

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC4584BP, TC4584BF, TC4584BFN

TC4584B HEX SCHMITT TRIGGER

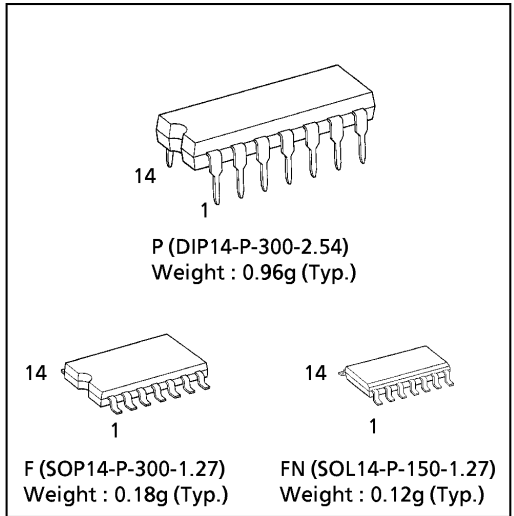
The TC4584B is the 6-circuit inverter having the Schmitt trigger function at the input terminal.

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.

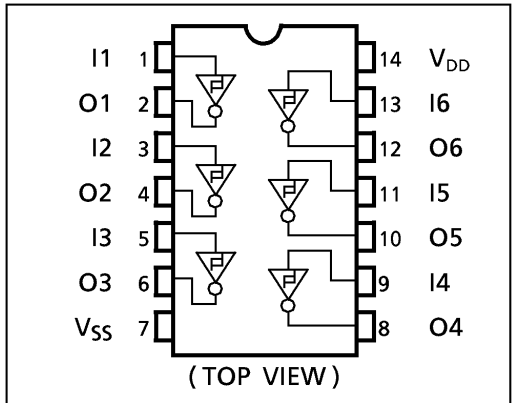
(Note) The JEDEC SOP (FN) is not available in Japan.



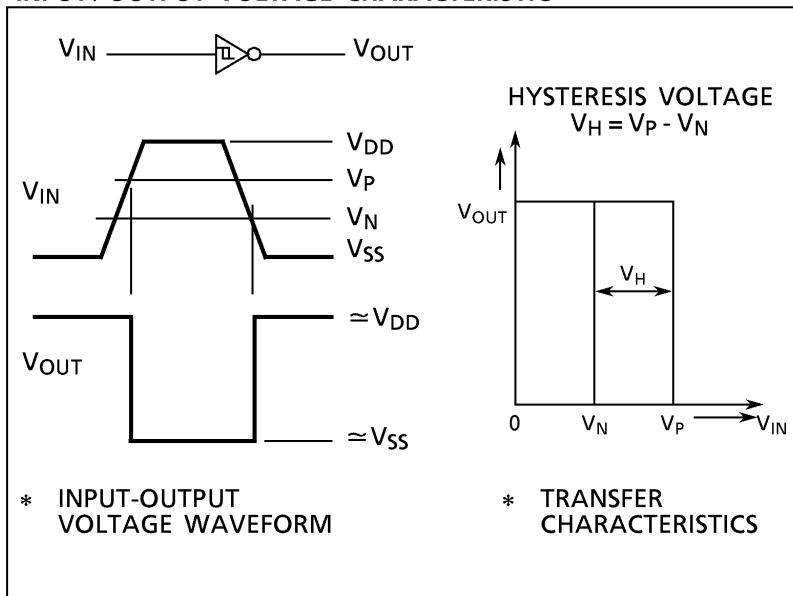
MAXIMUM RATINGS

| 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} | ± 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 |

