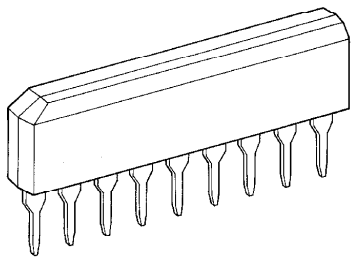
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7522S, TA7522F

DUAL VOLTAGE COMPARATOR

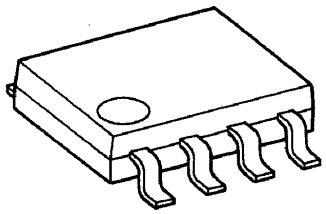
The TA7522S, TA7522F is an easy-to-use small 9-pin single in-line package IC incorporating two voltage comparator circuits.
Since one channel has an inverted-output buffer, a CR oscillator can be easily built up. In addition, the IC has so wide an operating temperature range that it can be used in wide application fields.

TA7522S



SIP9-P-2.54A

TA7522F



SOP8-P-225-1.27

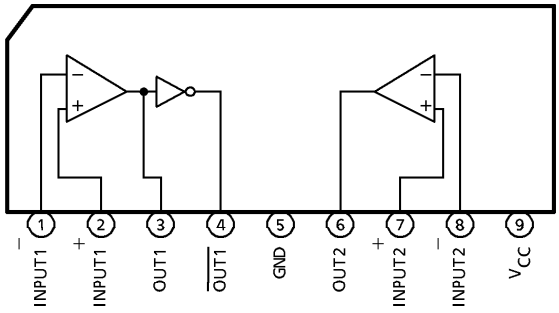
Weight
SIP9-P-2.54A : 0.92g (Typ.)
SOP8-P-225-1.27 : 0.08g (Typ.)

FEATURES

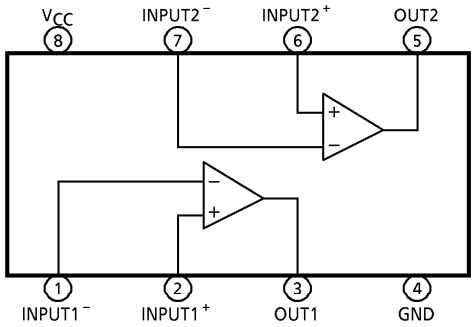
- Two-circuit package
- High gain
- Single 3V power supply for operation
- Inverted-output also available
- A 0V input causes action in the IC with a single power supply.
- Wide common-mode input range
- No latch-up
- Operating temperature range : from −40 to 85°C
- Open-collector output
- SIP-9 pin (TA7522S)
- Small SOP-8 pin (TA7522F)

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	—	$\overline{OUT1}$	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

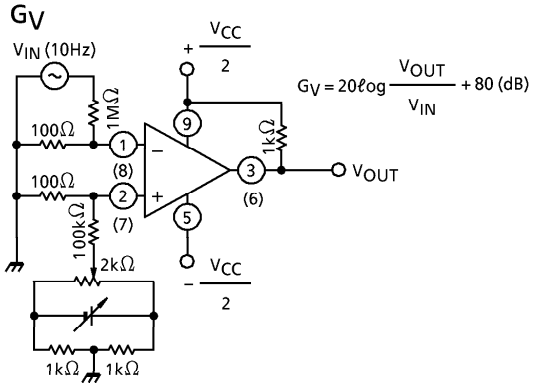
ELECTRICAL CHARACTERISTICS (Ta = − 40 to + 85°C)

CHARACTERISTIC	SYMBOL		TEST CIR-CUIT	TEST CONDITION	MIN.	(Note) TYP.	MAX.	UNIT
Voltage Gain	G_V		1	V_{CC} = 6V, R_L = 1kΩ f = 10Hz, test circuit 1	60	95	—	dB
Input Offset Voltage	V_{IO}		2	V_{CC} = 6V, R_L = 1kΩ 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 = 1kΩ 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 = ∞ test circuit 7	—	3	7	mA

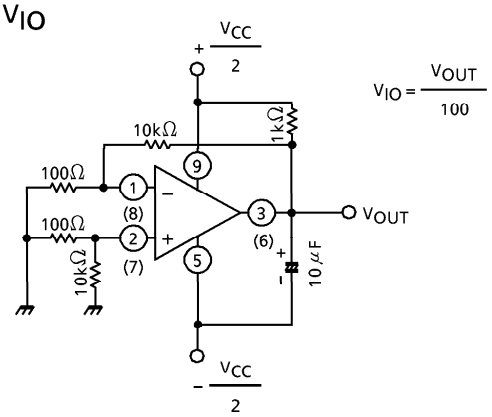
Note : An ambient temperature of 25°C is assumed for the typical values.

