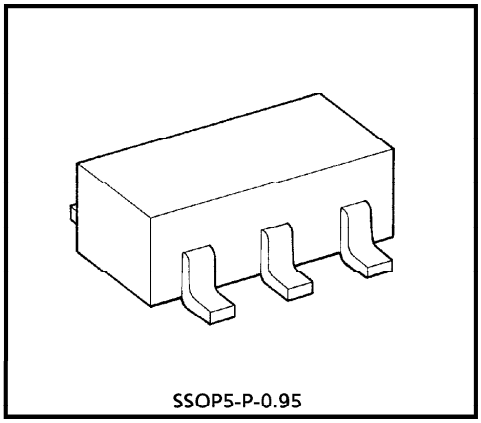
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA75S393F

## SINGLE VOLTAGE COMPARATOR

This device of voltage comparator that designed to operate from a single power supply over a wide range of voltage.
Normal operation from dual supplies is also to be guaranteed on voltage range from ±1V to ±18V.
$V_{CC}$ is necessary at least more 1.5V volts than the input common mode voltage.
The output can be connected to other open collector outputs to achieve Wired-OR relation ship.



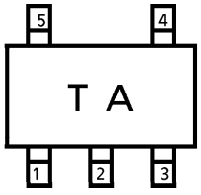
SSOP5-P-0.95

Weight : 0.014g (Typ.)

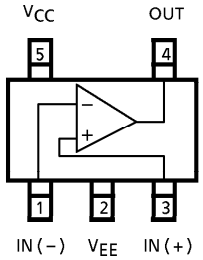
**FEATURES**

- Compatible to TA75393.
- Small Package
- Single supply voltage range or dual supplies : $2V_{DC}$ to $36V_{DC}$ or $\pm 1V_{DC}$ to $\pm 18V_{DC}$
- Low supply current : 0.4mA (Typ.)
- Low input offset voltage : ±2mV (Typ.)
- Wide input common mode voltage range : $0V_{DC}$ to $V_{CC} - 1.5V_{DC}$
- Output compatible with TTL, DTL, MOS and CMOS logic system.
- The output can be connected to achieve Wired-OR relation.

**MARKING** (TOP VIEW)

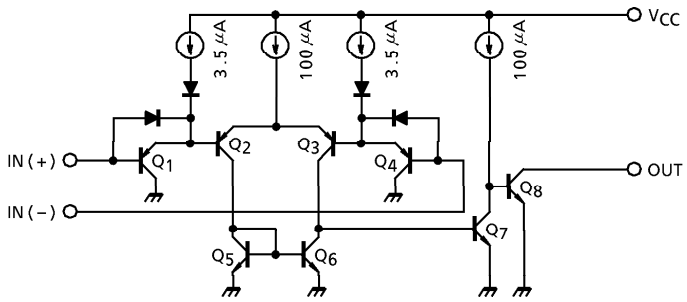



**PIN CONNECTION** (TOP VIEW)




961001EBA2

**EQUIVALENT CIRCUIT**




**MAXIMUM RATINGS** (Ta = 25°C)

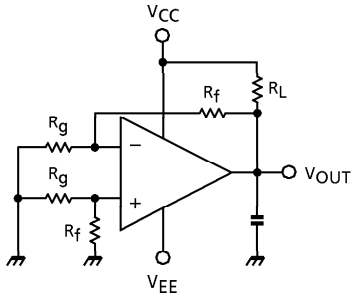
| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Supply Voltage | $V_{CC}$, $V_{EE}$ | ±18 or 36 | V |
| Differential Input Voltage | $DV_{IN}$ | ±36 | V |
| Input Voltage | $V_{IN}$ | −0.3~$V_{CC}$ | V |
| Power Dissipation | $P_D$ | 200 | mW |
| Operating Temperature | $T_{opr}$ | −40~85 | °C |
| Storage Temperature | $T_{stg}$ | −55~125 | °C |

