

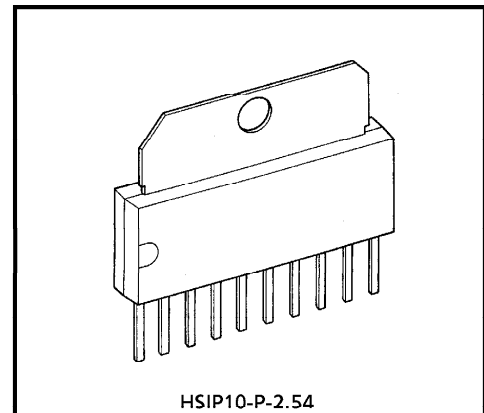
TA7272P

DUAL POWER OPERATIONAL AMPLIFIER

The TA7272P is a dual power operational amplifier. It is intended for use especially DC MOTOR positioning system applications, such as Arm Driver (for Audiodisk Players), head or voice coil motor drivers (for Floppy and Winchester Disk Drivers) and any other power driver applications.

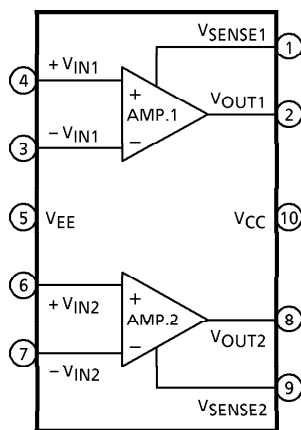
FEATURES

- HSIP 10Pin Power Package Capsealed.
- Build-in Over Current Protector.
- Few External Parts Required.
- Output Current Up to 1.2A (PEAK)
- Excellent Crosstalk Characteristics.



Weight : 2.47g (Typ.)

BLOCK DIAGRAM



961001EBA2

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PIN FUNCTION

| PIN No. | SYMBOL | FUNCTIONAL DESCRIPTION |
|---------|---------------------|---|
| 1 | V _{SENSE1} | Amp.1 output current detection terminal |
| 2 | V _{OUT1} | Amp.1 output terminal |
| 3 | -V _{IN1} | Amp.1 input terminal (-) |
| 4 | +V _{IN1} | Amp.1 input terminal (+) |
| 5 | V _{EE} | Negative-side power supply terminal |
| 6 | +V _{IN2} | Amp.2 input terminal (+) |
| 7 | -V _{IN2} | Amp.2 input terminal (-) |
| 8 | V _{OUT2} | Amp.2 output terminal |
| 9 | V _{SENSE2} | Amp.2 output current detection terminal |
| 10 | V _{CC} | Positive-side power supply terminal |

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|-----------------------|-----------------------------------|------------|------|
| Supply Voltage | V _{CC} , V _{EE} | ± 18 | V |
| Output Current | I _O (PEAK) | 1.2 (Note) | A |
| Power Dissipation | P _D | 12.5 | W |
| Operating Temperature | T _{opr} | - 30~75 | °C |
| Storage Temperature | T _{stg} | - 55~150 | °C |

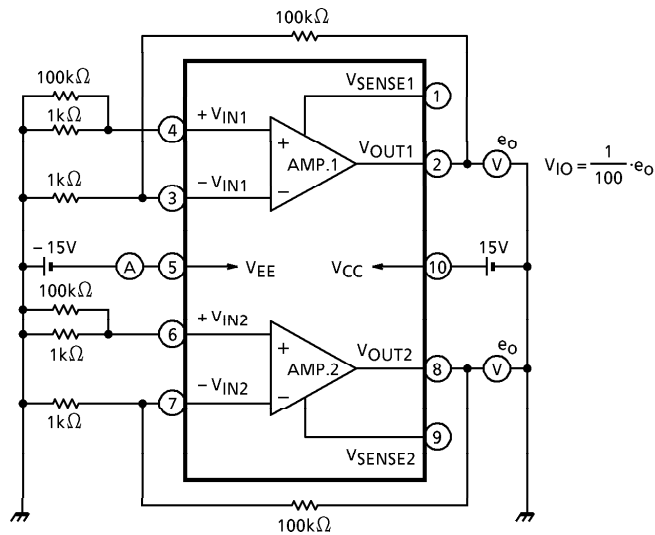
(Note) See V_{CC} - I_O (AVE) MAX. Characteristics
T_c = 25°C

