

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7522S, TA7522F

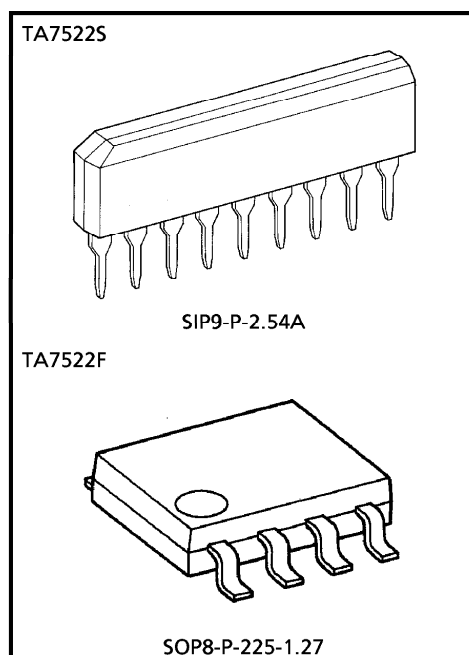
DUAL VOLTAGE COMPARATOR

The TA7522S, TA7522F 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.

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
- SIP-9 pin (TA7522S)
- Small SOP-8 pin (TA7522F)



Weight
 SIP9-P-2.54A : 0.92g (Typ.)
 SOP8-P-225-1.27 : 0.08g (Typ.)

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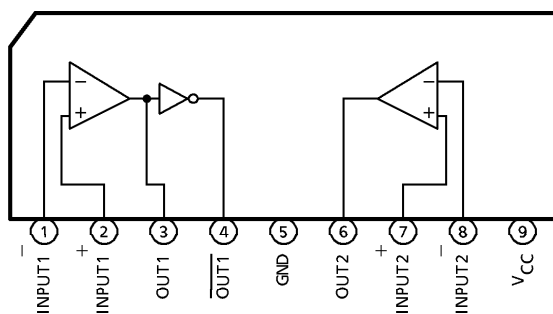
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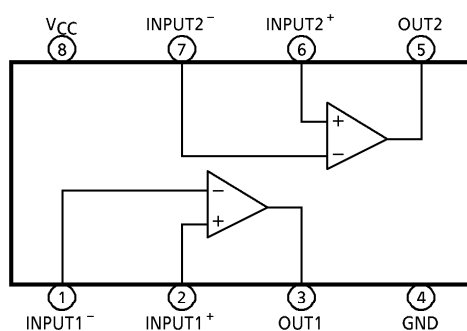
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BLOCK DIAGRAM AND PIN LAYOUT

TA7522S



TA7522F



Note : The TA7522S and TA7522F are the same chip, except that they are housed in different packages.

PIN DESCRIPTION

PIN No.		SYMBOL	DESCRIPTION
TA7522S	TA7522F		
1	1	INPUT1 ⁻	Inverted-input pin
2	2	INPUT1 ⁺	Non-inverted-input pin
3	3	OUT1	Output pin corresponding to INPUT1
4	—	$\overline{\text{OUT1}}$	Output pin for inversion of OUT1
5	4	GND	Grounded
6	5	OUT2	Output pin corresponding to INPUT2
7	6	INPUT2 ⁺	Non-inverted-input pin
8	7	INPUT2 ⁻	Inverted-input pin
9	8	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 / 440	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

(Note) P_D : TA7522S / TA7522F

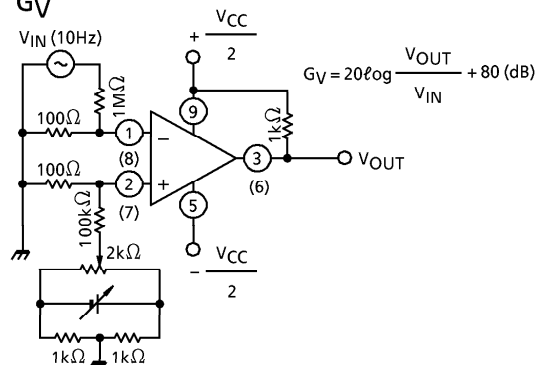
ELECTRICAL CHARACTERISTICS ($T_a = -40$ to $+85^\circ\text{C}$)

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

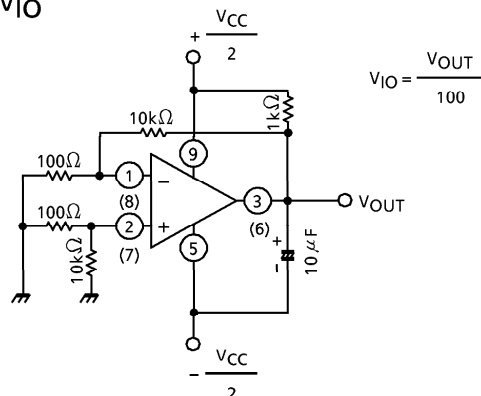
Note : An ambient temperature of 25°C is assumed for the typical values.

