

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

# TA75W393FU

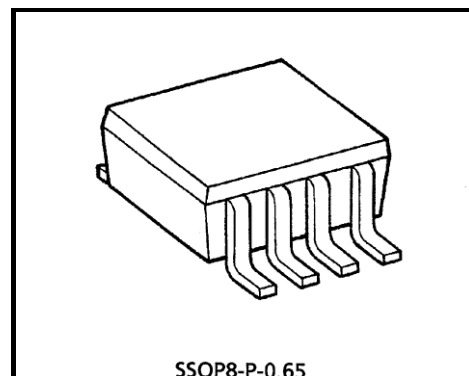
## Dual Voltage Comparator

This device consist of two independent voltage comparators 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  $\pm 1V$  to  $\pm 18V$ .

$V_{CC}$  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.

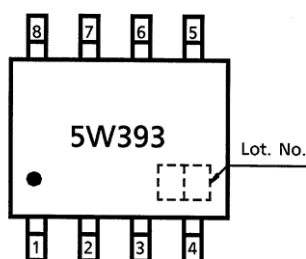


Weight: 0.021g (typ.)

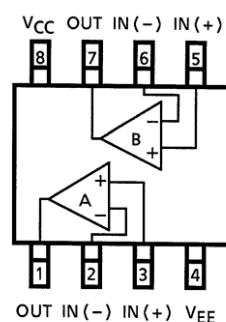
## Features

- Compatible to TA75393F.
- Single supply voltage range or dual supplies : 2V to 36V or  $\pm 1V$  to  $\pm 18V$
- Low supply current : 0.8mA (typ.)
- Low input offset voltage :  $\pm 2mV$  (typ.)
- Wide input common mode voltage range : 0V to  $V_{CC} - 1.5V$
- Output compatible with TTL, DTL, MOS and CMOS logic system.
- The output can be connected to achieve Wired-OR relation..

## Marking (Top View)

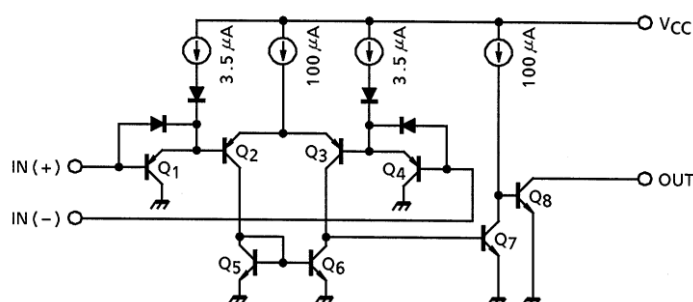


## Pin Connection (Top View)



Start of commercial production  
1991-08

## Equivalent Circuit



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

| Characteristic             | Symbol           | Rating           | Unit |
|----------------------------|------------------|------------------|------|
| Supply voltage             | $V_{CC}, V_{EE}$ | $\pm 18$ or 36   | V    |
| Differential input voltage | $DV_{IN}$        | $\pm 36$         | 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.

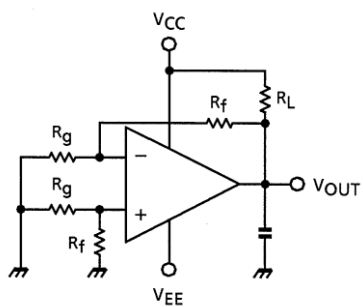
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

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

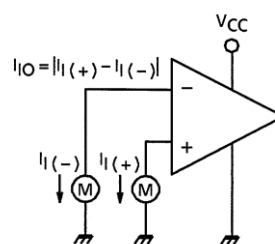
| Characteristic             | Symbol     | Test Circuit | Test Condition                                    | Min | Typ. | Max          | Unit    |
|----------------------------|------------|--------------|---------------------------------------------------|-----|------|--------------|---------|
| Input offset voltage       | $V_{IO}$   | 1            | —                                                 | —   | 2    | 5            | mV      |
| Input offset current       | $I_{IO}$   | 2            | —                                                 | —   | 5    | 50           | nA      |
| Input bias 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                                           | —   | 0.8  | 2            | mA      |
| Voltage gain               | $G_V$      | —            | $R_L = 15k\Omega$                                 | —   | 200  | —            | V/mV    |
| 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            | $R_L = 5.1k\Omega$ , $C_L = 15pF$                 | —   | 1.3  | —            | $\mu s$ |

