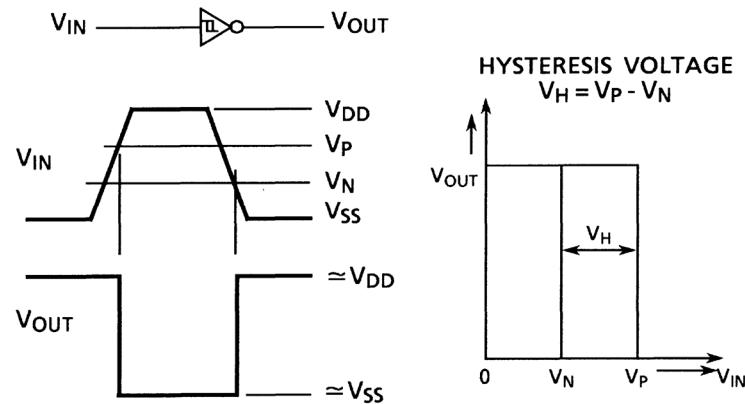
### Pin Assignment



### Logic Diagram



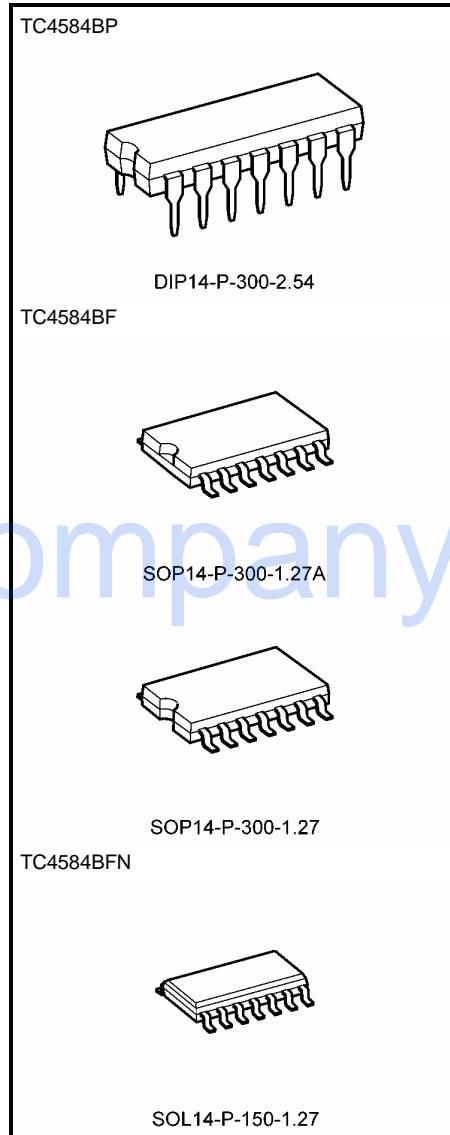
### Input/Output Voltage Characteristic



**Input-Output  
Voltage Waveform**

**Transfer  
Characteristics**

Note: xxxFN (JEDEC SOP) is not available in Japan.



Weight	
DIP14-P-300-2.54	: 0.96 g (typ.)
SOP14-P-300-1.27A	: 0.18 g (typ.)
SOP14-P-300-1.27	: 0.18 g (typ.)
SOL14-P-150-1.27	: 0.12 g (typ.)

**Absolute Maximum Ratings (Note)**

Characteristics	Symbol	Rating	Unit
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 (DIP)/180 (SOIC)	mW
Operating temperature range	T <sub>opr</sub>	-40~85	°C
Storage temperature range	T <sub>stg</sub>	-65~150	°C

Note: Exceeding any of the absolute maximum ratings, even briefly, lead to deterioration in IC performance or even destruction.

**Operating Range (V<sub>SS</sub> = 0 V) (Note)**

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
DC supply voltage	V <sub>DD</sub>	—	3	—	18	V
Input voltage	V <sub>IN</sub>	—	0	—	V <sub>DD</sub>	V

Note 1: The operating range must be maintained to ensure the normal operation of the device.  
Unused inputs must be tied to either V<sub>CC</sub> or GND.

