

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

# TA75W393FU

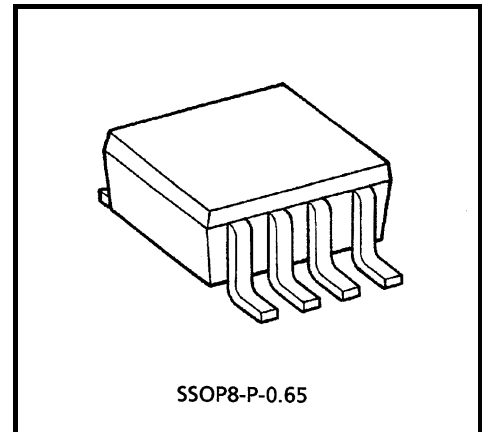
## Dual Voltage Comparator

This device consists of two independent voltage comparators that are designed to operate from a single power supply over a wide range of voltage.

Normal operation from dual supplies is also to be guaranteed over a 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 a Wired-OR relationship.

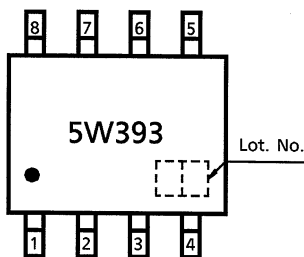


Weight: 0.021g (typ.)

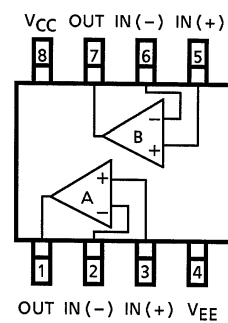
### Features

- Compatible to TA75393F.
- Single supply voltage range or dual supplies :  $2V_{DC}$  to  $36V_{DC}$  or  $\pm 1V_{DC}$  to  $\pm 18V_{DC}$
- Low supply current : 0.8mA (typ.)
- Low input offset voltage :  $\pm 2mV$  (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 a Wired-OR relationship.

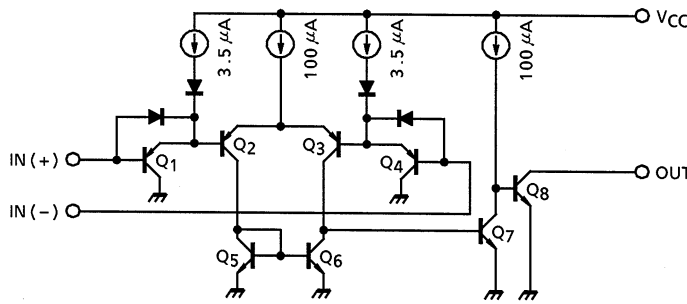
### Marking (Top View)



### Pin Connection (Top View)



**Equivalent Circuit**



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

Characteristic	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub> , V <sub>EE</sub>	±18 or 36	V
Differential input voltage	DV <sub>IN</sub>	±36	V
Input voltage	V <sub>IN</sub>	+0.3~V <sub>CC</sub>	V
Power dissipation	P <sub>D</sub>	250	mW
Operating temperature	T <sub>opr</sub>	-40~85	°C
Storage temperature	T <sub>stg</sub>	-55~125	°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.

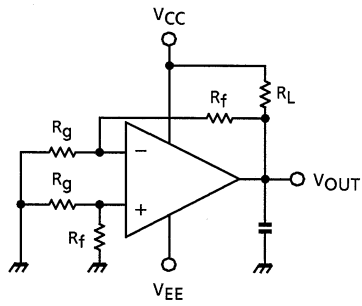
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

