

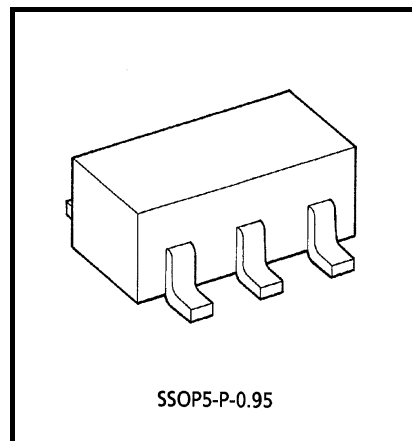
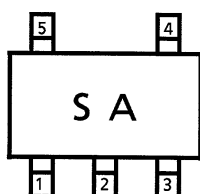
# TA75S01F

## Single Operational Amplifier

### Features

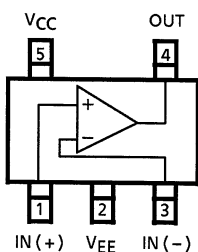
- In the linear mode the input common mode voltage range includes ground.
- The internally compensated Operational Amplifier is small package.
- Low power dissipation and power drain suitable for battery operation.
- Differential input voltage range equal to the power supply voltage.
- Large output voltage swing: 0V<sub>DC</sub> to 3.4V<sub>DC</sub> (V<sub>DC</sub> = 5V)
- Wide power supply voltage range and single power supply is possible.
- Single supply 3V<sub>DC</sub> to 12V<sub>DC</sub> or dual supplies  $\pm 1.5$ V<sub>DC</sub> to  $\pm 6$ V<sub>DC</sub>.

### Marking (Top View)

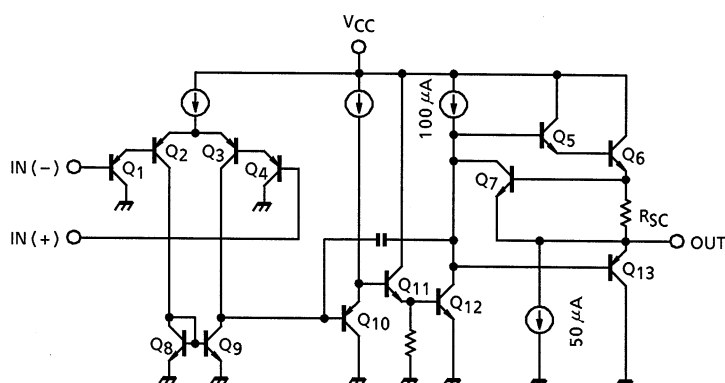


Weight: 0.014g (typ.)

### Pin Connection (Top View)



## Equivalent Circuit



## Absolute Maximum Ratings (Ta = 25°C)

| Characteristic             | Symbol           | Rating           | Unit |
|----------------------------|------------------|------------------|------|
| Supply voltage             | $V_{CC}, V_{EE}$ | $\pm 6$ or 12    | V    |
| Differential input voltage | $DV_{IN}$        | $\pm 12$         | V    |
| Input voltage              | $V_{IN}$         | -0.3 to $V_{CC}$ | V    |
| Power dissipation          | $P_D$            | 200              | mW   |
| Operating temperature      | $T_{opr}$        | -40 to 85        | °C   |
| Storage temperature        | $T_{stg}$        | -55 to 125       | °C   |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings and the operating ranges.