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

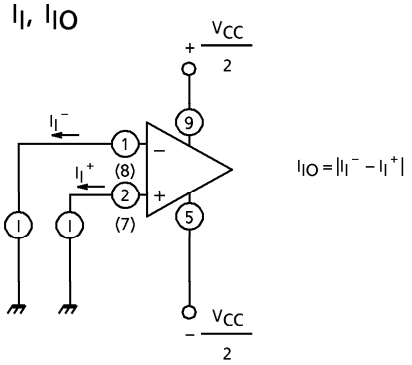
1. G_V



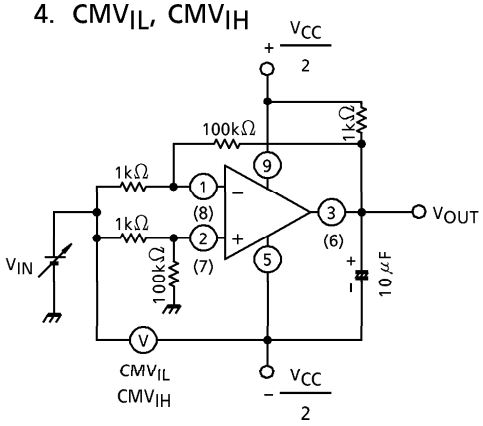
2. V_{IO}



3. I_I, I_{IO}



4. CMV_{IL}, CMV_{IH}

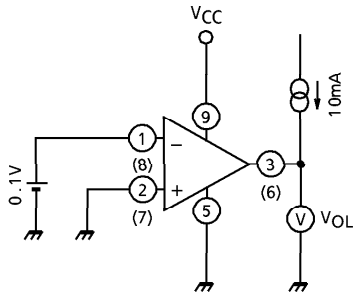


CMV_{IL} : Input voltage relative to pin 5 as it is obtained when V_{IN} is decreased until output V_{OUT} becomes ±2V.

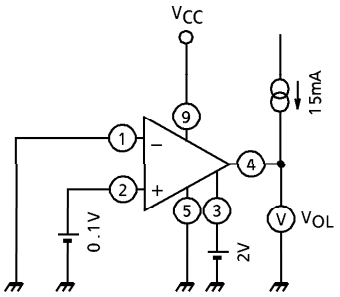
CMV_{IH} : Input voltage relative to pin 5 as it is obtained when V_{IN} is increased until output V_{OUT} becomes ±2V.

