

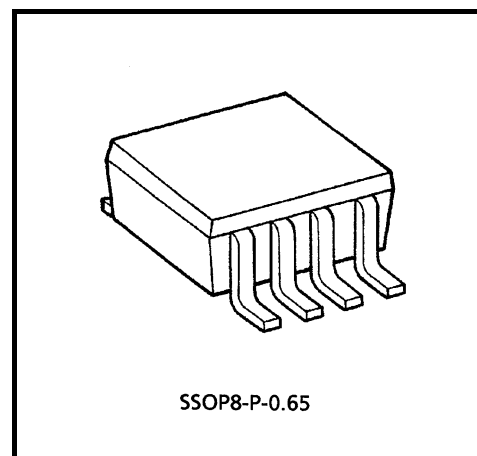
TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

# TA75W01FU

Dual Operational Amplifier

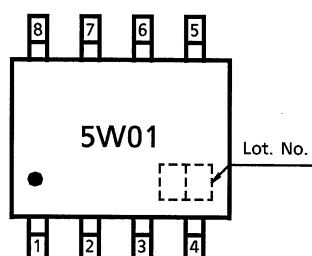
## Features

- 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 :  $0V_{DC}$  to  $3.4V_{DC}$  ( $V_{CC} = 5V_{DC}$ )
- Wide power supply voltage range and single power supply is possible.
- Single supply  $3V_{DC}$  to  $12V_{DC}$  or dual supplies  $\pm 1.5V_{DC}$  to  $\pm 6V_{DC}$ .

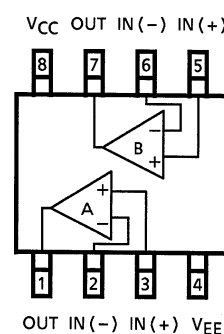


Weight: 0.021g (typ.)

## Marking (Top View)

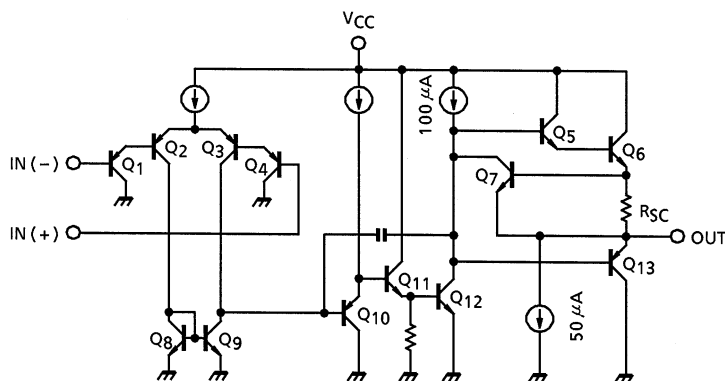


## Pin Connection (Top View)



Start of commercial production  
1991-07

## 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          | $P_D$            | 250                | 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.

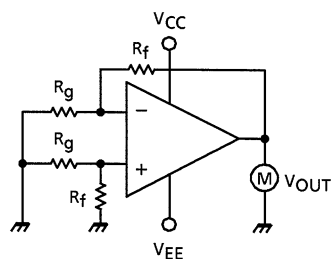
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

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

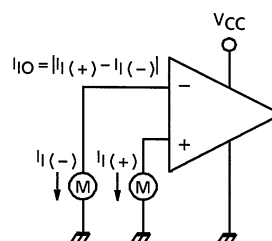
| Characteristic                 | Symbol       | Test Circuit | Test Condition           | Min | Typ. | Max            | Unit |
|--------------------------------|--------------|--------------|--------------------------|-----|------|----------------|------|
| Input offset voltage           | $V_{IO}$     | 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            | —                        | —   | 0.7  | 1.2            | 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