TEST CIRCUIT (Shown below is an example for the TA7522S. For the TA7522F, note that the pin numbers are different.)

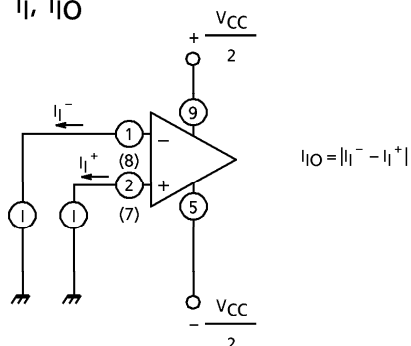
1. G_V



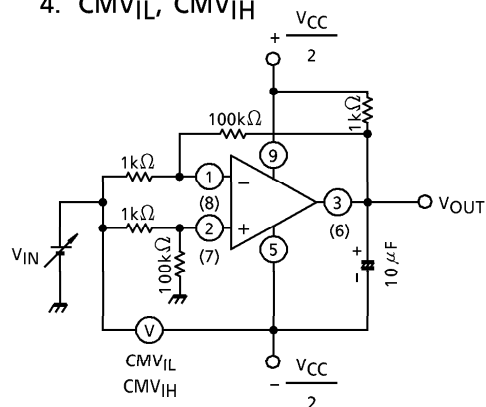
2. V_{IO}



3. I_I , I_{IO}



4. CMV_{IL} , CMV_{IH}

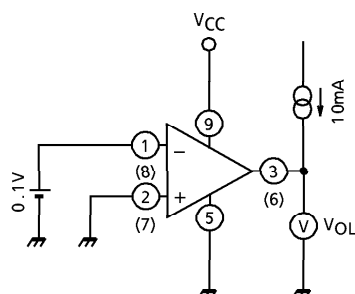


CMV_{IL} : Input voltage relative to pin 5 as it is obtained when V_{IN} is decreased until output V_{OUT} becomes $\pm 2V$.

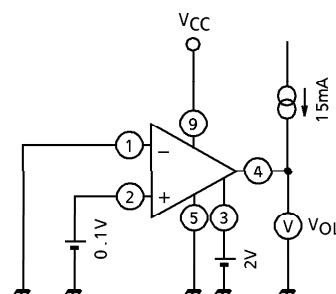
CMV_{IH} : Input voltage relative to pin 5 as it is obtained when V_{IN} is increased until output V_{OUT} becomes $\pm 2V$.