5. V_{OL}

5.1 OUT1, OUT2

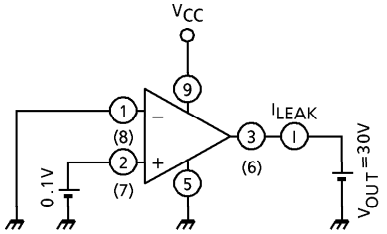


5.2 $\overline{OUT1}$

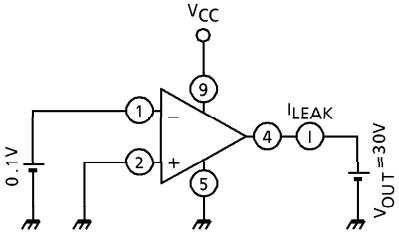


6. I_{LEAK}

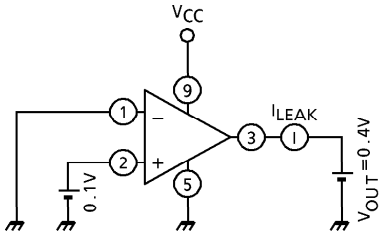
6.1 OUT1, OUT2



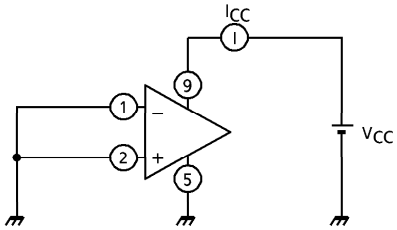
6.2 $\overline{OUT1}$



6.3 OUT1

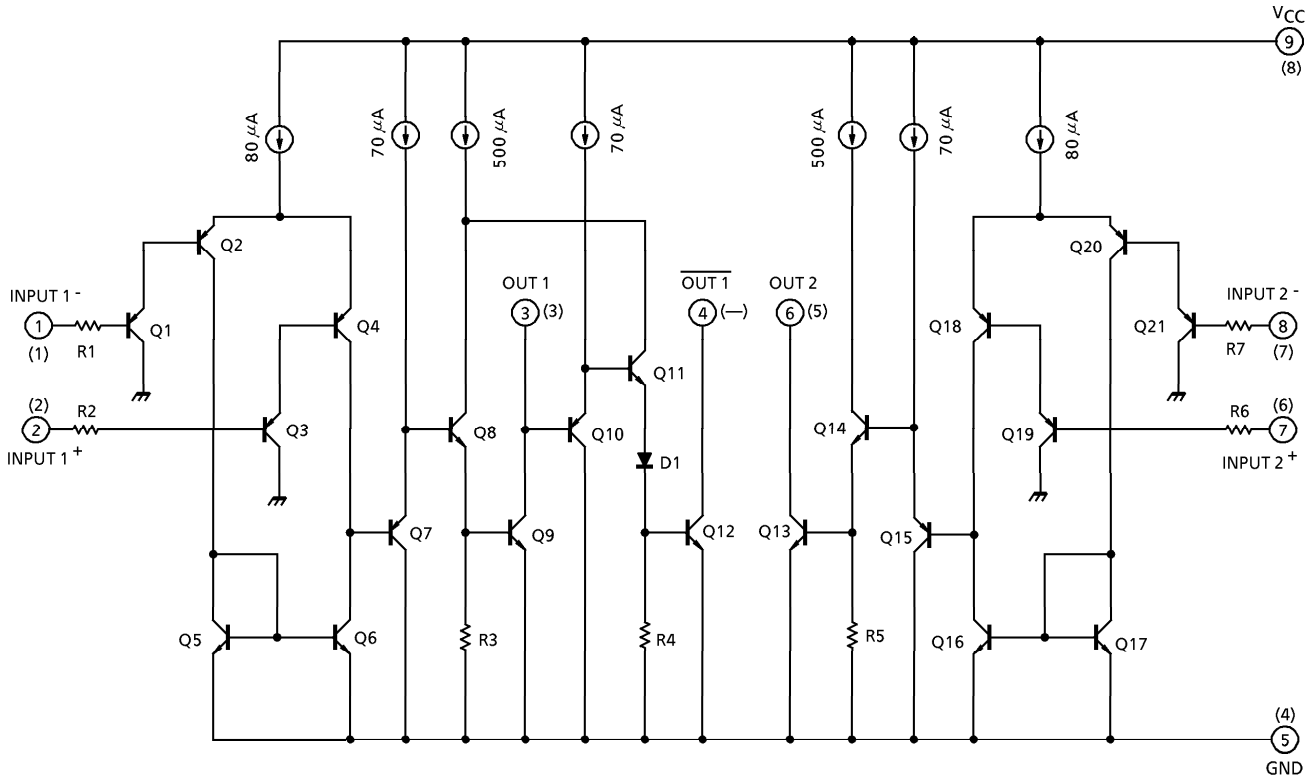


7. I_{CC}



All inputs are grounded.

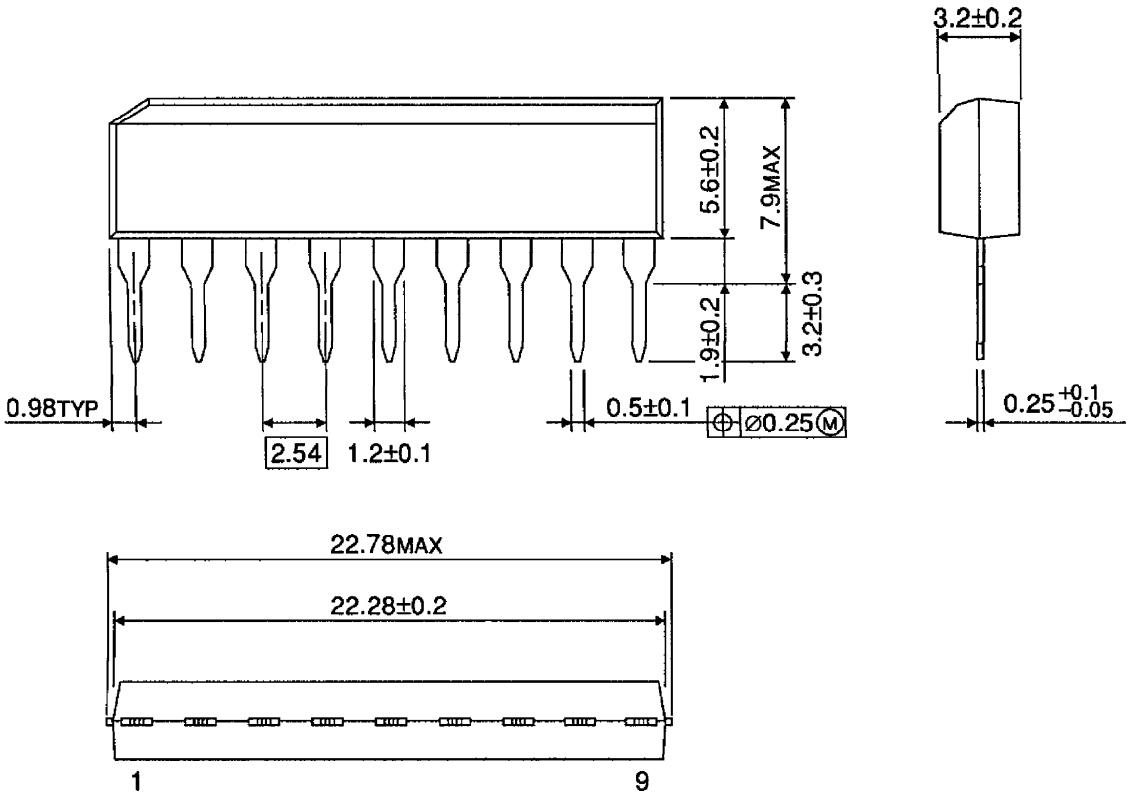
EQUIVALENT CIRCUIT (The pin numbers are explained in order of the TA7522S and the TA7522F.)