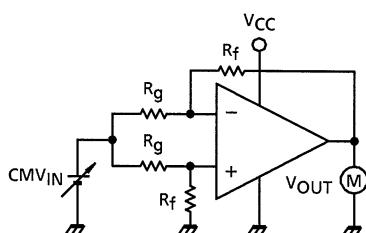
(1)  $V_{IO}$



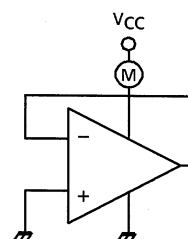
(2)  $I_I, I_{IO}$



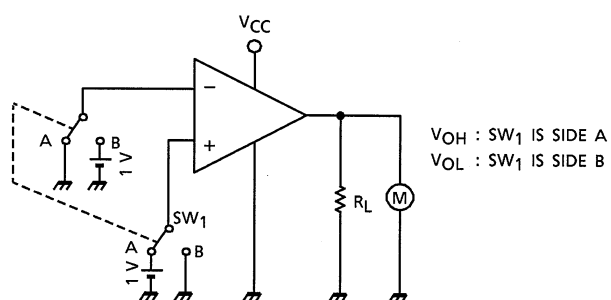
(3)  $CMV_{IN}, CMRR$



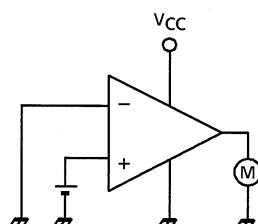
(4)  $I_{CC}$



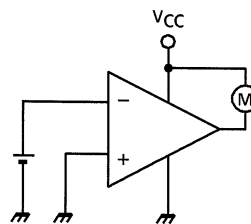
(5)  $V_{OP-P}$

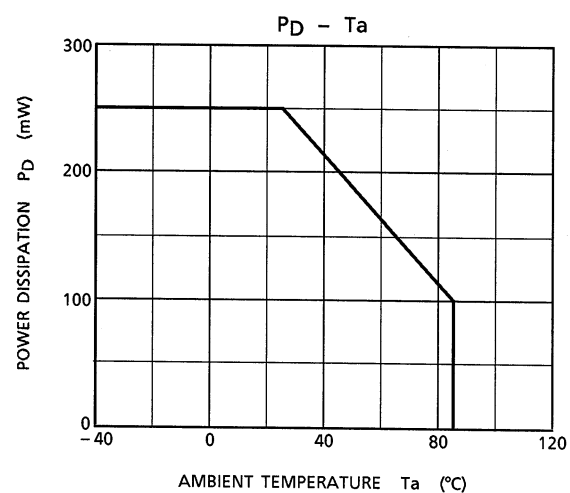
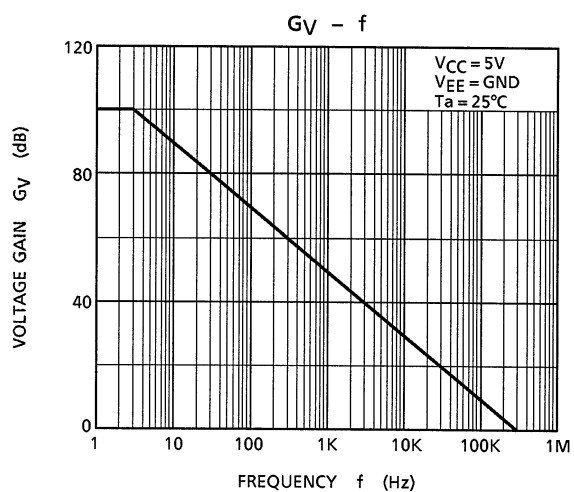
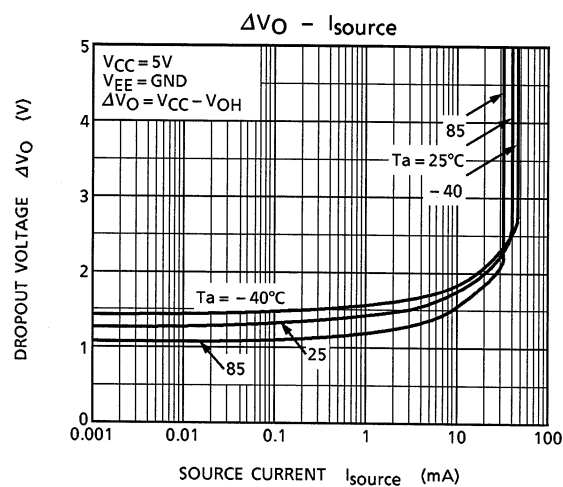
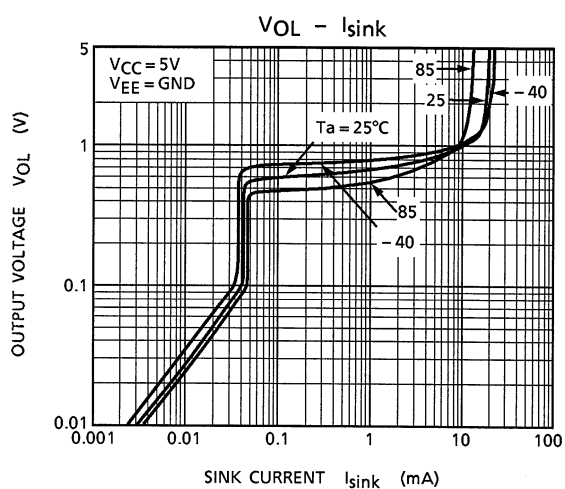
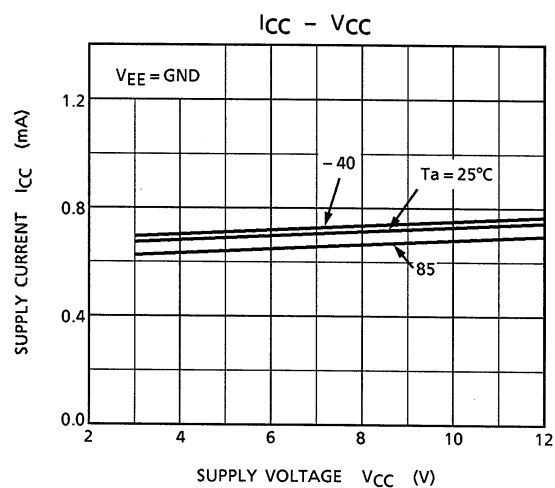
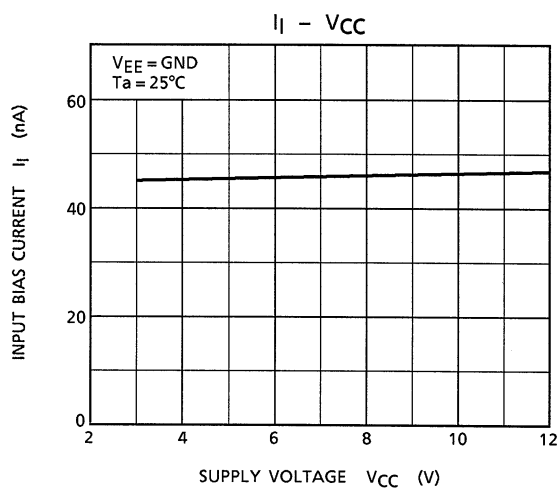