5. V_{OL}

5.1 OUT1, OUT2

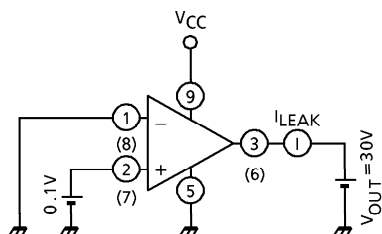


5.2 $\overline{OUT1}$

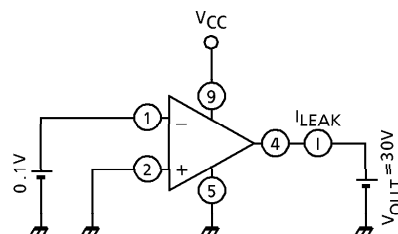


6. I_{LEAK}

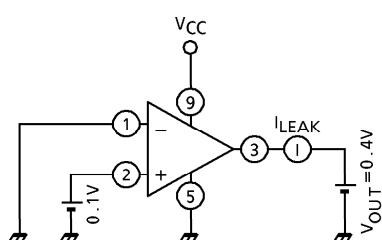
6.1 OUT1, OUT2



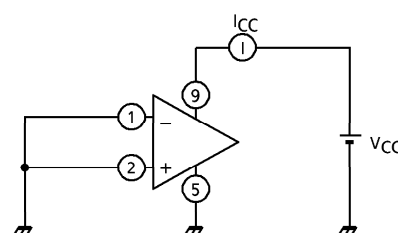
6.2 $\overline{OUT1}$



6.3 OUT1

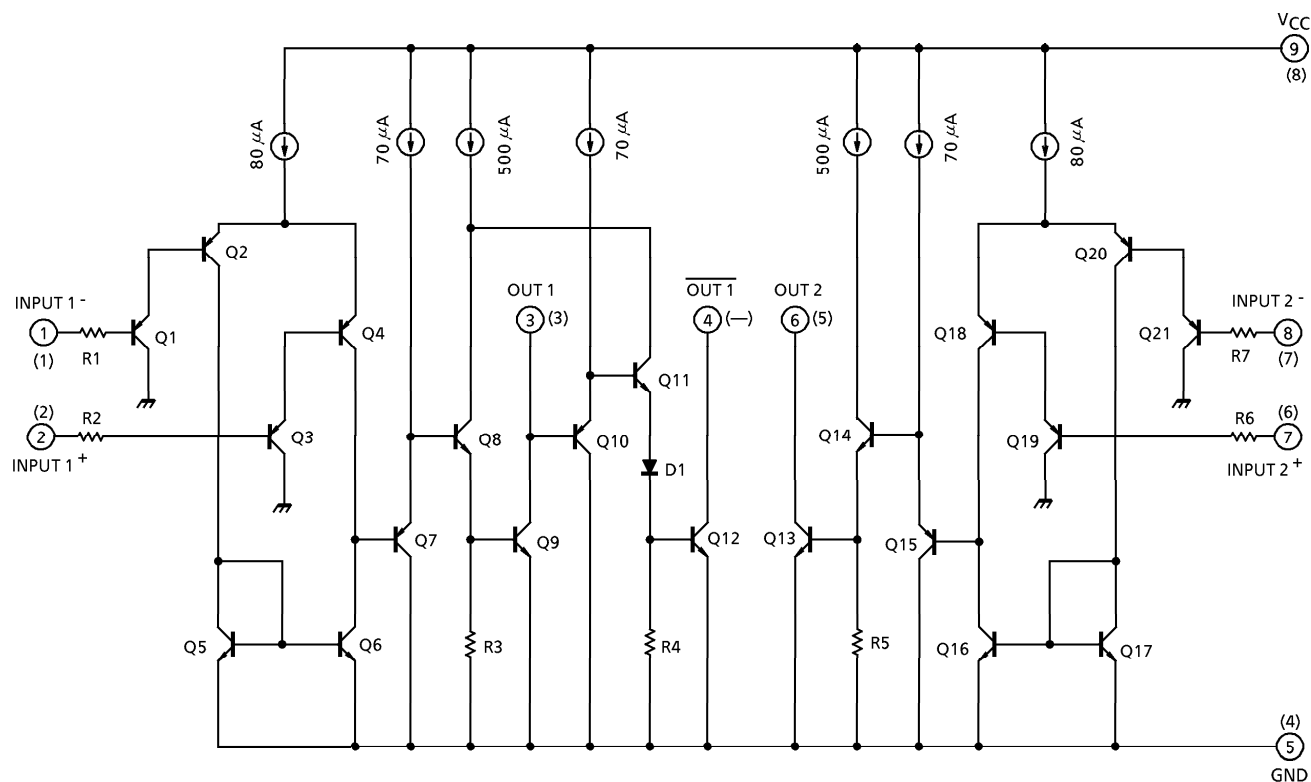


7. I_{CC}



All inputs are grounded.

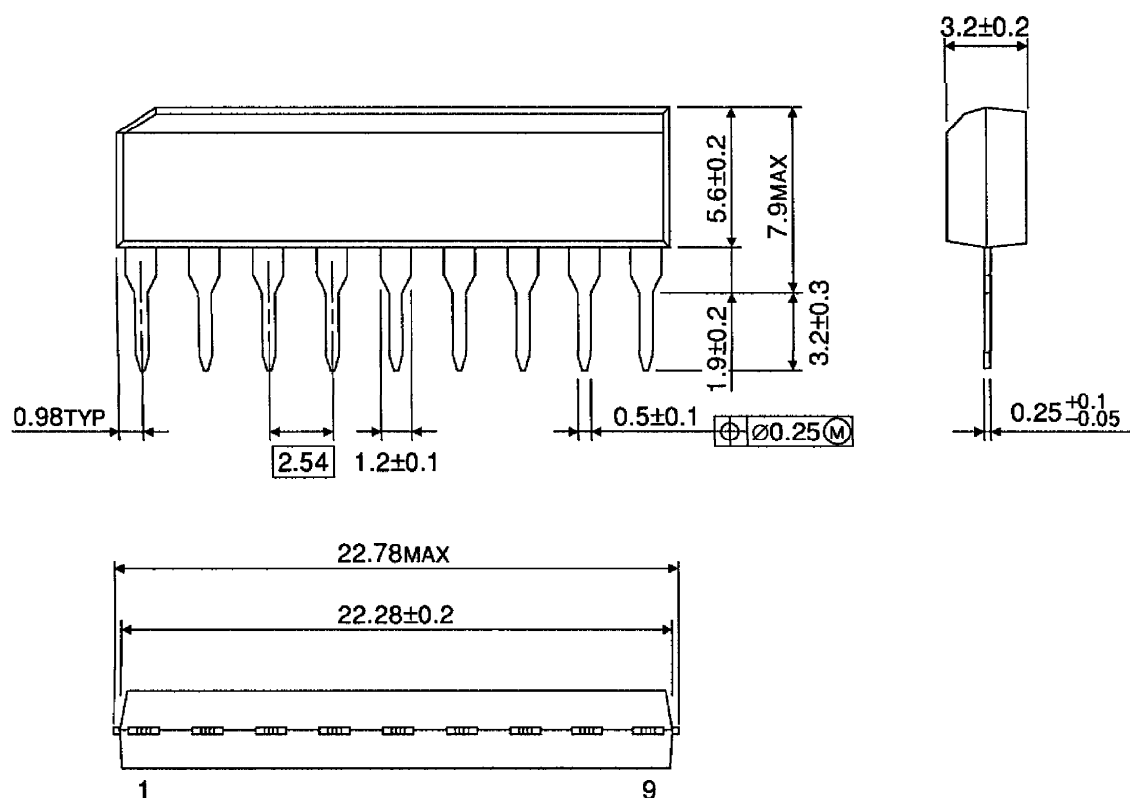
EQUIVALENT CIRCUIT (The pin numbers are explained in order of the TA7522S and the TA7522F.)



