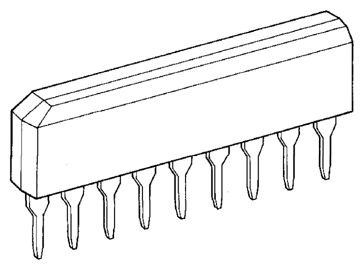
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7522S

DUAL VOLTAGE COMPARATOR

The TA7522S is an easy-to-use small 9-pin single in-line package IC incorporating two voltage comparator circuits. Since one channel has an inverted-output buffer, a CR oscillator can be easily built up. In addition, the IC has so wide an operating temperature range that it can be used in wide application fields.



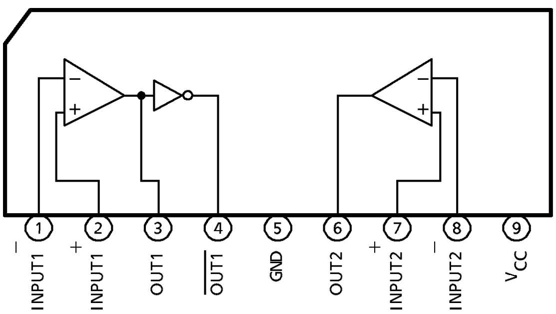
SIP9-P-2.54A

Weight : 0.92g (Typ.)

FEATURES

- Two-circuit package
- High gain
- Single 3V power supply for operation
- Inverted-output also available
- A 0V input causes action in the IC with a single power supply.
- Wide common-mode input range
- No latch-up
- Operating temperature range : from −40 to 85°C
- Open-collector output

BLOCK DIAGRAM AND PIN LAYOUT



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PIN DESCRIPTION

PIN No.	SYMBOL	DESCRIPTION
1	$INPUT1^{-}$	Inverted-input pin
2	$INPUT1^{+}$	Non-inverted-input pin
3	OUT1	Output pin corresponding to INPUT1
4	$\overline{OUT1}$	Output pin for inversion of OUT1
5	GND	Grounded
6	OUT2	Output pin corresponding to INPUT2
7	$INPUT2^{+}$	Non-inverted-input pin
8	$INPUT2^{-}$	Inverted-input pin
9	V_{CC}	Power supply pin

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	−0.3 to +18	V
Supply Voltage Surge	$V_{CC\ SURGE}$	+30 (within 1 second)	V
Power Dissipation	P_D	500	mW
Differential Input Voltage	DV_{IN}	±18	V
Input Voltage	V_{IN}	−0.3 to +18	V
Output Current	I_{SINK}	30	mA
Operating Temperature	T_{opr}	−40 to +85	°C
Storage Temperature	T_{stg}	−55 to +150	°C

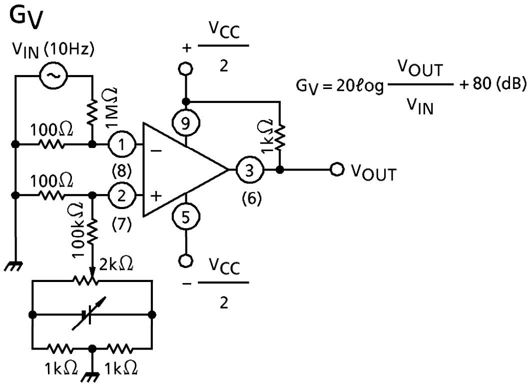
ELECTRICAL CHARACTERISTICS (Ta = − 40 to + 85°C)