OUTLINE DRAWING

SIP9-P-2.54A

Unit : mm

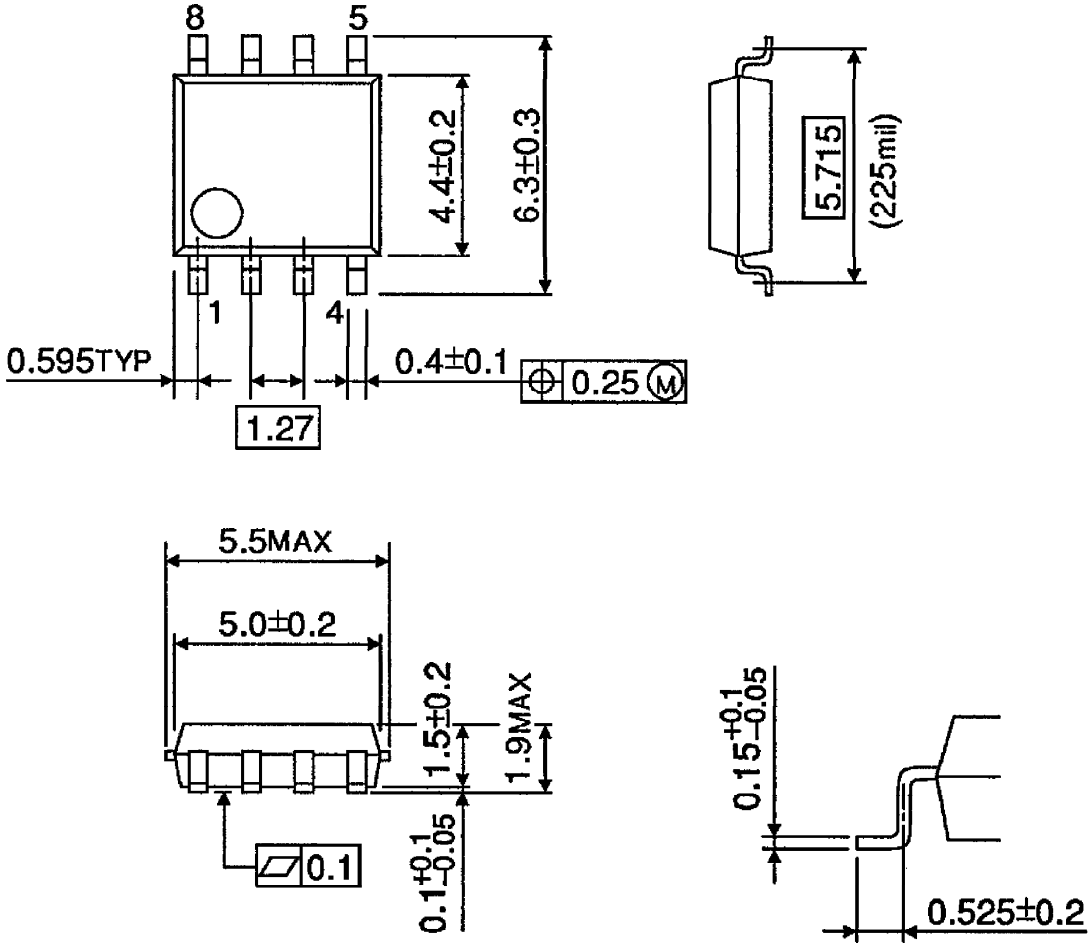


Weight : 0.92g (Typ.)

OUTLINE DRAWING

SOP8-P-225-1.27

Unit : mm



Weight : 0.08g (Typ.)