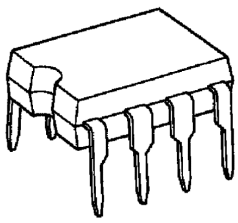
TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

# TA8505P

Supply Voltage Supervisor

TA8505P is a bipolar monolithic IC developed for reset controller in digital systems, especially in microcomputer systems.
Wide range detecting voltage can be set freely by a few external parts.



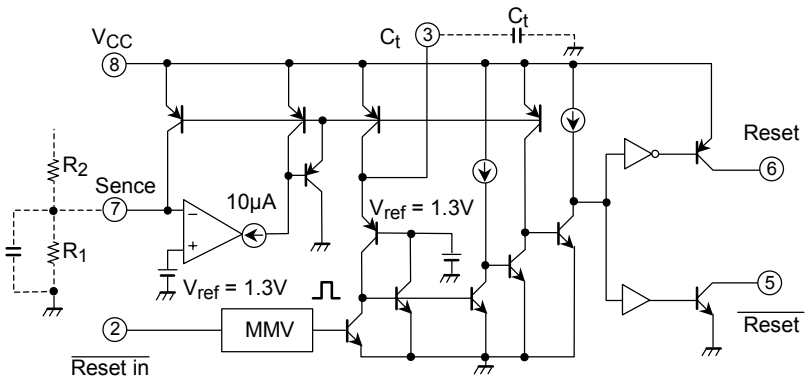
DIP8-P-300-2.54A

Weight: 0.5g (typ.)

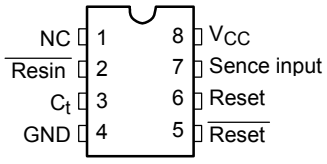
## Features

- A detected voltage and hysteresis can be set with 2 external resistances.
- Provided the 2 outputs of Reset and $\overline{\text{Reset}}$.
- $\overline{\text{Reset}}$–IN signal can reset two outputs' voltage.
- Wide operating voltage range: 1.8~32V
- Output current: $I_{OL}$ = 20mA (max.)

## Block Diagram




## Pin Connection (top view)



## Maximum Ratings (Ta = 25°C)

| Characteristic | Symbol | Rating | Unit |
|---|---|---|---|
| Supply voltage | $V_{CC}$ | 36 | V |
| Breakdown voltage | $\overline{\text{RESIN}}$ | 36 | V |
| | SENCE | | |
| Output current | $I_{OH}$ | −1 | mA |
| | $I_{OL}$ | 20 | |
| Power dissipation | $P_D$ | 0.6 | W |
| Operating temperature | $T_{opr}$ | −40~85 | °C |
| Storage temperature | $T_{stg}$ | −55~150 | °C |

## Recommended Operating Condition

| Characteristic | | | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| Supply voltage | | | $V_{CC}$ | — | 1.8 | — | 32 | V |
| Input voltage | | | $V_{IN}$ | — | 0 | — | $V_{CC}$ | V |
| Input voltage | "H" level | $\overline{\text{RESIN}}$ | $V_{IH}$ | — | 2.0 | — | $V_{CC}$ | V |
| | "L" level | $\overline{\text{RESIN}}$ | $V_{IL}$ | — | 0 | — | 0.6 | |
| Output current | | RESET | $I_{OH}$ | — | 0 | — | −1 | mA |
| | | $\overline{\text{RESET}}$ | $I_{OL}$ | — | 0 | — | 16 | |
| Operation temperature | | | $T_{opr}$ | — | 0 | — | 70 | °C |