CHARACTERISTIC	SYMBOL		TEST CIRCUIT	TEST CONDITION	MIN.	(Note) TYP.	MAX.	UNIT
Voltage Gain	G_V		1	$V_{CC} = 6V$, $R_L = 1k\Omega$ f = 10Hz, test circuit 1	60	95	—	dB
Input Offset Voltage	V_{IO}		2	$V_{CC} = 6V$, $R_L = 1k\Omega$ $CMV_{IN} = 3V$, test circuit 2	—	2	10	mV
Input Bias Current	I_I		3	$V_{CC} = 6V$, $CMV_{IN} = 3V$ test circuit 3	—	− 0.2	− 2	μA
Input Offset Current	I_{IO}		3	Same as above	—	0.02	0.3	μA
Common-mode Input Voltage	CMV_{IL}		4	$V_{CC} = 6.5V$, $R_L = 1k\Omega$ $V_{IO} = 20mV$, test circuit 4	—	− 0.5	0	V
	CMV_{IH}			Same as above	5.0	5.3	—	V
Zero Output Voltage	V_{OL}	OUT1 OUT2	5	$V_{CC} = 5.5V$, $V_{IN} = 0.1V$ $I_{OL} = 10mA$, test circuit 5	—	0.18	0.4	V
		$\overline{OUT1}$		$V_{CC} = 5.5V$, $V_{IN} = 0.1V$, $I_{OL} = 15mA$, V_{OL} (out1) ≧ 2V, test circuit 5	—	0.25	0.4	V
Output Leakage Current	I_{LEAK}	OUT1 $\overline{OUT1}$ OUT2	6	$V_{CC} = 6V$, $V_{OUT} = 30V$ test circuit 6	—	—	10	μA
		OUT1	6	$V_{CC} = 6V$, $V_{OUT} = 0.4V$ test circuit 6	—	− 1.5	− 10	μA
Current Consumption	I_{CC}		7	$V_{CC} = 6.5V$, $R_L = \infty$ test circuit 7	—	3	7	mA

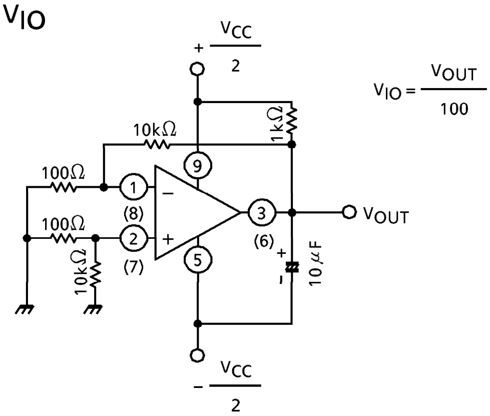
Note : An ambient temperature of 25°C is assumed for the typical values.

TEST CIRCUIT

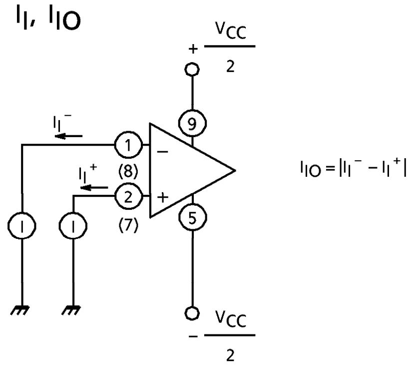
1. G_V



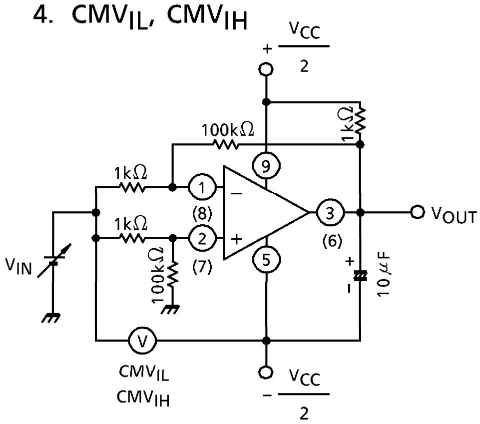
2. V_{IO}



3. I_I, I_{IO}



4. CMV_{IL}, CMV_{IH}

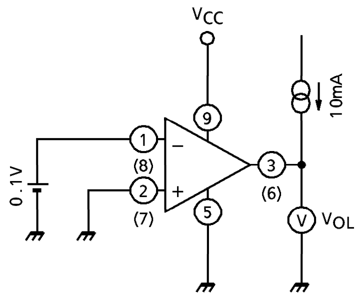


CMV_{IL} : Input voltage relative to pin 5 as it is obtained when V_{IN} is decreased until output V_{OUT} becomes ±2V.

