

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

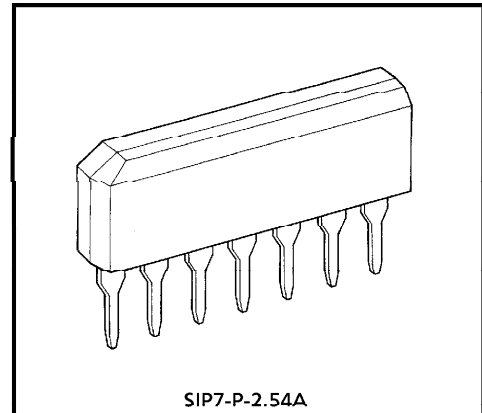
TA7523AS

SINGLE COMPARATOR

TA7523AS is comparator with wide range single or two supply voltage. Output is open collector and wired-OR possible.

FEATURES

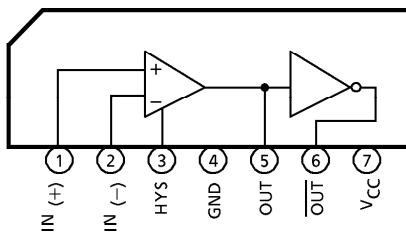
- Wide Common Mode Input Voltage : $0V \sim V_{CC} - 1.5V$
- Output is Compatible with TTL and CMOS.
- With Two Output Terminal (OUT, \overline{OUT})
- Hysteresis Voltage Width is Variable by External Resistor.
- Wide Supply Voltage Range : $2V \sim 36V$ or $\pm 1V \sim \pm 18V$
- Output Sink Current : 100mA (Typ.)



SIP7-P-2.54A

Weight : 0.7g (Typ.)

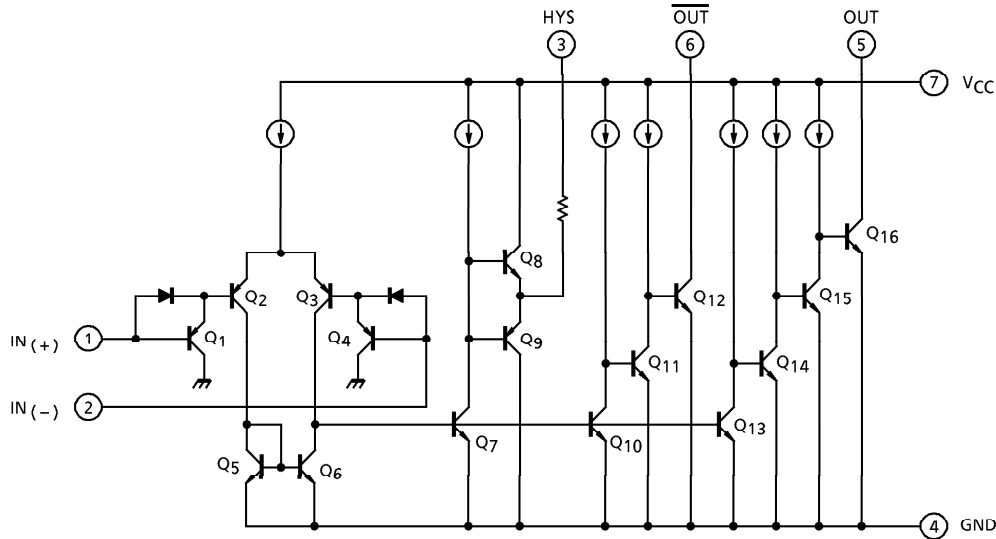
PIN CONNECTION



961001EBA1

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EQUIVALENT CIRCUIT



MAXIMUM RATINGS (Ta = 25°C)

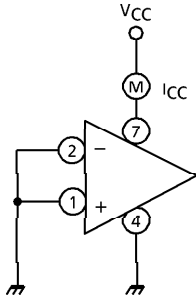
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	± 18 or 36	V
Differential Input Voltage	DV _{IN}	± 36	V
Common Mode Input Voltage	CMV _{IN}	- 0.3~V _{CC}	V
Power Dissipation	P _D	500	mW
Operating Temperature	T _{opr}	- 40~85	°C
Storage Temperature	T _{stg}	- 55~125	°C

ELECTRICAL CHARACTERISTICS (V_{CC} = 5V, Ta = 25°C)