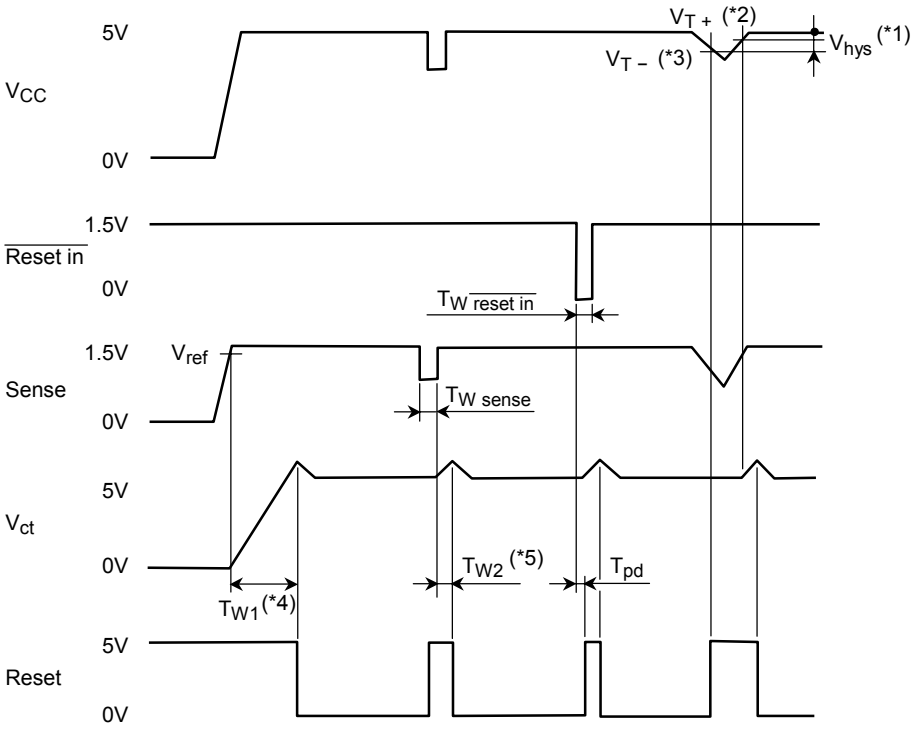
## Electrical Characteristics (Ta = 25°C)

| Characteristic | | | Symbol | Test Cir-cuit | Test Condition | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| Input current | "H" level | $\overline{\text{RESIN}}$ | $I_{IH}$ | — | $V_{CC}$ = 5.0V | $V_{IN}$ = 2.0V | — | — | 2 | μA |
| | | SENSE | | | | $V_{IN}$ = 1.5V | −8 | −12 | −16 | |
| | "L" level | $\overline{\text{RESIN}}$ | $I_{IL}$ | | | $V_{IN}$ = 0.4V | 0 | −0.8 | −6 | |
| | | SENSE | | | | $V_{IN}$ = 1V | 0 | — | ±2 | |
| $C_t$ change current | | | $I_{ct}$ | — | $V_{CC}$ = 5.0V , $V_{ct}$ = 0V | | −12 | −19 | −26 | μA |
| Output voltage | | RESET | $V_{OH}$ | — | $V_{CC}$ = 5.0V | $I_{OL}$ = −1mA | 4.5 | 4.8 | — | V |
| | | $\overline{\text{RESET}}$ | $V_{OL}$ | | | $I_{OH}$ = 16mA | — | 0.1 | 0.4 | |
| Output current | | RESET | $I_{OL}$ | — | $V_{CC}$ = 5.0V | $V_{OL}$ = 0V | — | — | −2 | μA |
| | | $\overline{\text{RESET}}$ | $I_{OH}$ | | | $V_{OH}$ = 5.0V | — | — | 2 | |
| Reference voltage | | | $V_{ref}$ | — | $V_{CC}$ = 5.0V | | 1.24 | 1.31 | 1.38 | V |
| Supply current | | | $I_{CC}$ | — | $V_{CC}$ = 5.0V, all inputs and outputs open | | — | 1.6 | 3.0 | mA |

