

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.

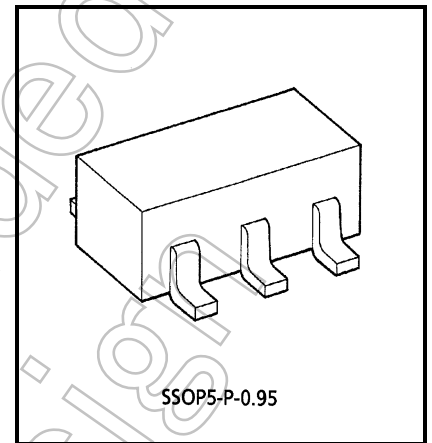
Normal operation from dual supplies is also to be guaranteed on voltage range from $\pm 1\text{ V}$ to $\pm 18\text{ V}$.

VCC is necessary at least more 1.5 V volts than the input common mode voltage.

The output can be connected to other open collector outputs to achieve Wired-OR relationship.

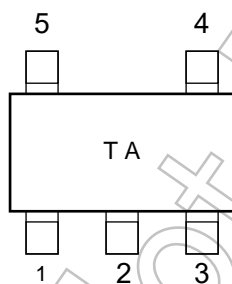
Features

- Small package.
- Single supply voltage range or dual supplies: 2 VDC to 36 VDC or $\pm 1\text{ VDC}$ to $\pm 18\text{ VDC}$.
- Low supply current: 0.4 mA (typ.)
- Low input offset voltage: $\pm 2\text{ mV}$ (typ.)
- Wide input common mode voltage range: 0 VDC to VCC -1.5 VDC
- Output compatible with TTL, DTL, MOS and COMS logic system.
- The output can be connected to achieve Wired-OR relation.

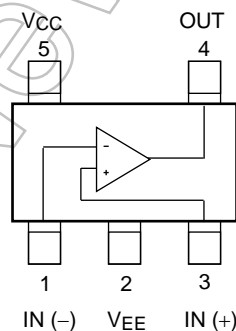


Weight:0.014g (typ.)

Marking (top view)

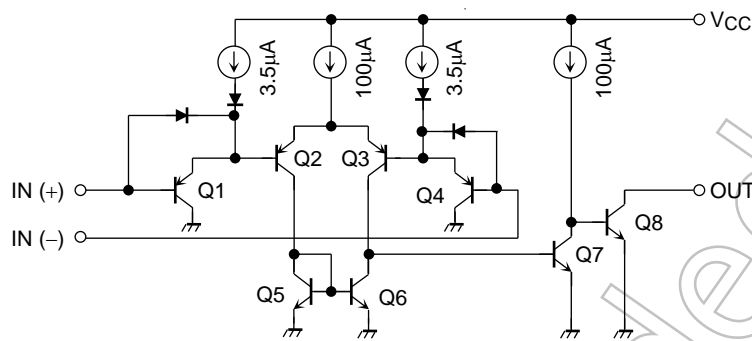


Pin Connection (top view)



Start of commercial production
1991-01

Equivalent Circuit



Absolute 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 to V _{CC}	V
Power dissipation (Note 1)	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. 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).

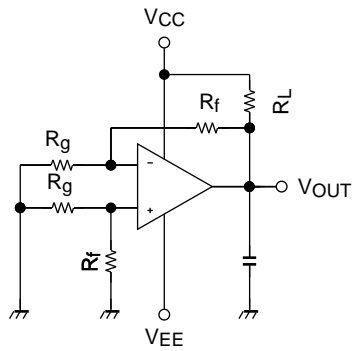
Note 1: Unit rating

Electrical Characteristics (V_{CC} = 5 V, V_{EE} = GND, Ta = 25°C)

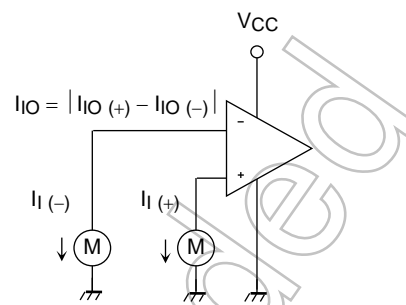
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Input offset voltage	V _{IO}	1	—	—	2	5	mV
Input offset current	I _{IO}	2	—	—	5	50	nA
Input bias current	I _I	2	—	—	25	250	nA
Common mode input voltage	C _{mVIN}	—	—	0	—	V _{CC} - 1.5	V
Supply current	I _{CC}	3	No load	—	0.4	0.8	mA
Voltage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