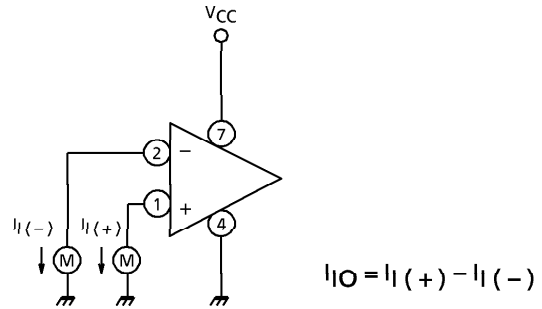
CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V _{IO}	4	—	—	3	10	mV
Input Bias Current	I _I	2	—	—	25	250	nA
Input Offset Current	I _{IO}	2	—	—	5	50	nA
Common Mode Input Voltage	CMV _{IN}	4	—	0	—	V _{CC} - 1.5	V
Voltage Gain	G _V	—	R _L = 15kΩ	—	200	—	V / mV
Supply Current	I _{CC}	1	No Load	—	6	10	mA
Sink Current	I _{sink}	5	V _{IN (+)} = 0V, V _{IN (-)} = 1V, V _{OL} = 1.5V	80	100	—	mA
Output Voltage	V _{OL}	5	V _{IN (+)} = 0V, V _{IN (-)} = 1V, I _{sink} = 60mA	—	0.2	0.4	V
Output Leak Current	I _{LEAK}	3	V _{IN (+)} = 1V, V _{IN (-)} = 0V, V _O = 5V	—	0.1	—	nA
Response Time	t _{rsp}	6	R _L = 82Ω, C _L = 15pF	—	0.9	—	μs