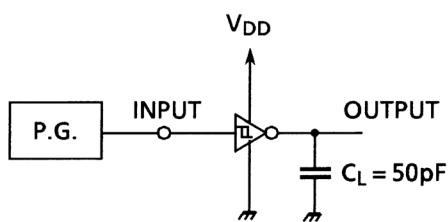
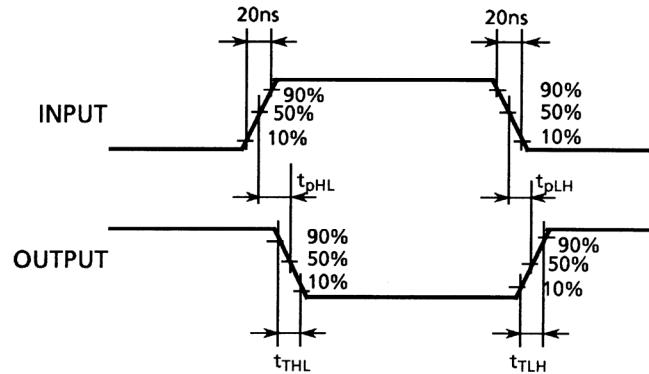
Static Electrical Characteristics ( $V_{SS} = 0$  V)

Characteristics	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	$I_{OH}$	$V_{OH} = 4.6$ V $V_{OH} = 2.5$ V $V_{OH} = 9.5$ V $V_{OH} = 13.5$ V $V_{IN} = V_{SS}$	5	-0.61	—	-0.51	-1.0	—	-0.42	—	mA	
			5	-2.50	—	-2.10	-4.0	—	-1.70	—		
			10	-1.50	—	-1.30	-2.2	—	-1.10	—		
			15	-4.00	—	-3.40	-9.0	—	-2.80	—		
			—	—	—	—	—	—	—	—		
Output low current	$I_{OL}$	$V_{OL} = 0.4$ V $V_{OL} = 0.5$ V $V_{OL} = 1.5$ V $V_{IN} = V_{DD}$	5	0.61	—	0.51	1.5	—	0.42	—	mA	
			10	1.50	—	1.30	3.8	—	1.10	—		
			15	4.00	—	3.40	15.0	—	2.80	—		
			—	—	—	—	—	—	—	—		
Positive trigger threshold voltage	$V_P$	$V_{OUT} = 0.5$ V $V_{OUT} = 1.0$ V $V_{OUT} = 1.5$ V	5	2.05	3.75	2.15	3.0	3.75	2.15	3.85	V	
			10	4.80	7.60	4.90	6.4	7.60	4.90	7.70		
			15	7.80	11.60	7.90	9.9	11.60	7.90	11.70		
Negative trigger threshold voltage	$V_N$	$V_{OUT} = 4.5$ V $V_{OUT} = 9.0$ V $V_{OUT} = 13.5$ V	5	1.25	2.95	1.25	2.3	2.85	1.15	2.85	V	
			10	2.40	5.20	2.40	3.8	5.10	2.30	5.10		
			15	3.40	7.20	3.40	5.2	7.10	3.30	7.10		
Hysteresis voltage	$V_H$	—	5	0.10	1.25	0.25	0.65	1.25	0.25	1.40	V	
			10	1.80	3.50	1.90	2.60	3.50	1.90	3.60		
			15	3.70	5.60	3.80	4.70	5.60	3.80	5.70		
Input current	"H" level	$I_{IH}$	$V_{IH} = 18$ V	18	—	0.1	—	$10^{-5}$	0.1	—	1.0	$\mu A$
	"L" level	$I_{IL}$	$V_{IL} = 0$ V	18	—	-0.1	—	$-10^{-5}$	-0.1	—	-1.0	
Quiescent supply current	$I_{DD}$	$V_{IN} = V_{SS}, V_{DD}$ (Note)	5	—	1	—	0.001	1	—	7.5	$\mu A$	
			10	—	2	—	0.002	2	—	15.0		
			15	—	4	—	0.004	4	—	30.0		

Note: All valid input combinations.