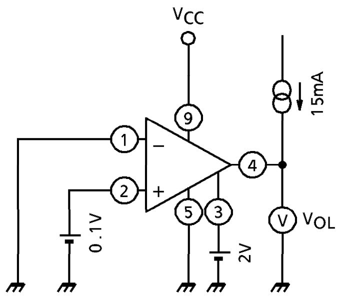
CMV_{IH} : Input voltage relative to pin 5 as it is obtained when V_{IN} is increased until output V_{OUT} becomes ±2V.

5. V_{OL}

5.1 OUT1, OUT2

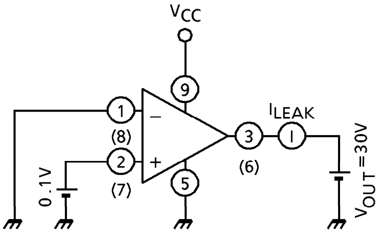


5.2 $\overline{\text{OUT1}}$

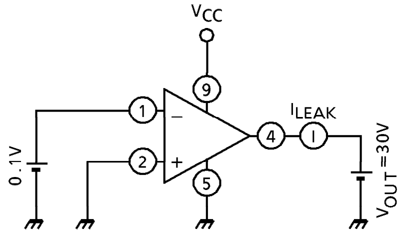


6. I_{LEAK}

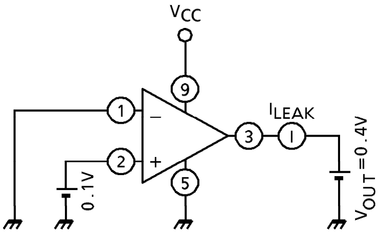