**ELECTRICAL CHARACTERISTICS** ($V_{CC}$ = 5V, $V_{EE}$ = GND, Ta = 25°C)

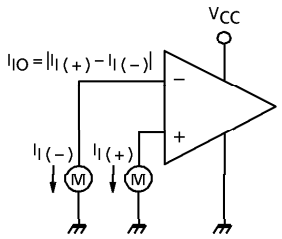
| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Input Offset Voltage | $V_{IO}$ | 1 | — | — | 2 | 5 | mV |
| Input Bias Current | $I_{IO}$ | 2 | — | — | 5 | 50 | nA |
| Input Offset Current | $I_I$ | 2 | — | — | 25 | 250 | nA |
| Common Mode Input Voltage | $CMV_{IN}$ | — | — | 0 | — | $V_{CC}$ − 1.5 | V |
| Supply Current | $I_{CC}$ | 3 | No load | — | 0.4 | 0.8 | mA |
| Voltage Gain | $G_V$ | — | $R_L$ = 15kΩ | — | 200 | — | V / mA |
| Sink Current | $I_{sink}$ | 4 | IN (+) = 0V, IN (−) = 1V<br>$V_{OL}$ = 1.5V | 6 | 16 | — | mA |
| Output Voltage ("L" Level) | $V_{OL}$ | 5 | IN (+) = 0V, IN (−) = 1V<br>$I_{sink}$ = 3mA | — | 0.2 | 0.4 | V |
| Output Leak Current | $I_{LEAK}$ | — | IN (+) = 1V, IN (−) = 0V<br>$V_O$ = 5V | — | 0.1 | — | nA |
| Response Time | $t_{rsp}$ | 6 | $R_L$ = 5.1kΩ, $C_L$ = 15pF | — | 1.3 | — | μs |

