TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

TA75S393F

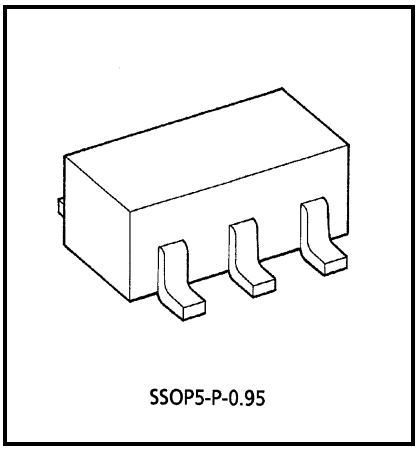
Single Voltage Comparator

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 ±1 V to ±18 V.

V_{CC} 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.

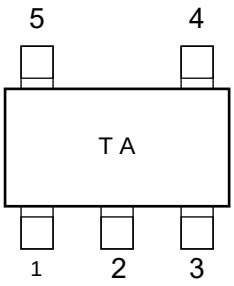


Weight:0.014g (typ.)

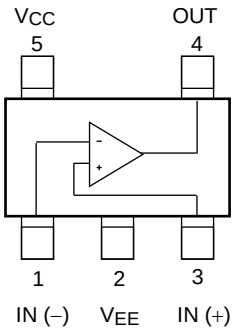
Features

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

Marking (top view)



Pin Connection (top view)



Start of commercial production
1991-01

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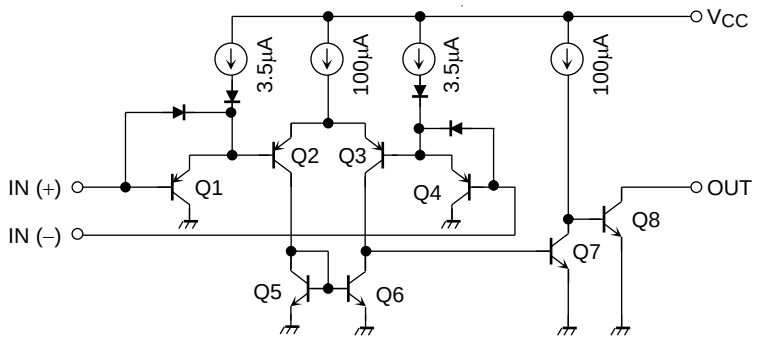
Equivalent Circuit



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

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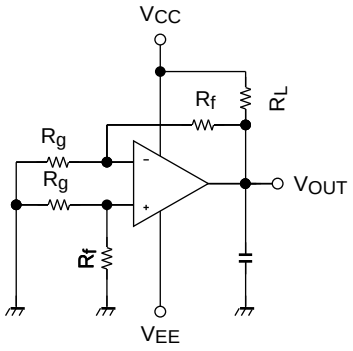
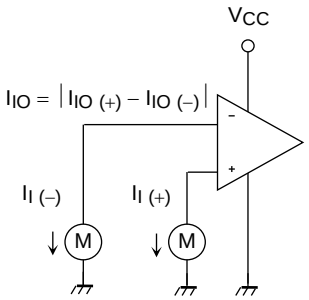
Test Circuit