TEST CIRCUIT

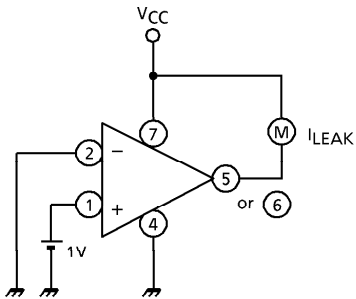
(1) I_{CC}



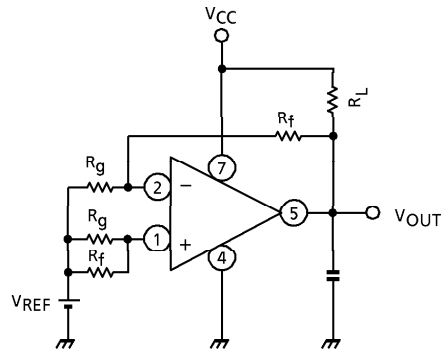
(2) I_I, I_{IO}



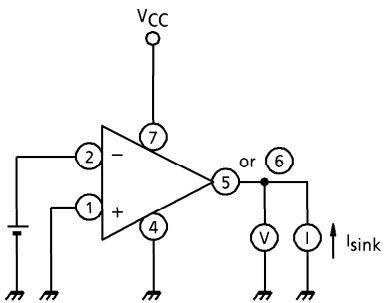
(3) I_{LEAK}



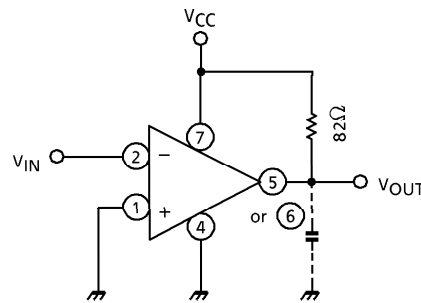
(4) V_{IO}, CMV_{IN}



(5) I_{sink}, V_{OL}

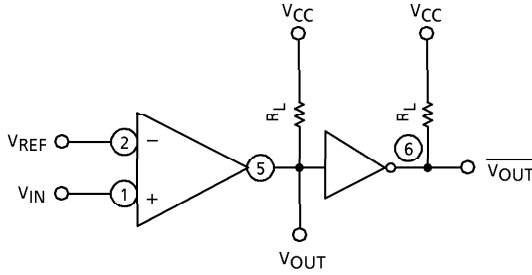


(6) t_{rsp}

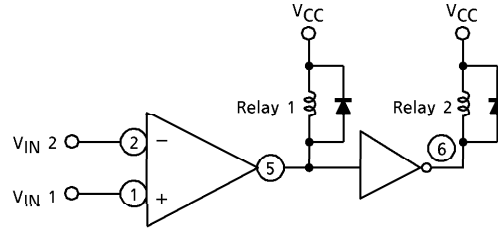


APPLICATION CIRCUIT

1. GENERAL COMPARATOR

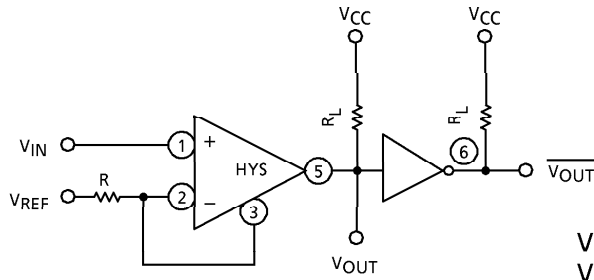


2. COMPARE WITH INPUT VOLTAGE

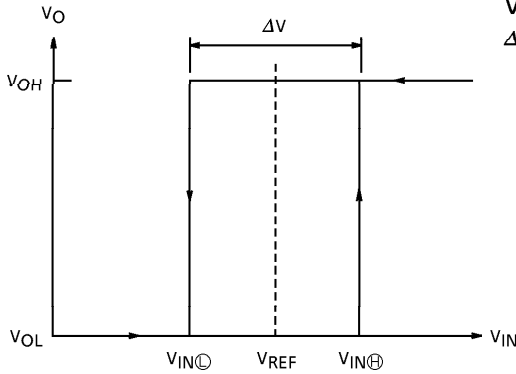


LED 2 IS LIGHTED AT $V_{IN 1} > V_{IN 2}$
 LED 2 IS LIGHTED AT $V_{IN 1} < V_{IN 2}$