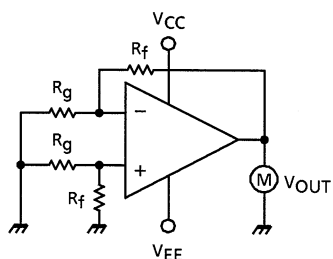
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

## Electrical Characteristics ( $V_{CC} = 5E$ , $V_{EE} = GND$ , $T_a = 25^\circ C$ )

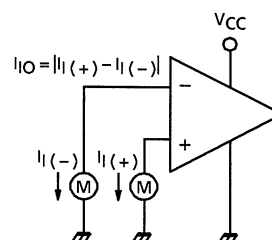
| Characteristic                 | Symbol       | Test Circuit | Test Condition           | Min | Typ. | Max          | Unit |
|--------------------------------|--------------|--------------|--------------------------|-----|------|--------------|------|
| Input offset voltage           | $V_{IO}$     | 1            | $R_g \leq 10k\Omega$     | —   | 2    | 7            | mV   |
| Input offset current           | $I_{IO}$     | 2            | —                        | —   | 5    | 50           | nA   |
| Input bias current             | $I_I$        | 2            | —                        | —   | 45   | 250          | nA   |
| Common mode input voltage      | $CMV_{IN}$   | 3            | —                        | 0   | —    | $V_{CC}-1.5$ | V    |
| Supply current                 | $I_{CC}$     | 4            | —                        | —   | 0.4  | 0.8          | mA   |
| Voltage gain                   | $G_V$        | —            | $R_L \geq 2k\Omega$      | 86  | 100  | —            | dB   |
| Maximum output voltage swing   | $V_{op-p}$   | 5            | $R_L = 2k\Omega$         | 0   | —    | 3.4          | V    |
| Common mode rejection ratio    | CMRR         | 3            | —                        | 65  | 85   | —            | dB   |
| Supply voltage rejection ratio | SVRR         | —            | $R_g = 10k\Omega$        | 65  | 100  | —            | dB   |
| Source current                 | $I_{source}$ | 6            | $IN(-) = 0V, IN(+) = 1V$ | 20  | 40   | —            | mA   |
| Sink current                   | $I_{sink}$   | 7            | $IN(-) = 1V, IN(+) = 0V$ | 10  | 20   | —            | mA   |
| Unity gain cross frequency     | $f_T$        | —            | —                        | —   | 0.3  | —            | MHz  |