## AC Characteristics ($V_{CC}$ = 5V, Ta = 25°C)

| Characteristic | Symbol | Test Circuit | Test Condition | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| Input pulse width | $t_{w\ sence}$ | — | $V_{IH} = V_{ref}$ Typ + 200mA<br>$V_{IL} = V_{ref}$ Typ − 200mA | | 1.0 | — | — | μs |
| | $t_{w\ \overline{reset\ in}}$ | — | — | | 0.4 | 1.4 | — | |
| Output pulse width | $t_w$ | — | $C_t$ = 0.1μF | $V_{ct\ (t=0)}$ = 1V | 0.65 | 1.3 | 2.6 | ms |
| | | | | $V_{ct\ (t=0)}$ = 0V | — | 5.7 | — | |
| Propagation delay time ($\overline{RESIN}$–RESET) | $t_{pd}$ | — | $C_L$ = 100pF, $R_L$ = 4.7kΩ | | — | 1 | — | μs |

## Timing Chart




(*1) $V_{hys} = (R_1 + R_2) \times 10^{-5}$ (V)

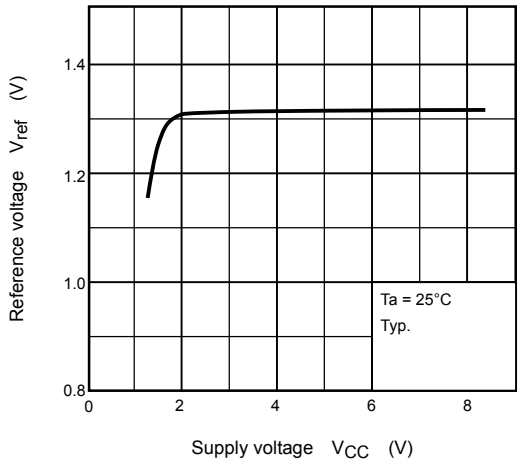
(*2) $V_{T+} = \frac{R_1+R_2}{R_1} \times 1.31$ (V)

(*3) $V_{T-} = \frac{R_1+R_2}{R_1} \times (1.31 - R_1 \times 10^{-5})$ (V)

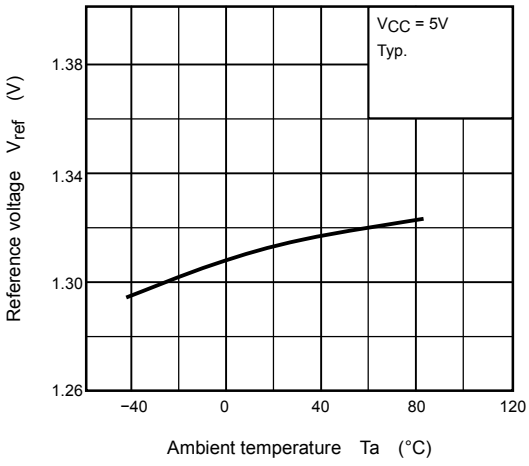
(*4) $T_{w1} = G_t \cdot (V_{ref} - 0V) / I_{CT}$ ($I_{CT} = 23\mu A$)