3. COMPARATOR WITH HYSTERESIS



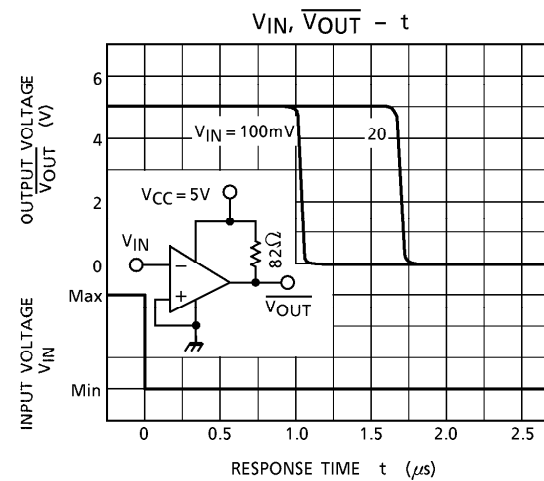
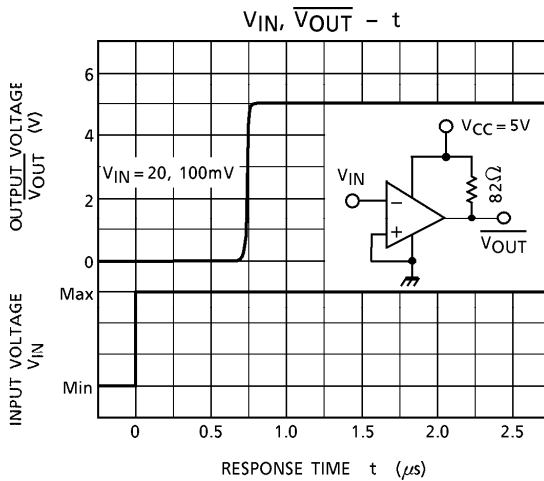
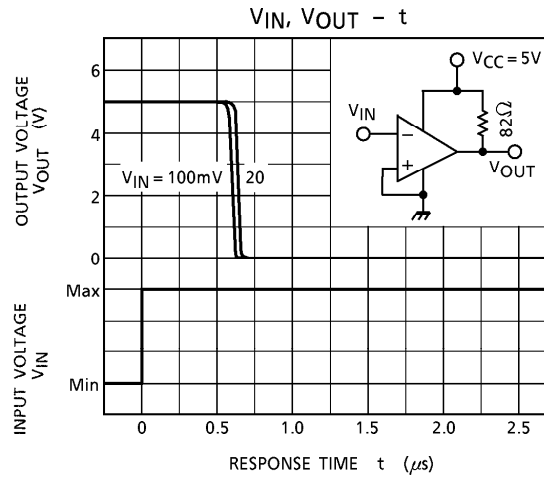
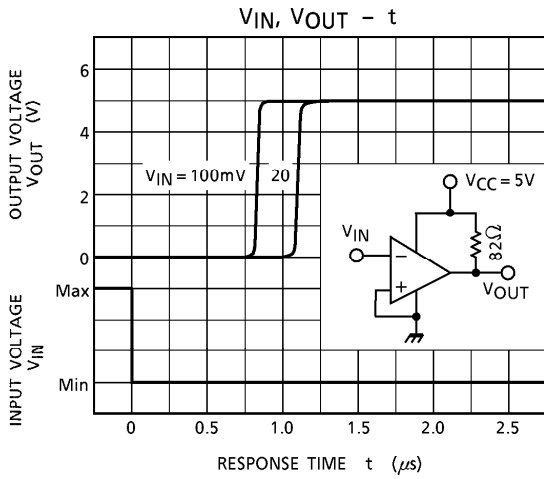
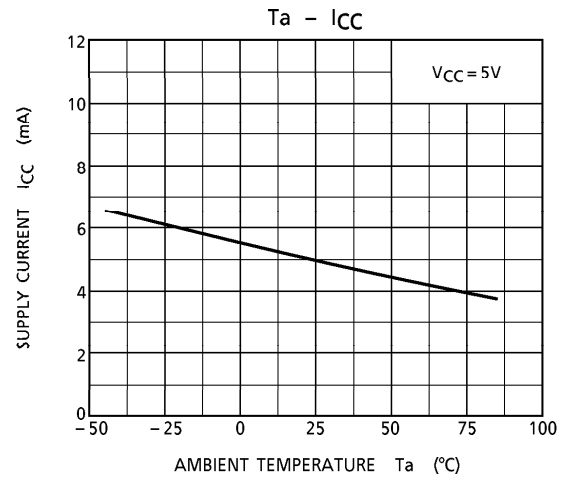
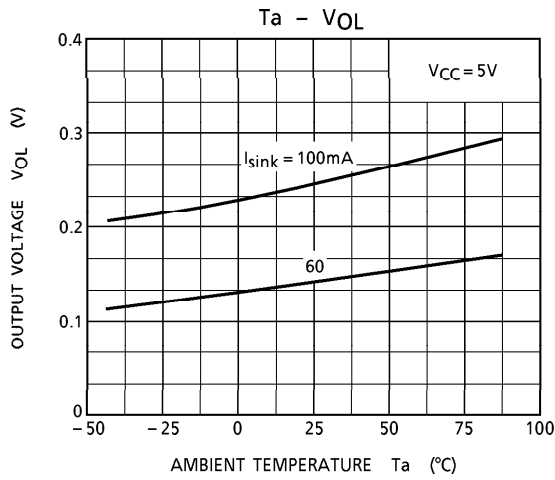
- V_{OH} : OUTPUT VOLTAGE ("H" LEVEL)
- V_{OL} : OUTPUT VOLTAGE ("L" LEVEL)
- $V_{IN(H)}$: TURNOVER INPUT VOLTAGE ("H" LEVEL)
- $V_{IN(L)}$: TURNOVER INPUT VOLTAGE ("L" LEVEL)
- V_{REF} : REFERENCE VOLTAGE
- ΔV : HYSTERESIS WIDTH

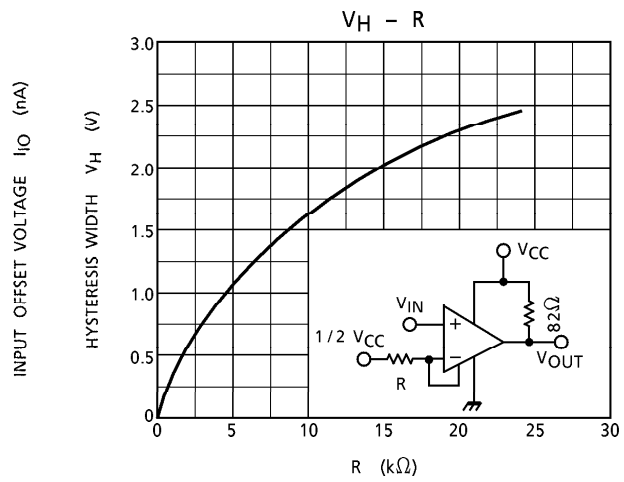
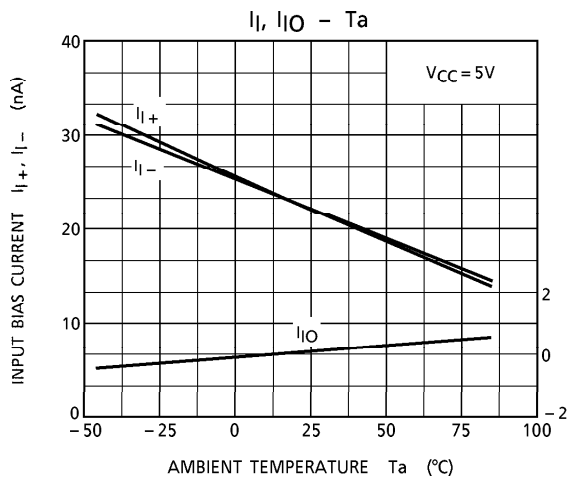