**TEST CIRCUIT**

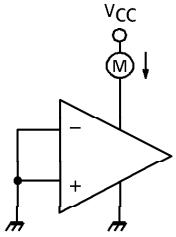
(1) $V_{IO}$



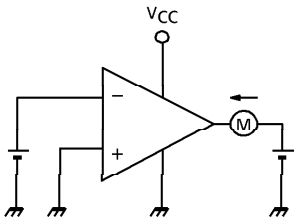

(2) $I_I$, $I_{IO}$



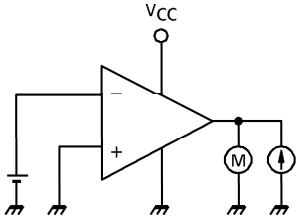

(3) $I_{CC}$



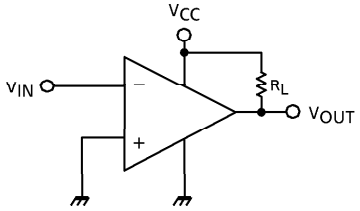

(4) $I_{sink}$



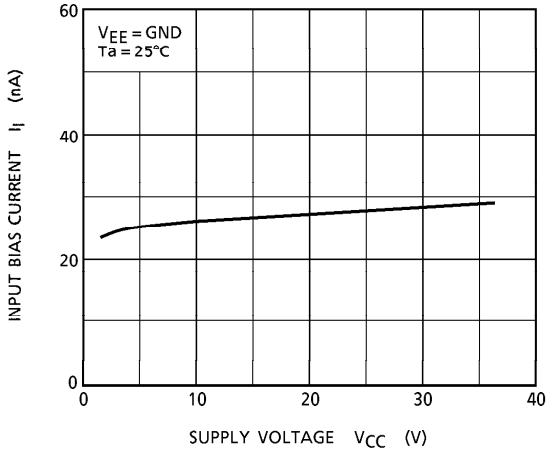

(5) $V_{OL}$



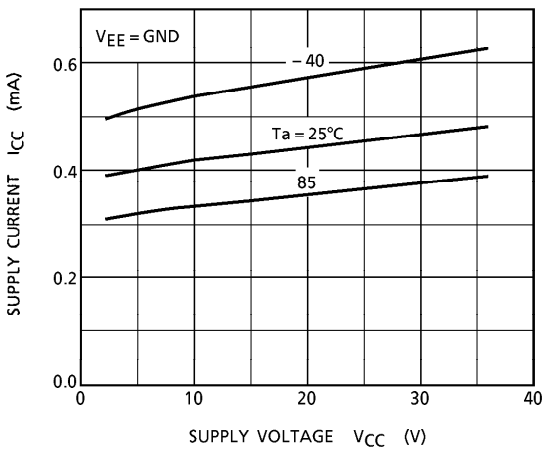

(6) $t_{rsp}$



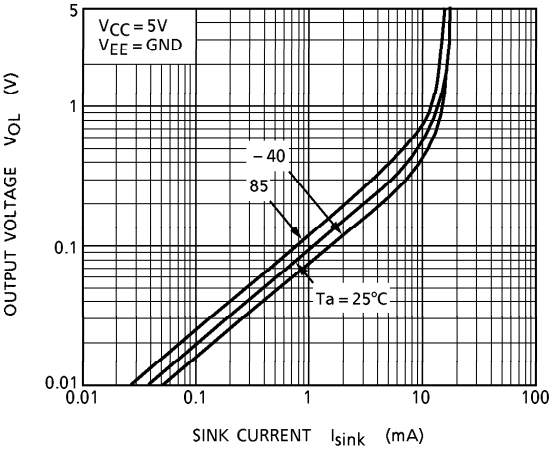
$I_I$ – $V_{CC}$



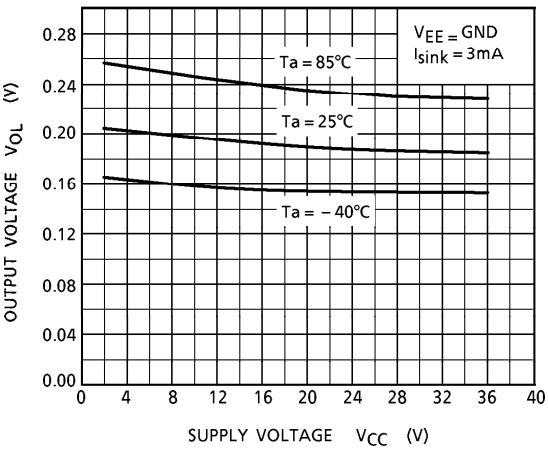

$I_{CC}$ – $V_{CC}$



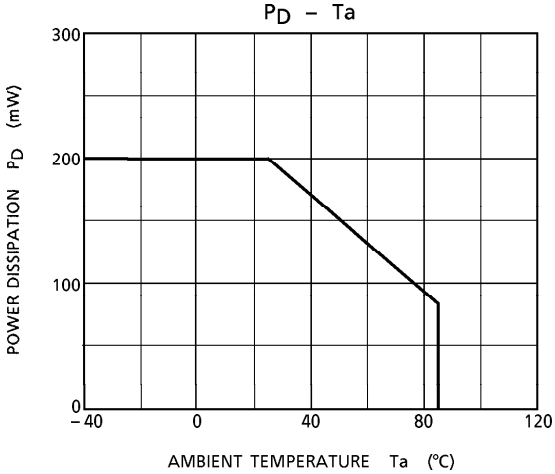

$V_{OL}$ – $I_{sink}$




$V_{OL}$ – $V_{CC}$



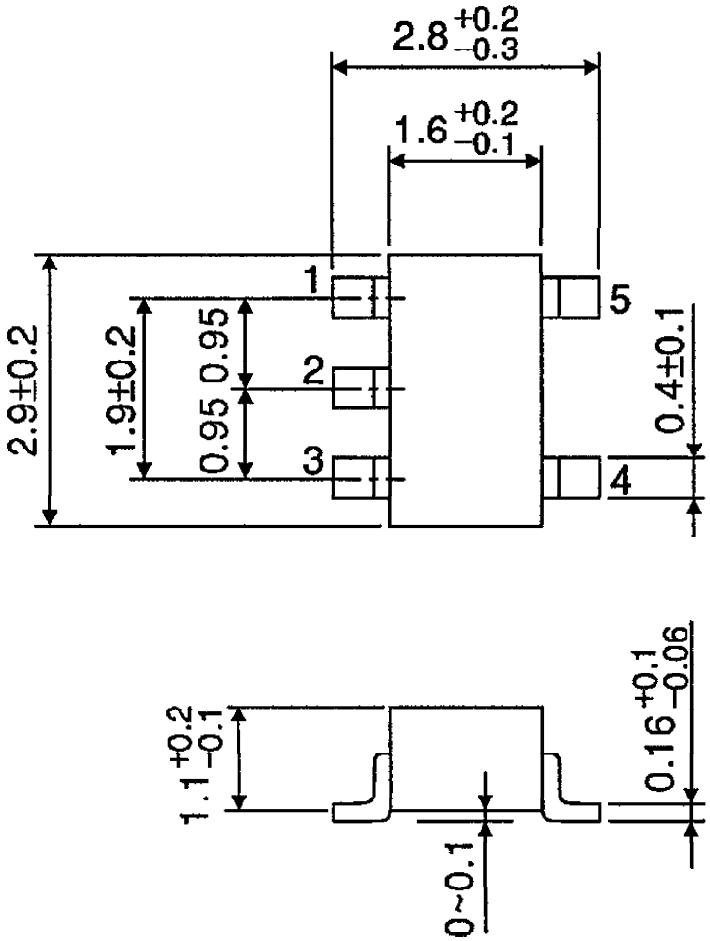

$P_D$ – Ta



**OUTLINE DRAWING**

SSOP5-P-0.95

Unit : mm




Weight : 0.014g (Typ.)