(*5) $T_{w2} = G_t \cdot (V_{ref} - 1V) / I_{CT}$

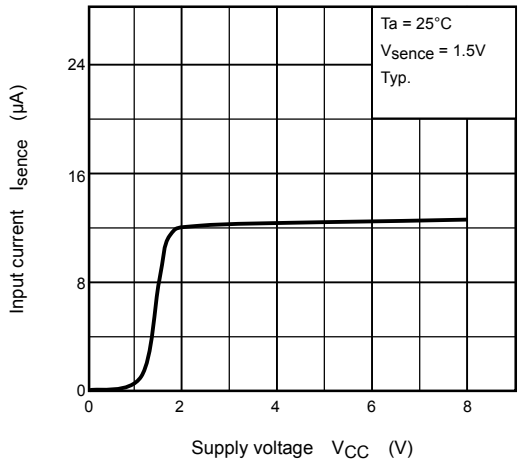
$V_{ref}$ – $V_{CC}$



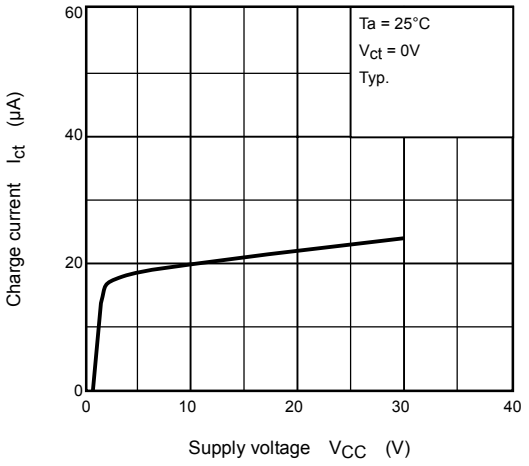

$V_{ref}$ – Ta



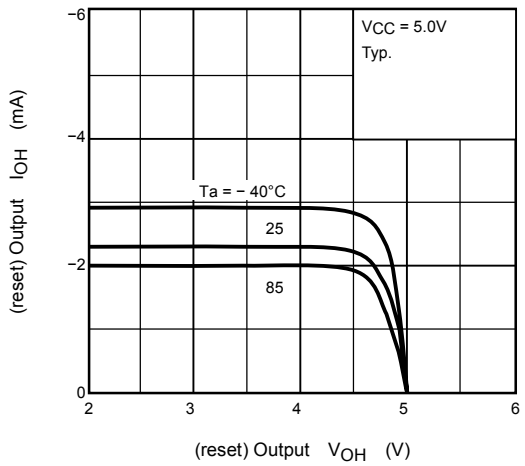

$I_{sence}$ – $V_{CC}$



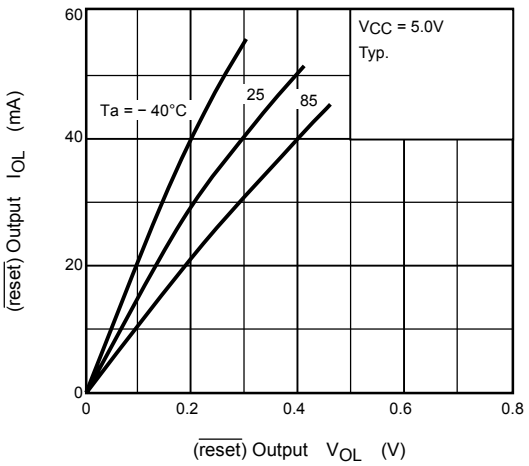

$I_{ct}$ – $V_{CC}$



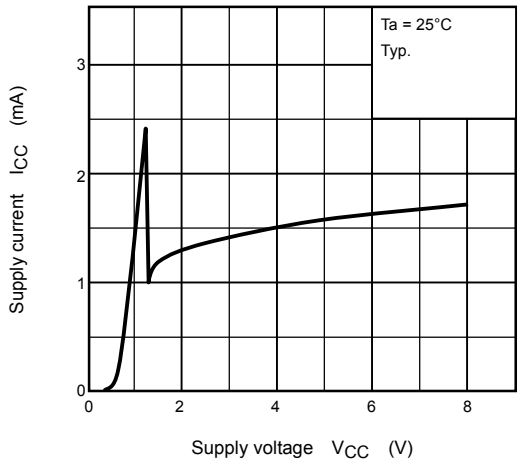

$I_{OH}$ – $V_{OH}$



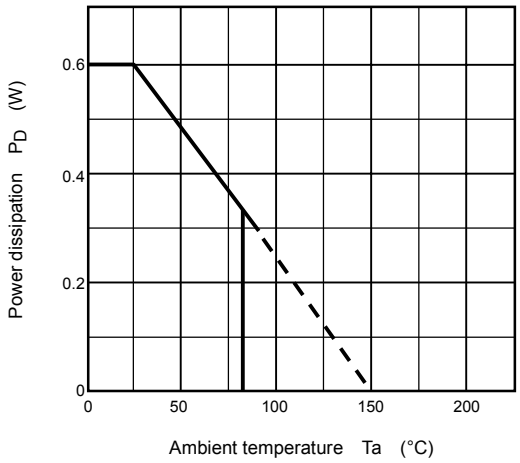