## Test Circuit

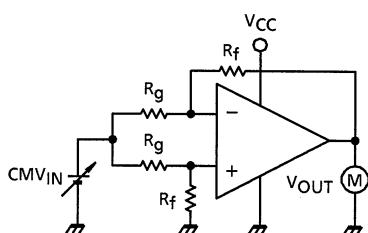
(1)  $V_{IO}$



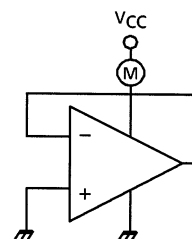
(2)  $I_I, I_{IO}$



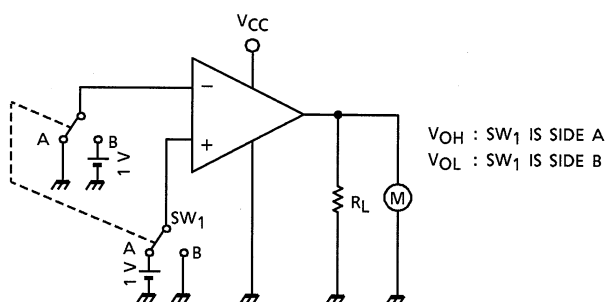
(3)  $CMV_{IN}, CMRR$



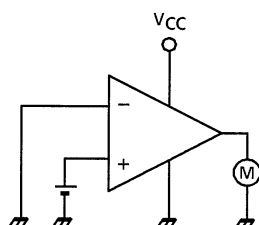
(4)  $I_{CC}$



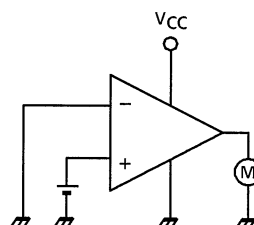
(5)  $V_{OP-P}$

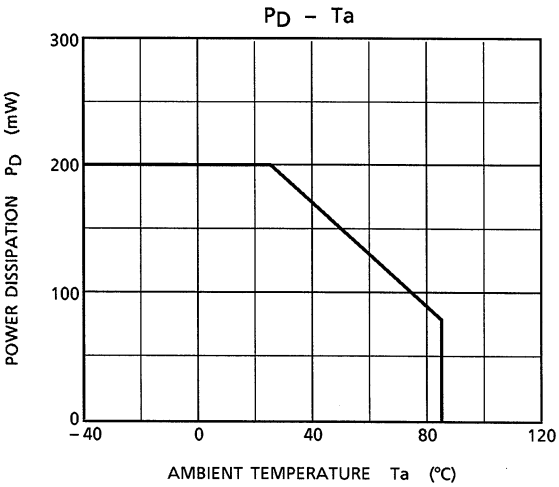
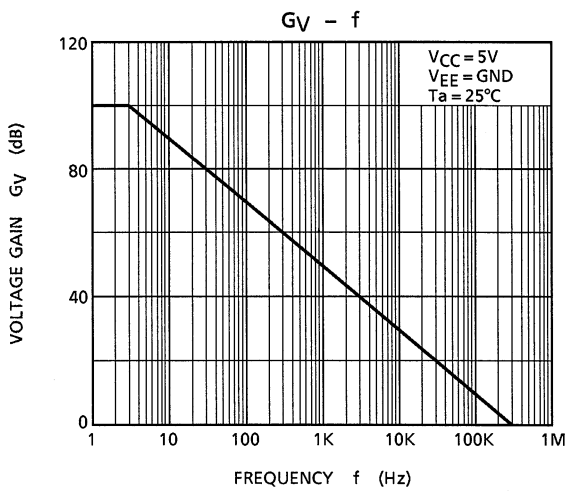
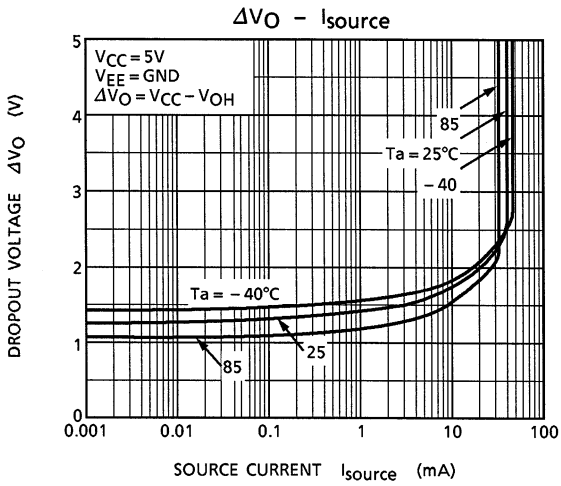
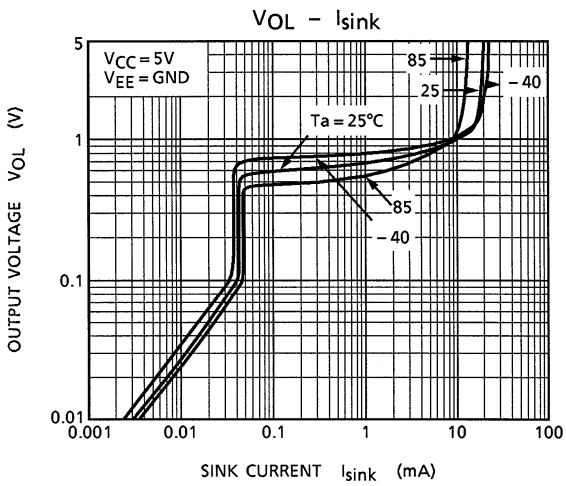
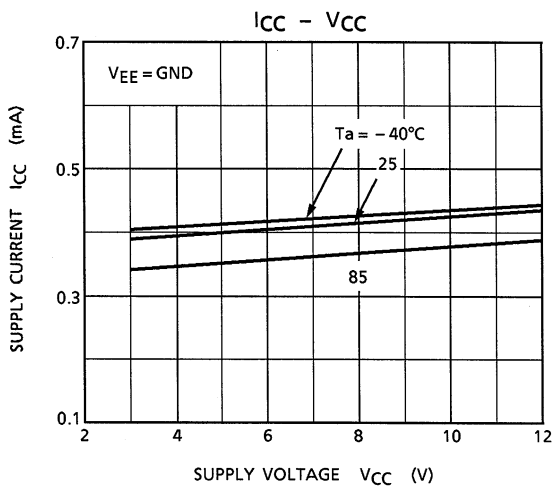
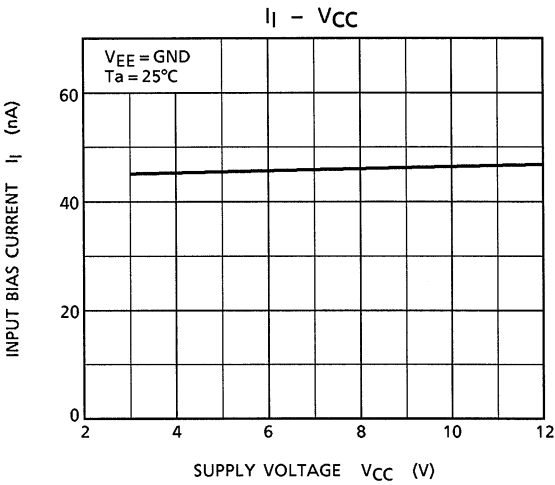