**Electrical Characteristics (V<sub>CC</sub> = 5V, V<sub>EE</sub> = GND, Ta = 25°C)**

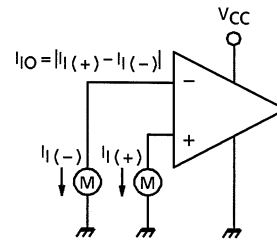
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Input offset voltage	V <sub>IO</sub>	1	—	—	2	5	mV
Input bias current	I <sub>I</sub>	2	—	—	25	250	nA
Input offset current	I <sub>IO</sub>	2	—	—	5	50	nA
Common mode input voltage	CMV <sub>IN</sub>	—	—	0	—	V <sub>CC</sub> -1.5	V
Supply current	I <sub>CC</sub>	3	No load	—	0.8	2	mA
Voltage gain	G <sub>V</sub>	—	R <sub>L</sub> = 15kΩ	—	200	—	V/mA
Sink current	I <sub>sink</sub>	4	IN (+) = 0V <sub>DC</sub> , IN (-) = 1V <sub>DC</sub> V <sub>OL</sub> = 1.5V	6	16	—	nA
Output Voltage ("L" Level)	V <sub>OL</sub>	5	IN (+) = 0V <sub>DC</sub> , IN (-) = 1V <sub>DC</sub> I <sub>sink</sub> = 3mA	—	0.2	0.4	V
Output Leak Current	I <sub>LEAK</sub>	—	IN (+) = 1V <sub>DC</sub> , IN (-) = 0V <sub>DC</sub> V <sub>O</sub> = 5V <sub>DC</sub>	—	0.1	—	nA
Response Time	t <sub>rsp</sub>	6	R <sub>L</sub> = 5.1kΩ, C <sub>L</sub> = 15pF	—	1.3	—	μs