## Test Circuit

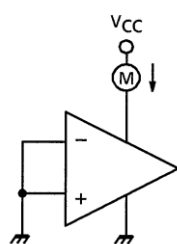
(1)  $V_{IO}$



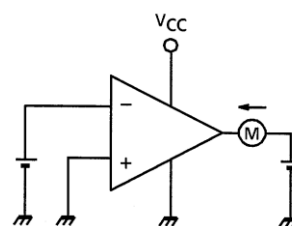
(2)  $I_I$ ,  $I_{IO}$



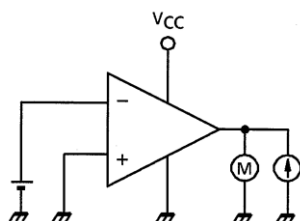
(3)  $I_{CC}$



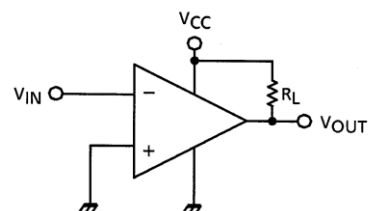
(4)  $I_{sink}$

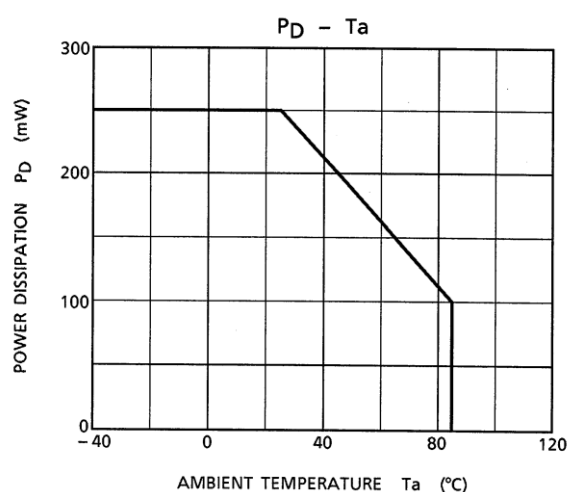
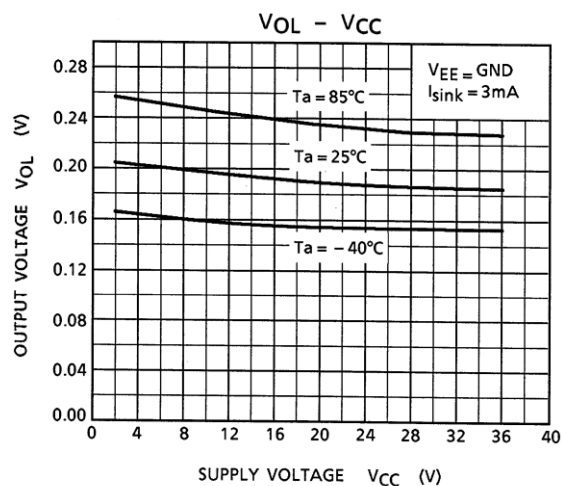
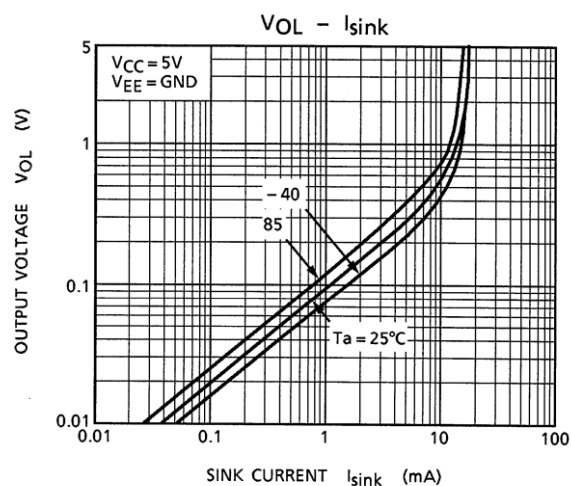
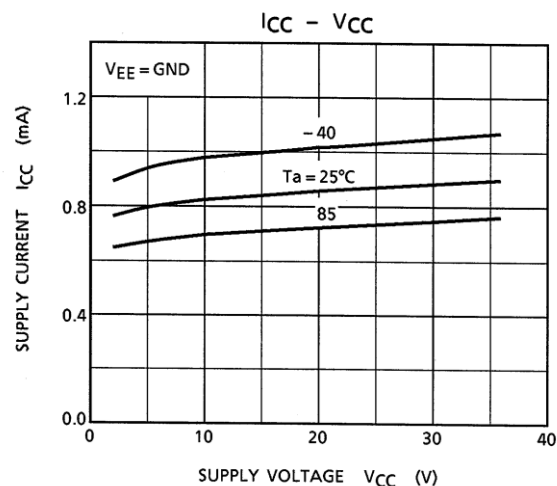
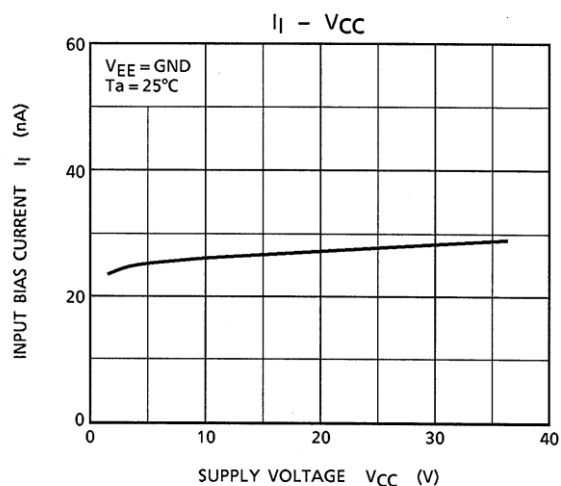