$I_{OL}$ – $V_{OL}$



$I_{CC} - V_{CC}$

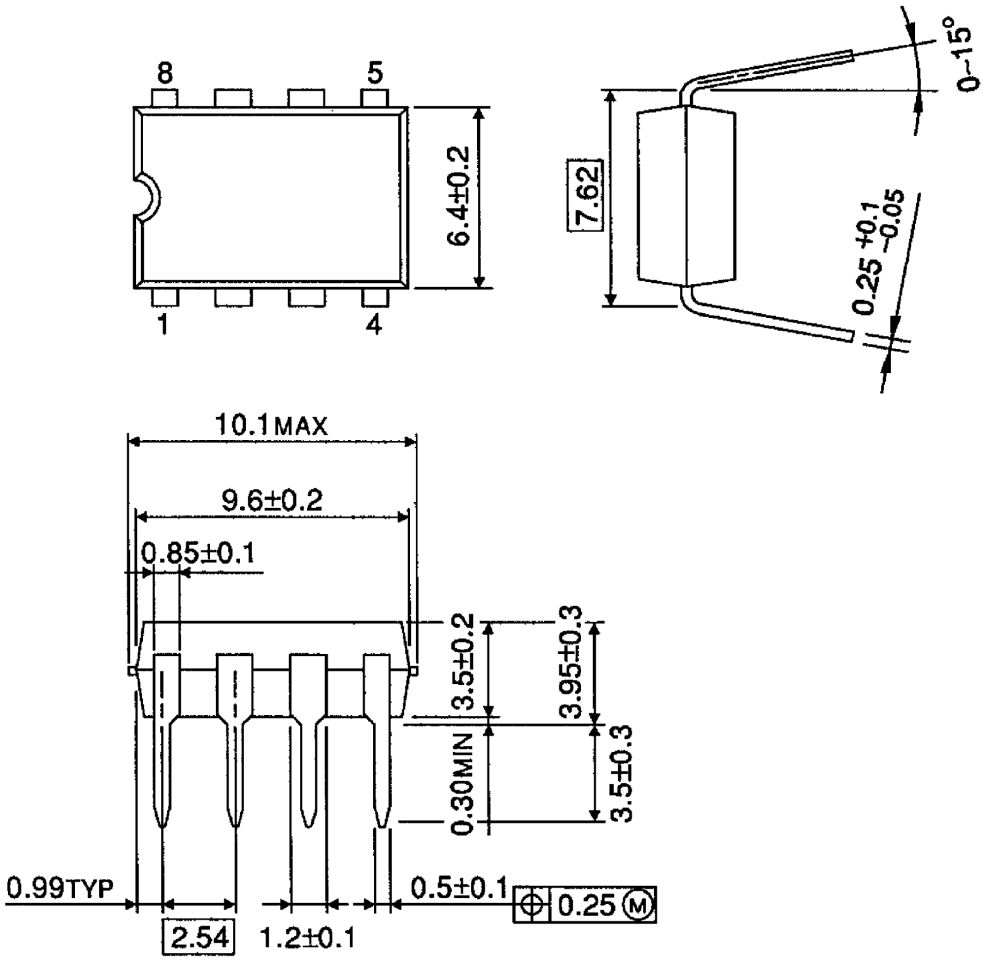

Ta = 25°C
Typ.
Supply current $I_{CC}$ (mA)
Supply voltage $V_{CC}$ (V)
0
1
2
3
0
2
4
6
8

$P_D - Ta$


Power dissipation $P_D$ (W)
Ambient temperature Ta (°C)
0
0.2
0.4
0.6
0
50
100
150
200

## Package Dimensions

DIP8-P-300-2.54A Unit : mm




Weight: 0.5g (typ.)

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