**Test Circuit**

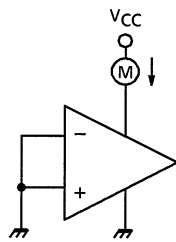
**(1)  $V_{IO}$**



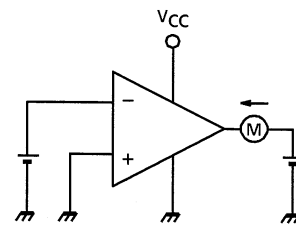
**(2)  $I_I, I_{IO}$**



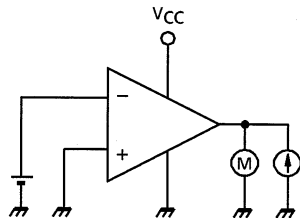
**(3)  $I_{CC}$**



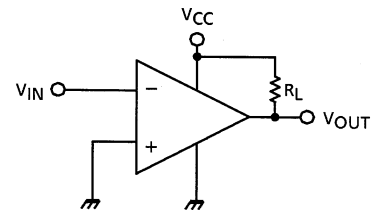
**(4)  $I_{sink}$**

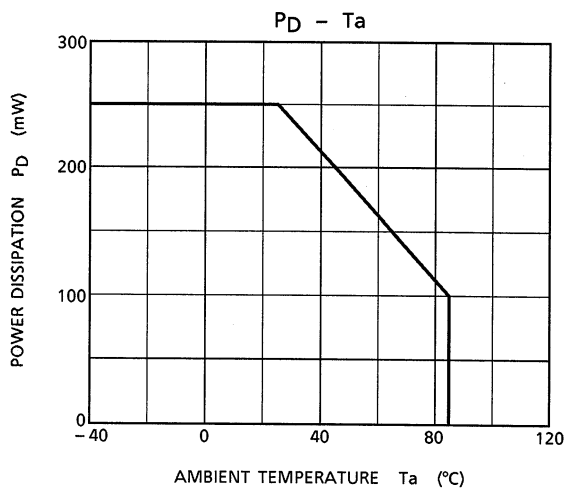
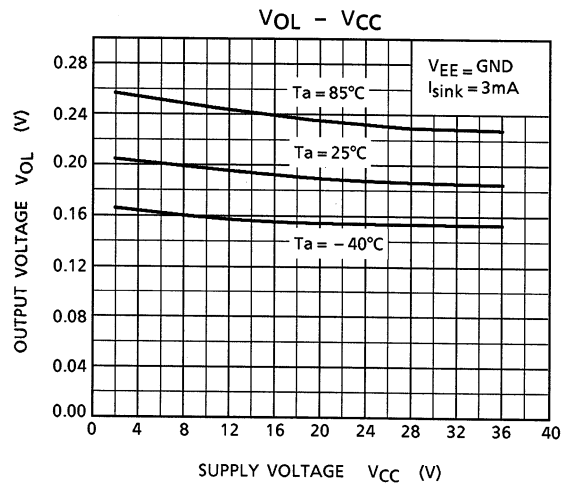
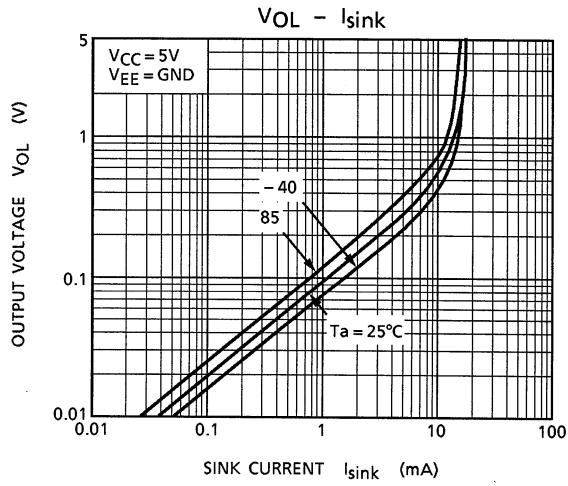
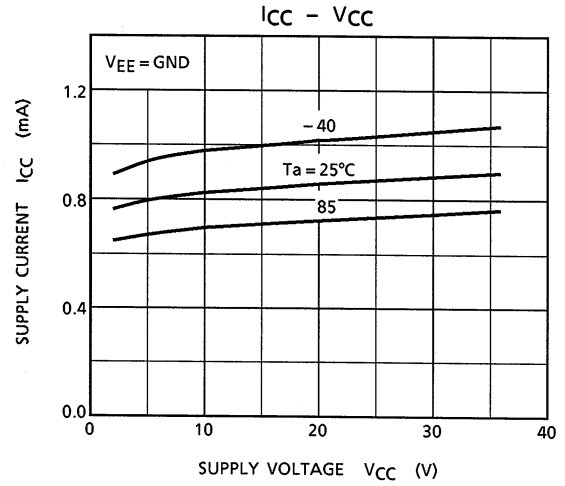
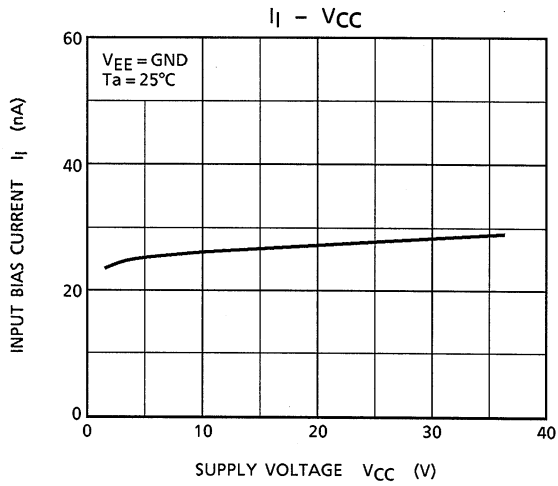


**(5)  $V_{OL}$**



**(6)  $t_{rsp}$**

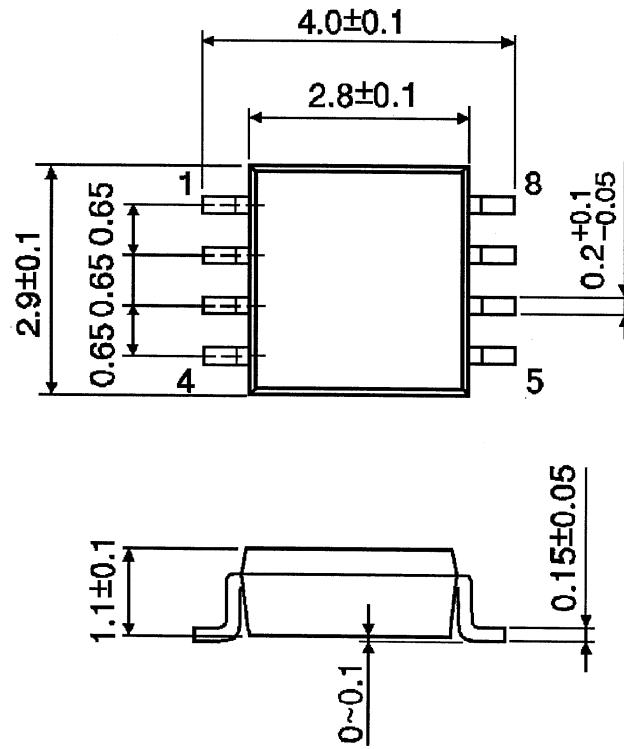




## Package Dimensions

SSOP8-P-0.65

Unit: mm



Weight: 0.021g (typ.)

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20070701-EN GENERAL

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