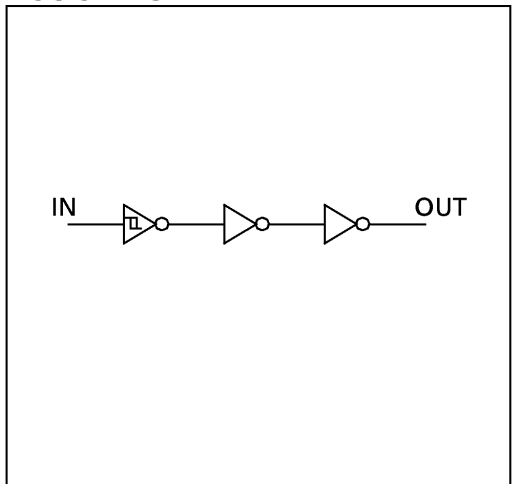
PIN ASSIGNMENT



INPUT / OUTPUT VOLTAGE CHARACTERISTIC



LOGIC DIAGRAM



980910EBA2

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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} | $V_{OH} = 4.6V$ $V_{OH} = 2.5V$ $V_{OH} = 9.5V$ $V_{OH} = 13.5V$ $V_{IN} = V_{SS}$ | 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} | $V_{OL} = 0.4V$ $V_{OL} = 0.5V$ $V_{OL} = 1.5V$ $V_{IN} = V_{DD}$ | 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 | — | | |
| | | | 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 | | | | | |
| Positive Trigger Threshold Voltage | V_P | $V_{OUT} = 0.5V$ $V_{OUT} = 1.0V$ $V_{OUT} = 1.5V$ | 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 | $V_{OUT} = 4.5V$ $V_{OUT} = 9.0V$ $V_{OUT} = 13.5V$ | 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} | $V_{IH} = 18V$ | 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 | |
| Quiescent Supply Current | I_{DD} | $V_{IN} = V_{SS}, V_{DD} *$ | 5 | — | 1 | — | 0.001 | 1 | — | 7.5 | μA | |
| | | | 10 | — | 2 | — | 0.002 | 2 | — | 15.0 | | |
| | | | 15 | — | 4 | — | 0.004 | 4 | — | 30.0 | | |

* All valid input combinations.

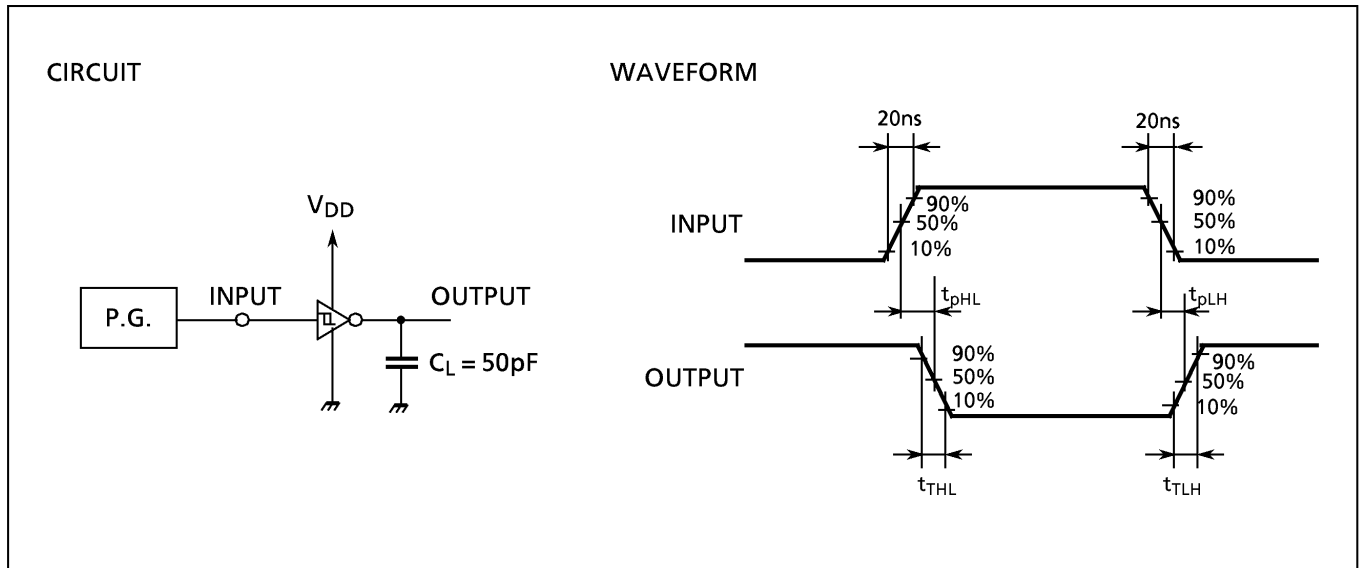
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DYNAMIC ELECTRICAL CHARACTERISTICS (Ta = 25°C, Vss = 0V, CL = 50pF)