6.1 OUT1, OUT2



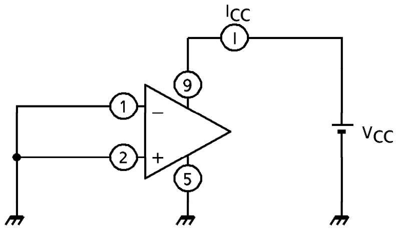
6.2 $\overline{\text{OUT1}}$



6.3 OUT1

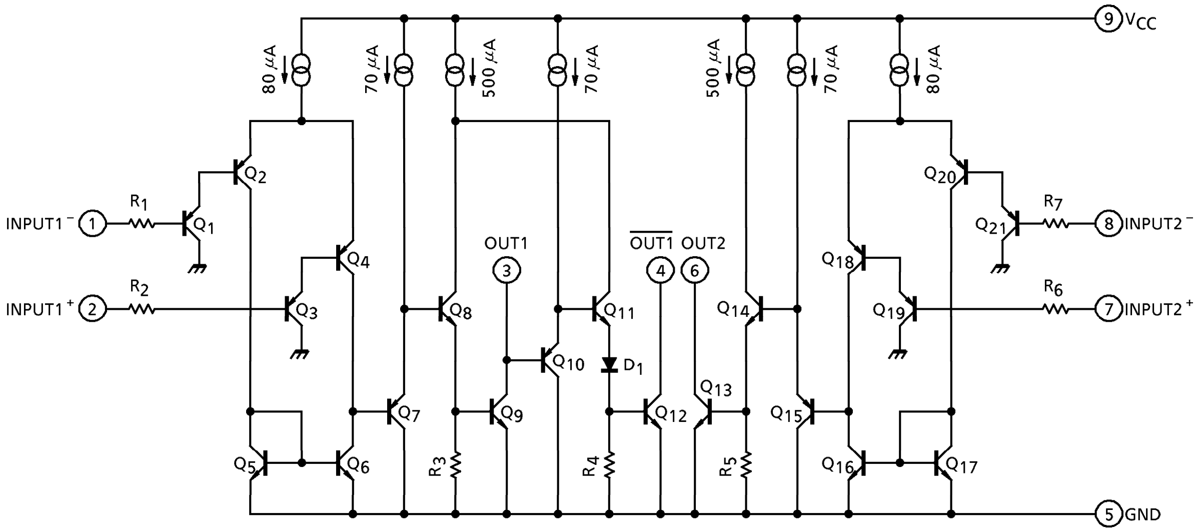


7. I_{CC}



All inputs are grounded.

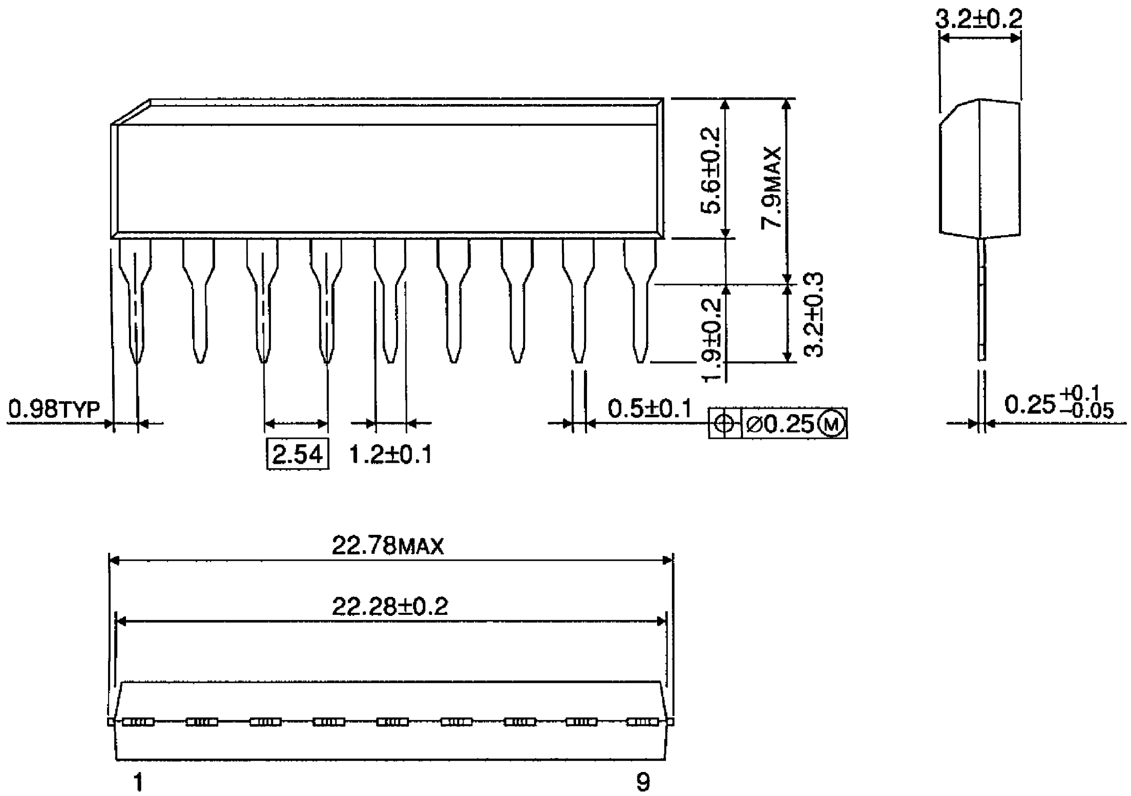
EQUIVALENT CIRCUIT



OUTLINE DRAWING

SIP9-P-2.54A

Unit : mm



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