(6)  $I_{source}$



(7)  $I_{sink}$

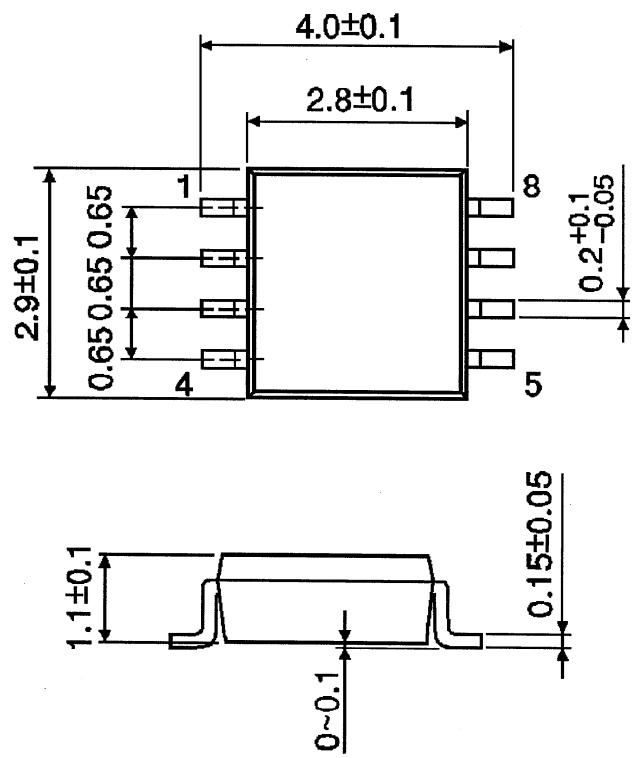




Package Dimensions

SSOP8-P-0.65

Unit: mm



Weight: 0.021g (typ.)

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