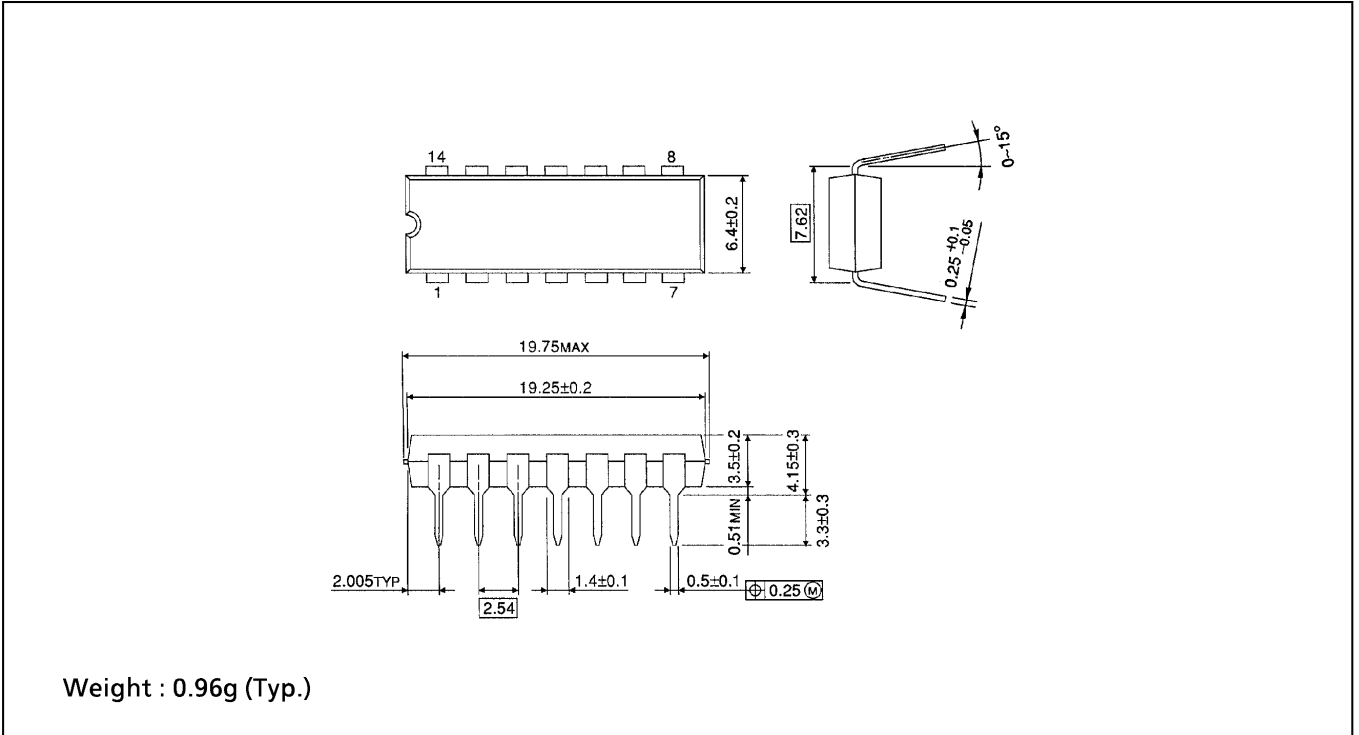
| CHARACTERISTIC | SYMBOL | TEST CONDITION | $V_{DD}(V)$ | MIN. | TYP. | MAX. | UNIT |
|---|------------------------|----------------|-------------|------|------|------|------|
| | | | | | | | |
| Output Transition Time (Low to High) | t_{TLH} | | 5 | — | 80 | 200 | ns |
| | | | 10 | — | 50 | 100 | |
| | | | 15 | — | 40 | 80 | |
| Output Transition Time (High to Low) | t_{THL} | | 5 | — | 80 | 200 | |
| | | | 10 | — | 50 | 100 | |
| | | | 15 | — | 40 | 80 | |
| Propagation Delay Time | t_{pLH} t_{pHL} | | 5 | — | 170 | 340 | |
| | | | 10 | — | 80 | 160 | |
| | | | 15 | — | 60 | 120 | |
| Input Capacitance | C_{IN} | | | — | 5 | 7.5 | pF |