**Dynamic Electrical Characteristics ( $T_a = 25^\circ\text{C}$ ,  $V_{SS} = 0 \text{ V}$ ,  $C_L = 50 \text{ pF}$ )**

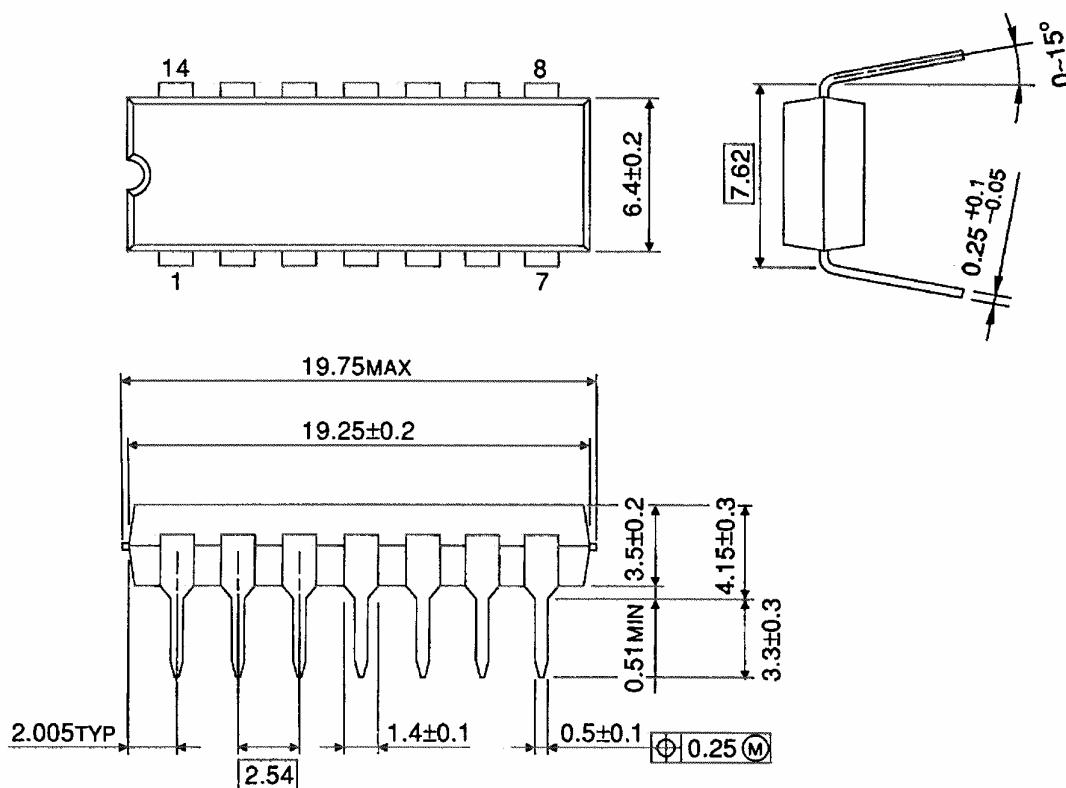
Characteristics	Symbol	Test Condition	$V_{DD} (\text{V})$	Min	Typ.	Max	Unit
			5	—	80	200	
Output transition time (low to high)	$t_{TLH}$	—	10	—	50	100	ns
			15	—	40	80	
			5	—	80	200	
Output transition time (high to low)	$t_{THL}$	—	10	—	50	100	ns
			15	—	40	80	
			5	—	170	340	
Propagation delay time	$t_{pLH}$ $t_{pHL}$	—	10	—	80	160	ns
			15	—	60	120	
Input capacitance	$C_{IN}$	—	—	—	5	7.5	pF