(5)  $V_{OL}$



(6)  $t_{rsp}$

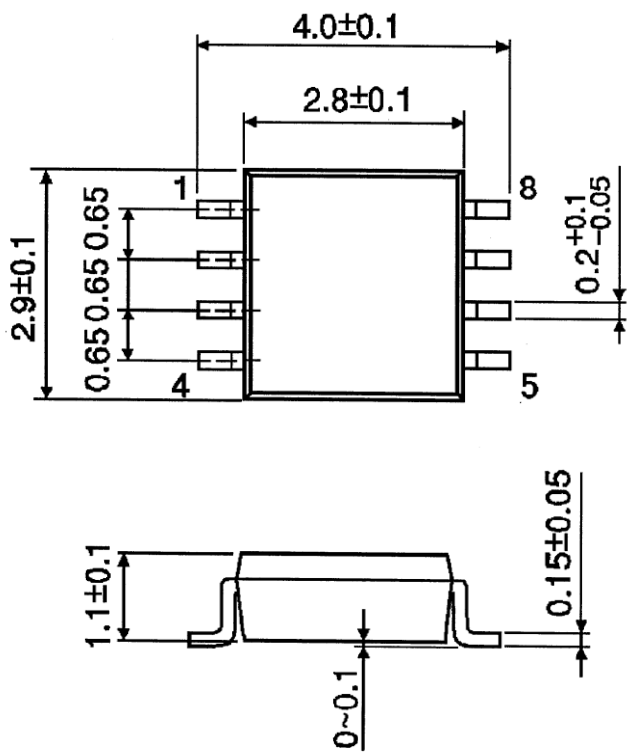




Package Dimensions

SSOP8-P-0.65

Unit: mm



Weight: 0.021g (typ.)

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