(6)  $I_{source}$



(7)  $I_{sink}$

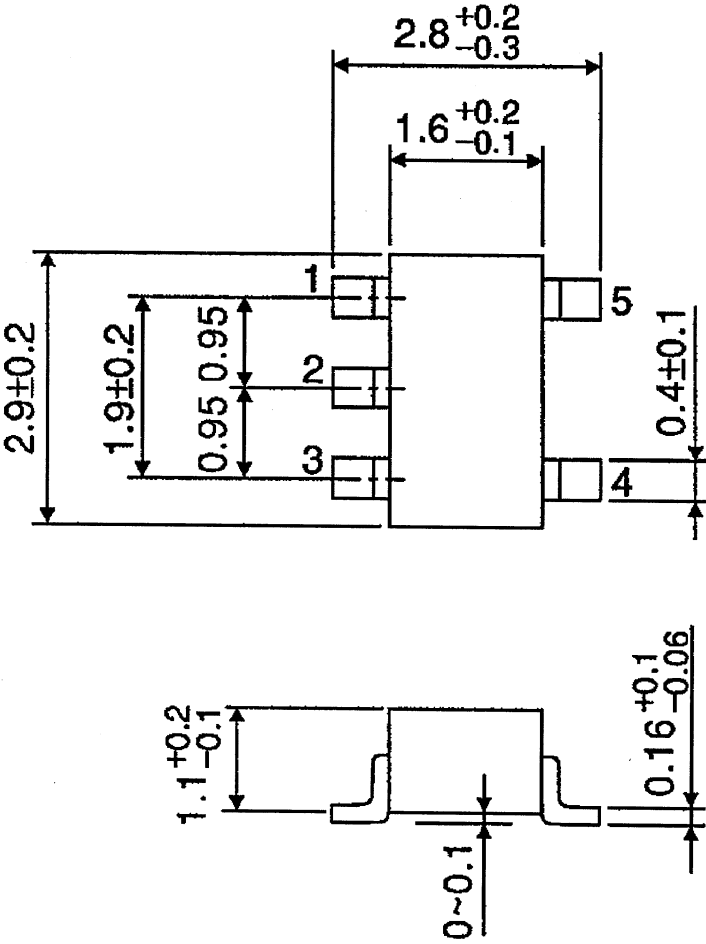




Package Dimensions

SSOP5-P-0.95

Unit: mm



Weight: 0.014g (typ.)

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