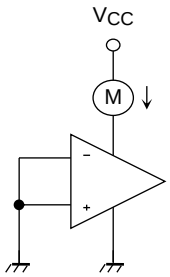
(1) V_{IO}



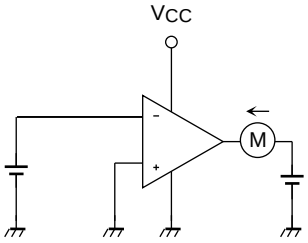
(2) I_I, I_{IO}



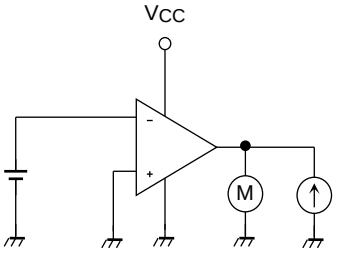
(3) I_{CC}



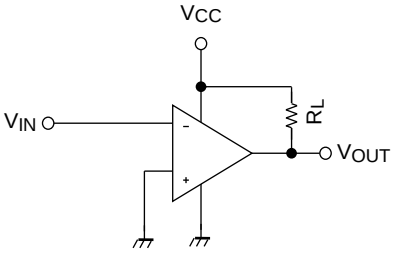
(4) I_{sink}



(5) V_{OL}



(6) t_{rsp}



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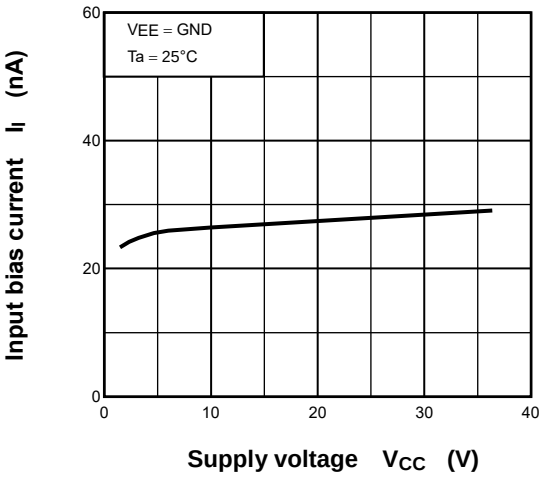
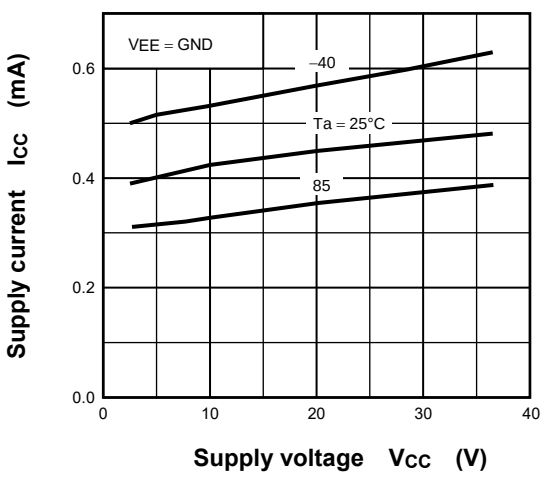
Characteristics Curves (Note)