OUTLINE DRAWING

SIP9-P-2.54A

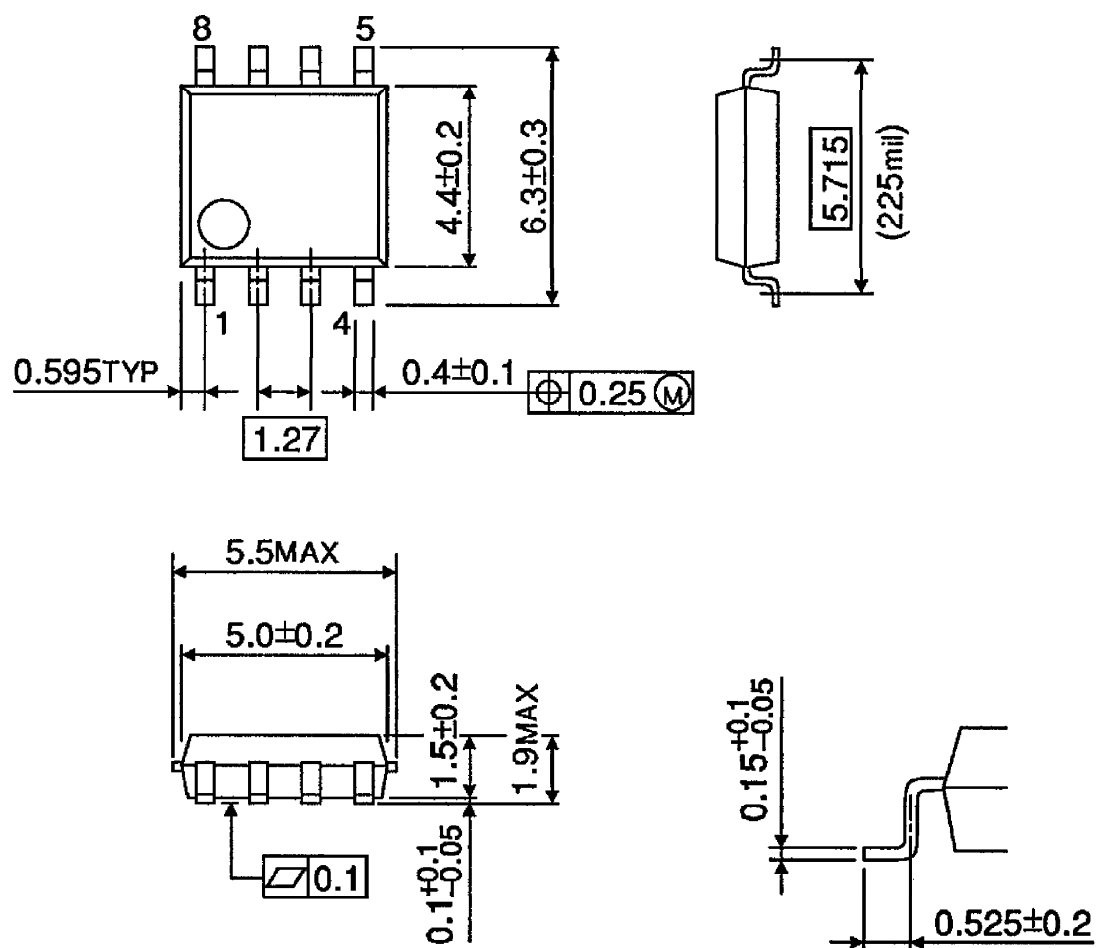
Unit : mm



Weight : 0.92g (Typ.)

OUTLINE DRAWING
SOP8-P-225-1.27

Unit : mm



Weight : 0.08g (Typ.)