Test Circuit

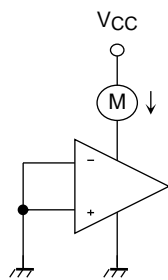
(1) V_{IO}



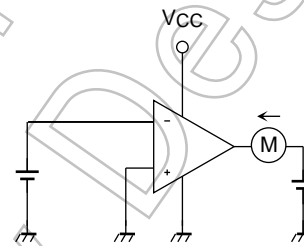
(2) I_I, I_{IO}



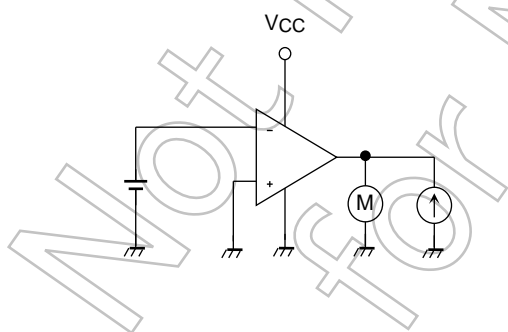
(3) I_{CC}



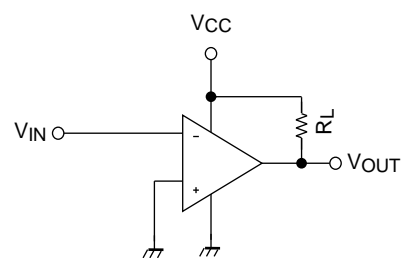
(4) I_{sink}



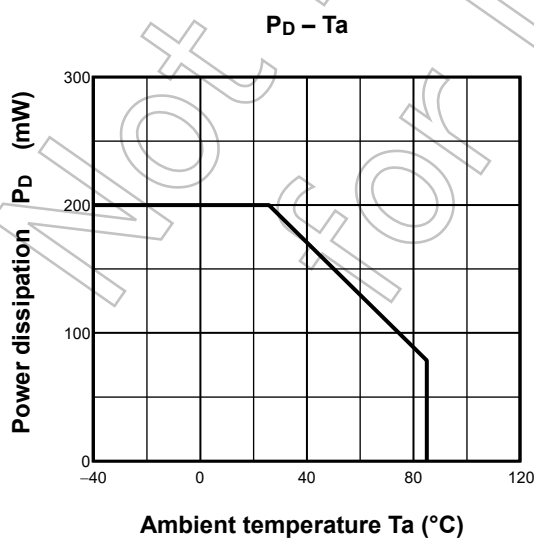
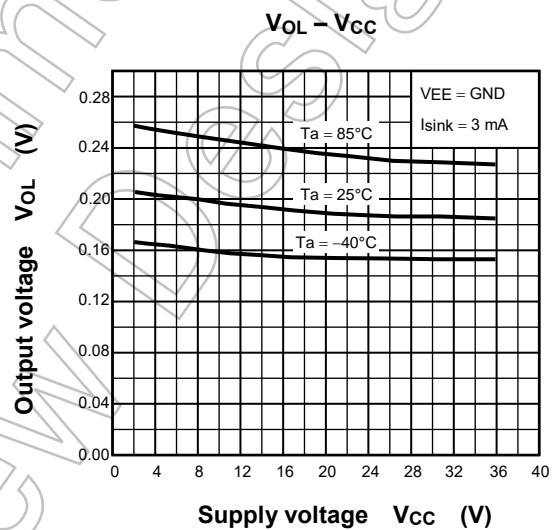
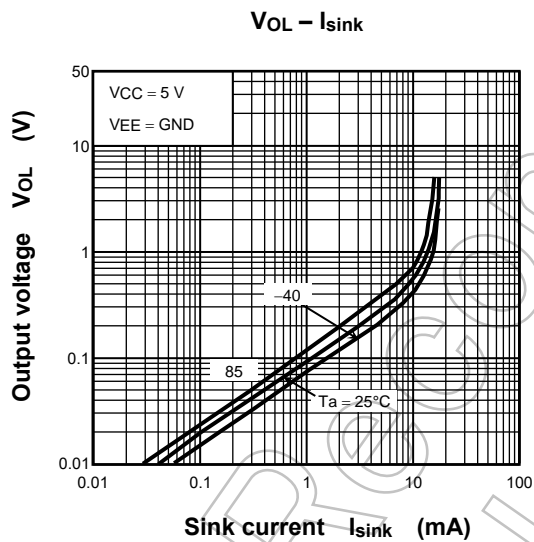
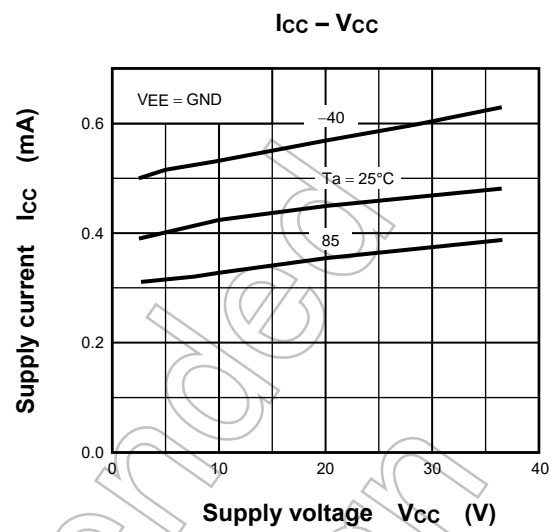
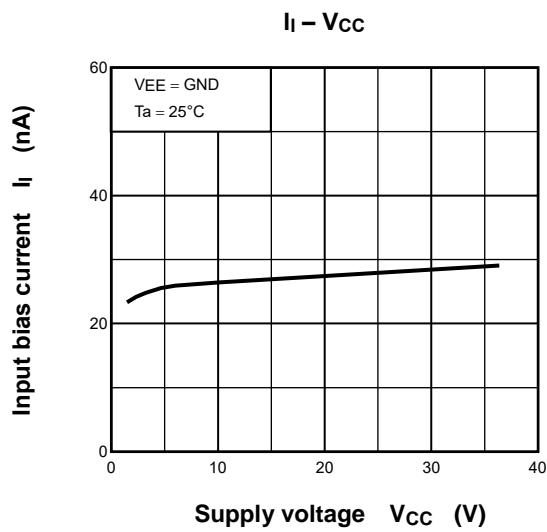
(5) V_{OL}



(6) t_{rsp}



Characteristics Curves (Note)



Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

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