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, V_{CC} = 15V, V_{EE} = - 15V, Ta = 25°C)

| CHARACTERISTIC | SYMBOL | TEST CIRCUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---------------------------------|-----------------|-----------------|--|--------|--------|------|------|
| Quiescent Current | I _{CC} | 1 | — | — | 20 | 35 | mA |
| Input Off Set Current | I _{IO} | 2 | — | — | 2 | 100 | nA |
| Input Bias Current | I _I | 2 | — | — | 50 | 300 | nA |
| Input Off Set Voltage | V _{IO} | 1 | — | — | 1.0 | 7.0 | mV |
| Output Voltage Swing | Upper | V _{OH} | V _{CC} = ± 15V, I _O = 300mA | 11.5 | 12.1 | — | V |
| | Lower | V _{OL} | | - 11.5 | - 12.3 | — | |
| | Upper | V _{OH} | V _{CC} = ± 6V, I _O = 1A | 2.2 | 3.3 | — | V |
| | Lower | V _{OL} | | - 2.2 | - 3.7 | — | |
| Open Loop Gain | G _{VO} | 4 | — | — | 90 | — | dB |
| Input Common Mode Voltage Range | CMR | 5 | — | ± 13 | ± 14 | — | V |
| Common Mode Rejection Ratio | CMRR | 5 | V _{IN} = - 10~10V | 90 | 95 | — | dB |
| Supply Voltage Rejection Ratio | SVRR | 5 | V _{CC} = - V _{EE} = 6~15V ± 1V | — | 45 | 125 | μV/V |
| Slew Rate | SR | 6 | — | — | 0.4 | — | V/μs |
| Short Circuit Current | I _{SC} | 7 | R _{SC} = 0.68Ω | 0.8 | 1.0 | — | A |
| Cross Talk | C _T | 5 | V _{IN} = - 14~14V | — | 60 | — | dB |

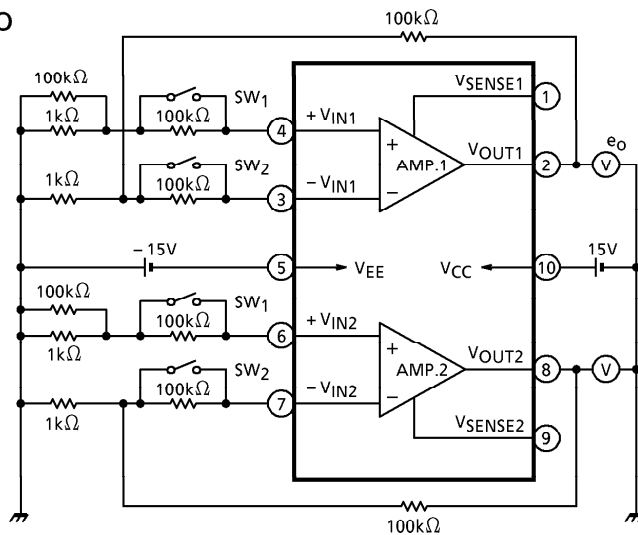
TEST CIRCUIT 1

I_{CC}, V_{IO}



TEST CIRCUIT 2

I_{I+}, I_{I-}, I_{IO}



When SW_1 and SW_2 are closed, the measured value is V_{M1} .
 When I_{I+} SW_1 is closed and SW_2 is open, the measured value is V_{M2} .

$$I_{I+} = \frac{V_{M2} - V_{M1}}{100k} \cdot \frac{1}{100}$$

When I_{I-} SW_1 is open and SW_2 is closed, the measured value is V_{M3} .

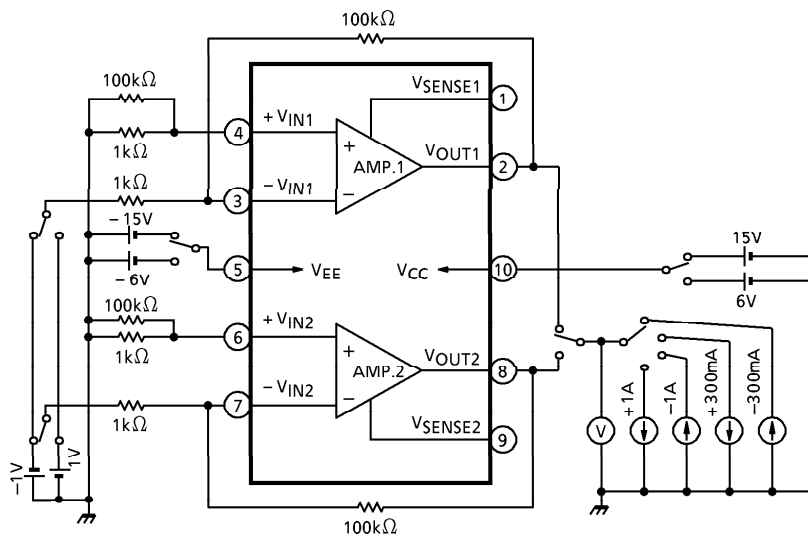
$$I_{I-} = \frac{V_{M3} - V_{M1}}{100k} \cdot \frac{1}{100}$$