Calculate the Hysteresis width using the following equation

$$\Delta V \cong (V_{CC} - 1.5) \frac{R}{R + 10} \quad V_{CC} (V) \quad R (k\Omega)$$

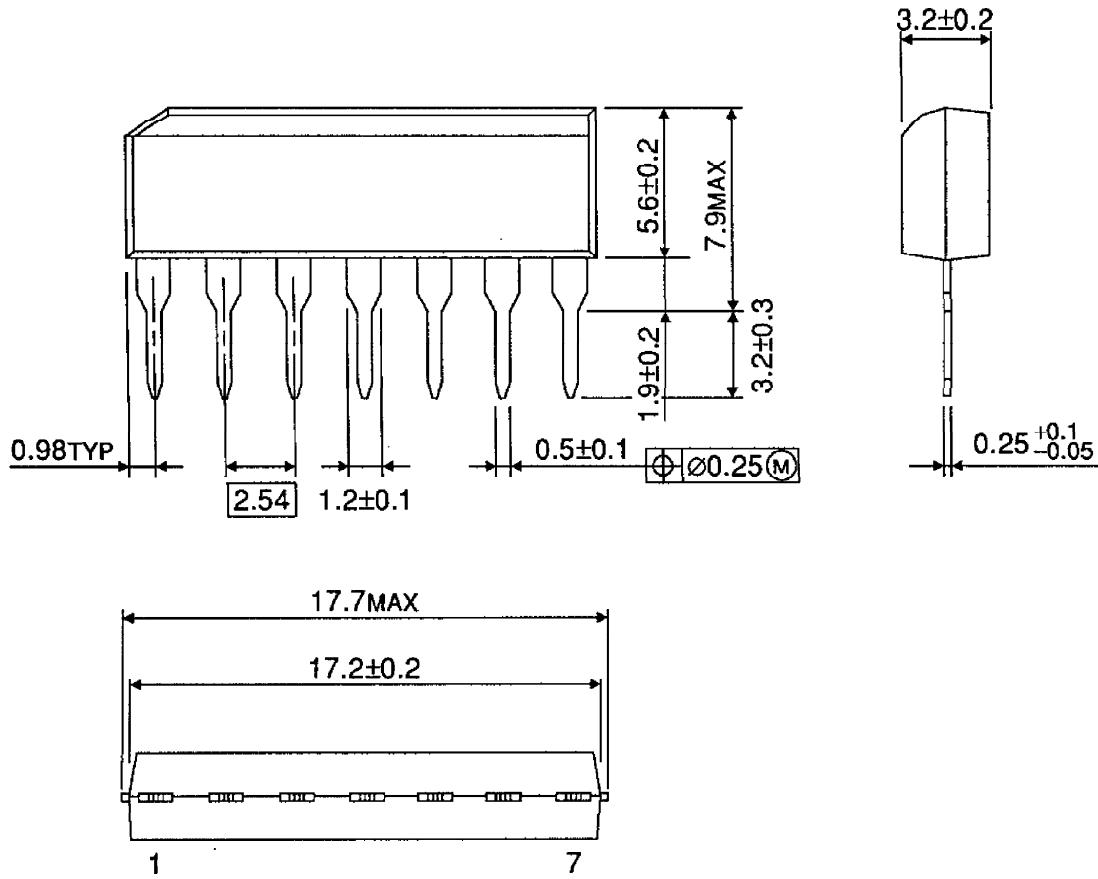
CHARACTERISTICS





OUTLINE DRAWING
SIP7-P-2.54A

Unit : mm



Weight : 0.7g (Typ.)