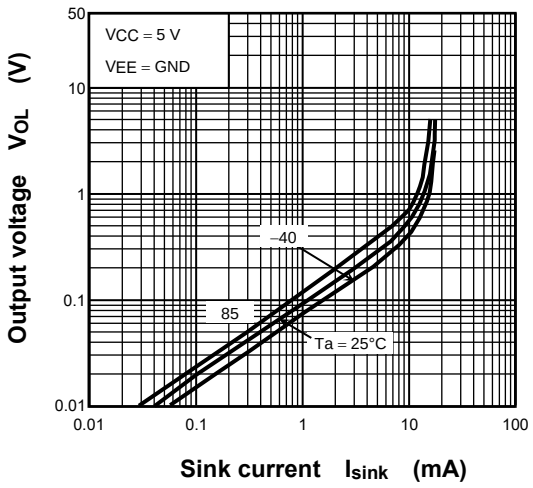
I_I – V_{CC}



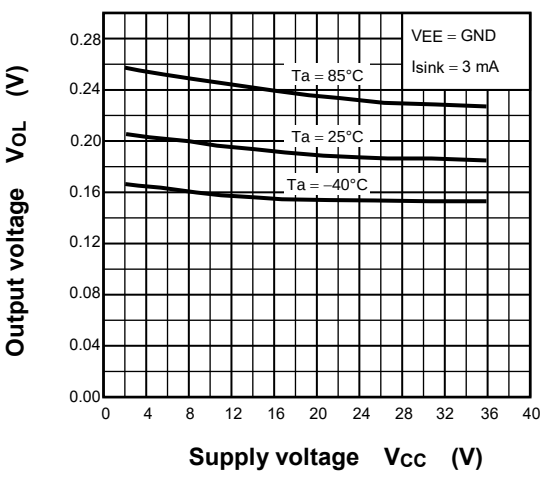
I_{CC} – V_{CC}



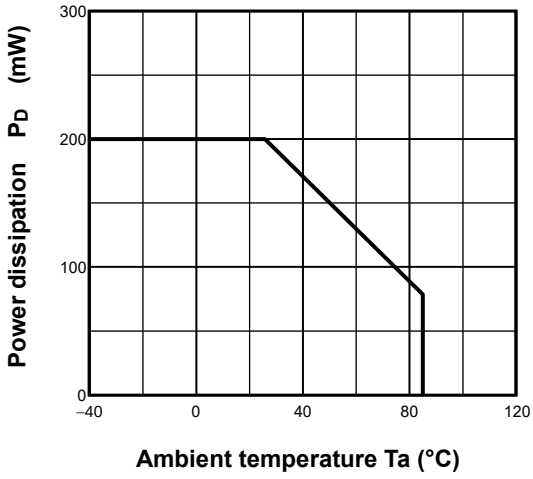
V_{OL} – I_{sink}



V_{OL} – V_{CC}



P_D – Ta



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

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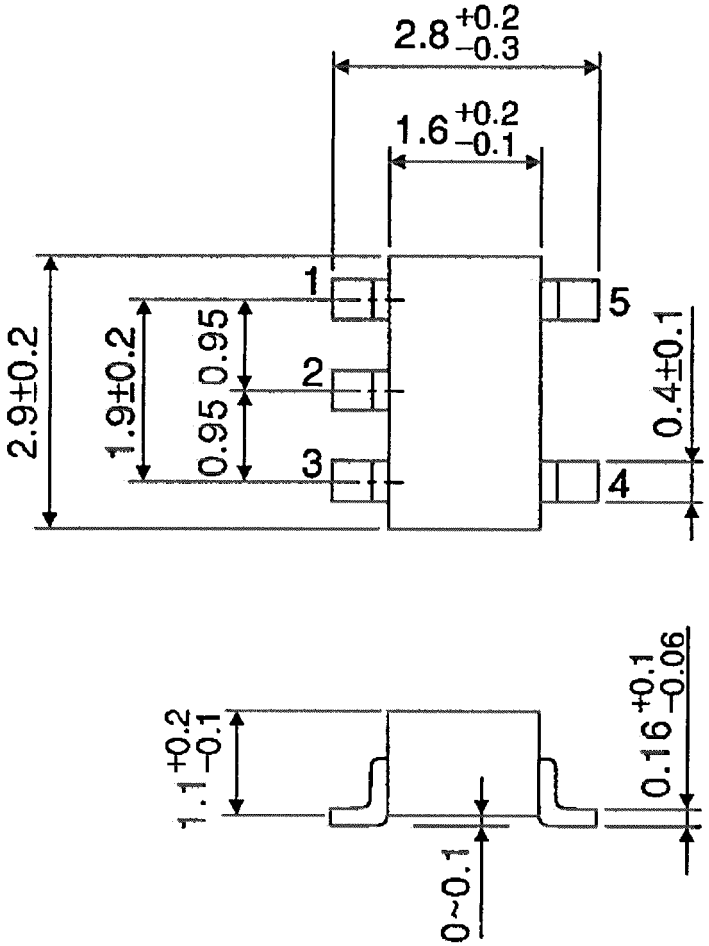
Package Dimensions

SSOP5-P-0.95 Unit : mm



Weight : 0.014 g (typ.)

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