CIRCUIT AND WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS



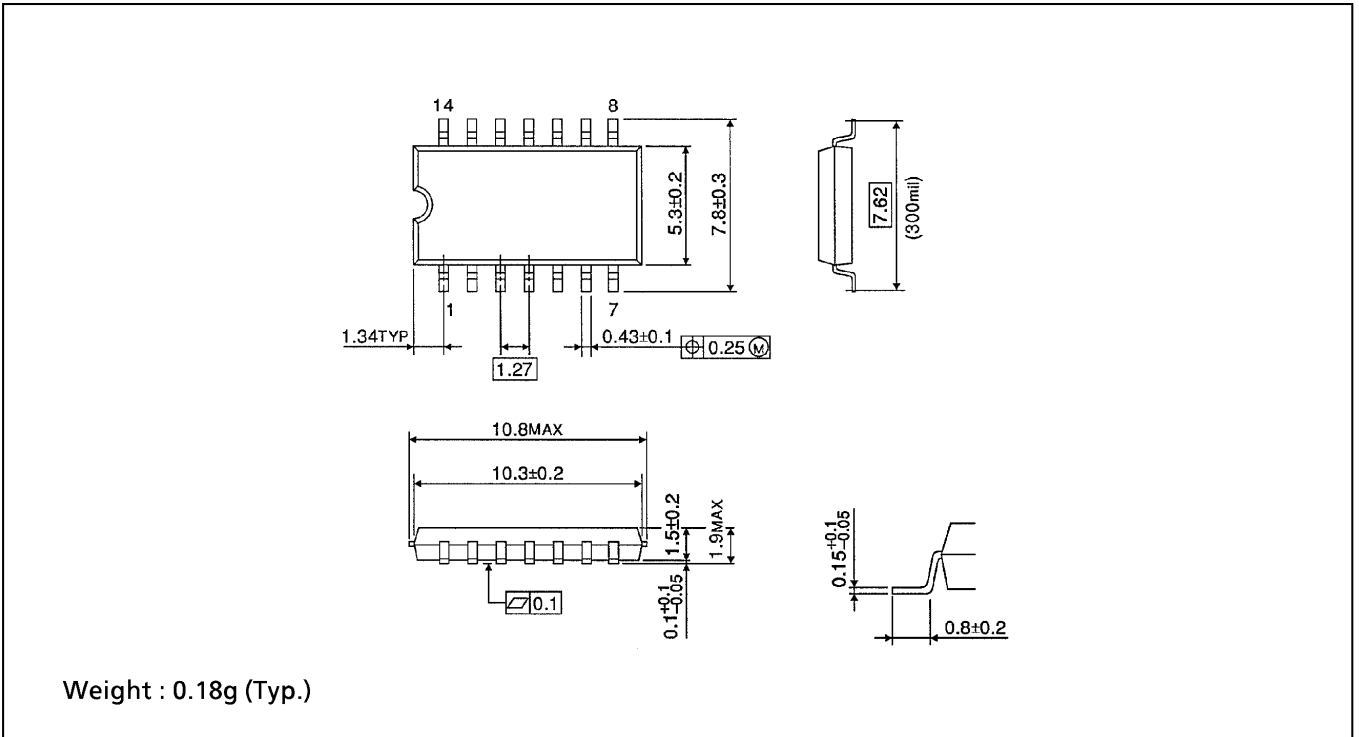
DIP 14PIN OUTLINE DRAWING (DIP14-P-300-2.54)

Unit in mm



SOP 14PIN (200mil BODY) OUTLINE DRAWING (SOP14-P-300-1.27)

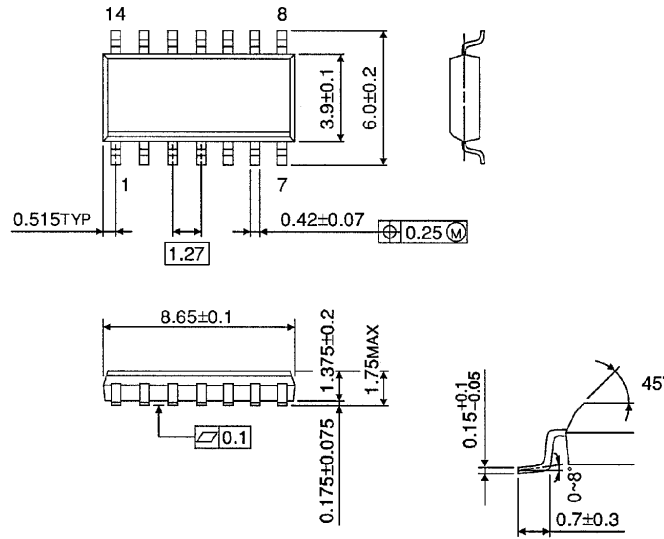
Unit in mm



SOP 14PIN (150mil BODY) OUTLINE DRAWING (SOL14-P-150 -1.27)

Unit in mm

(Note) This package is not available in Japan.



Weight : 0.12g (Typ.)

This datasheet has been downloaded from:

www.DatasheetCatalog.com

Datasheets for electronic components.