**Circuit and Waveform for Measurement of Dynamic Characteristics****Circuit****Waveform**

**Package Dimensions**

DIP14-P-300-2.54

Unit : mm

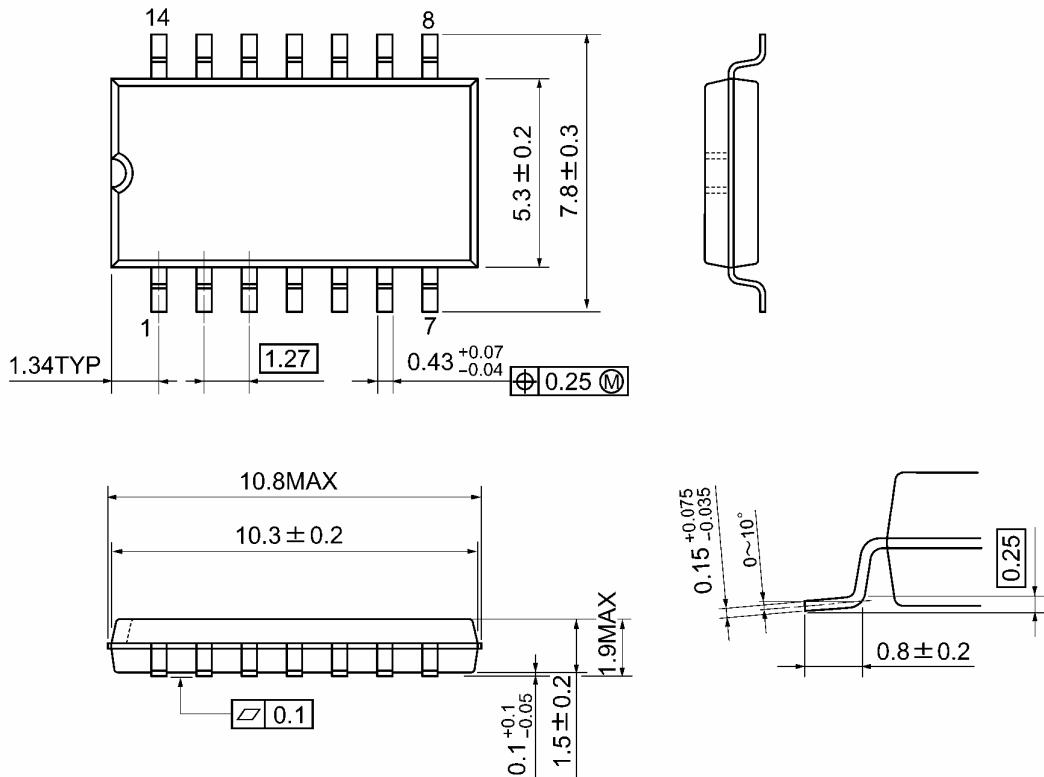


Weight: 0.96 g (typ.)

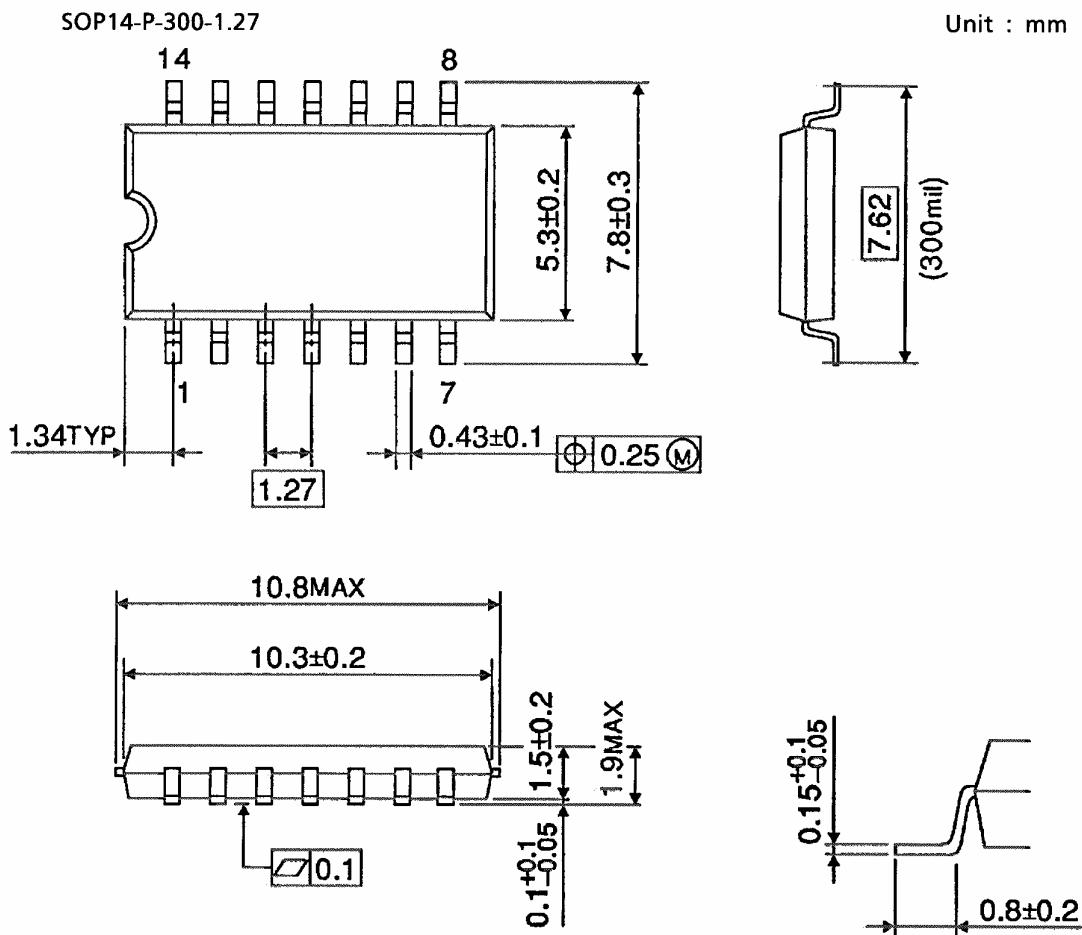
**Package Dimensions**

SOP14-P-300-1.27A

Unit: mm



Weight: 0.18 g (typ.)

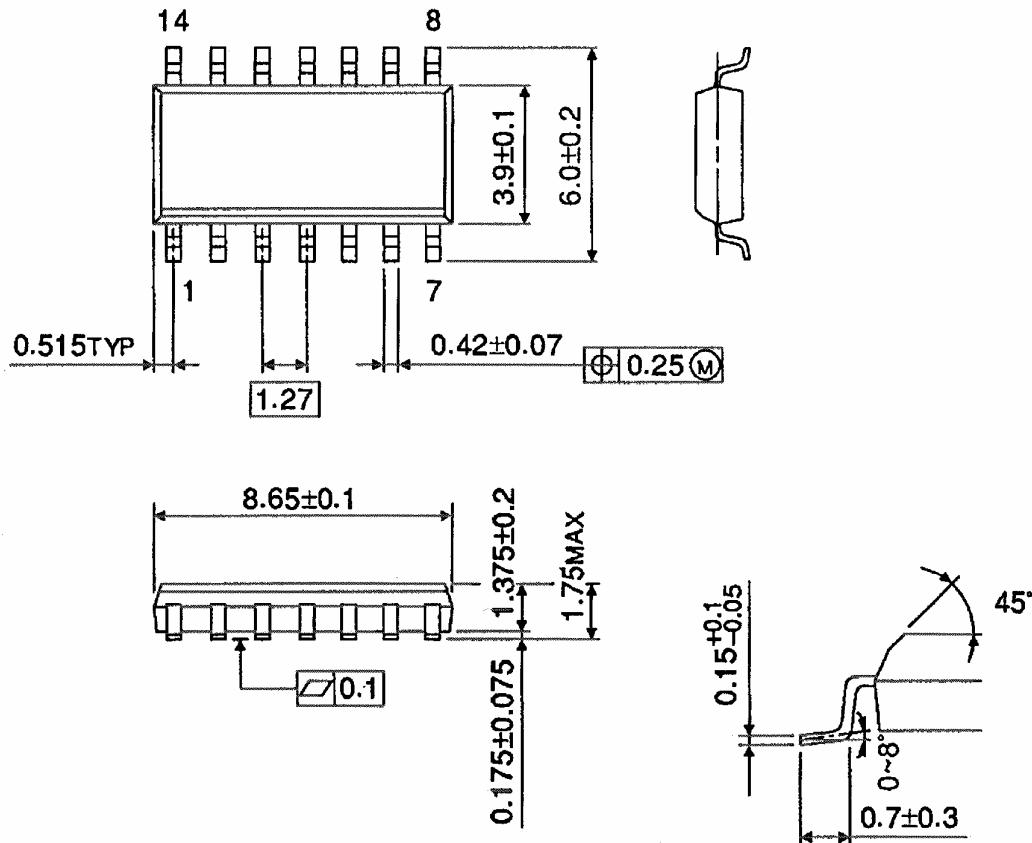
**Package Dimensions**

Weight: 0.18 g (typ.)

## Package Dimensions (Note)

SOL14-P-150-1.27

Unit : mm



Note: This package is not available in Japan.

Weight: 0.12 g (typ.)

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