When I_{IO} SW_1, SW_2 is open, the measured value is V_{M4} .

$$I_{IO} = \frac{V_{M4} - V_{M1}}{100k} \cdot \frac{1}{100}$$

TEST CIRCUIT 3

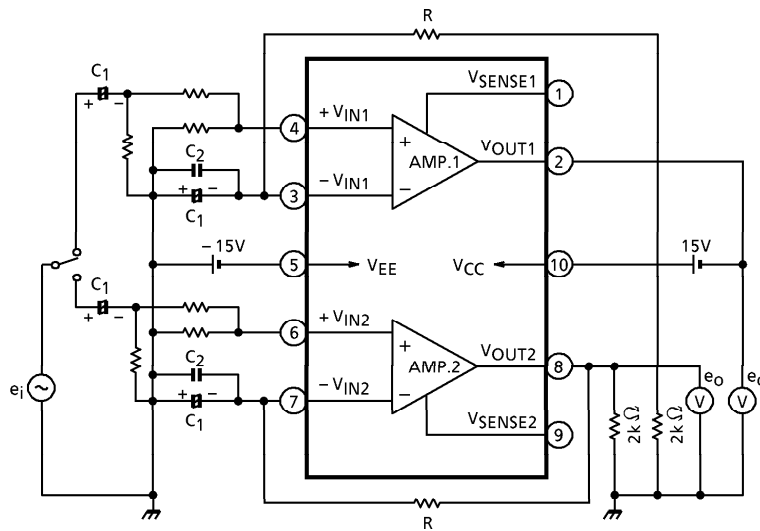
V_{OH}, V_{OL}



Set $V_{CC} = -V_{EE} = 15V$, then $I_O = 300mA$
 Set $V_{CC} = -V_{EE} = 6V$, then $I_O = 1A$

TEST CIRCUIT 4

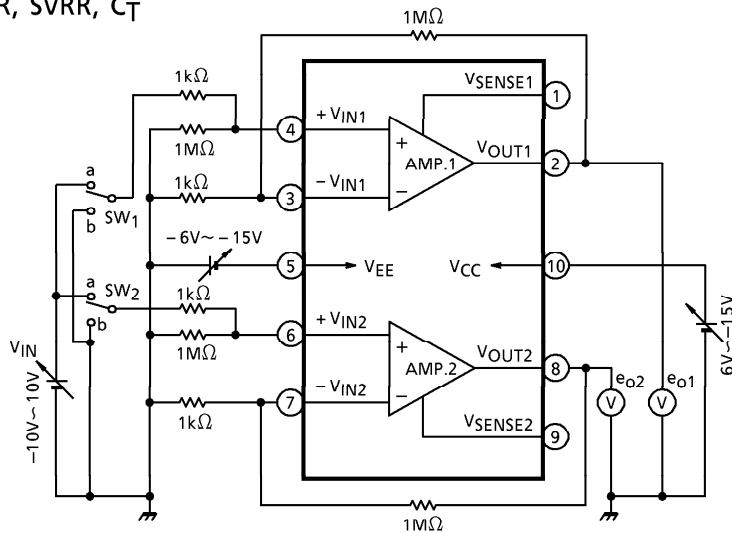
G_{VO}



$G_{VO} = 20 \log e_o / e_i$
 $R \gg 1 / \omega C_1$
 C₁ : obstruction direct current short-circuit
 C₂ : radio frequency short-circuit.
 Mica or Titanium capacitor use.

TEST CIRCUIT 5

CMR, CMRR, SVRR, C_T



CMR : V_{IN} value where a change in V_{IN} does not cause e_o to operate.

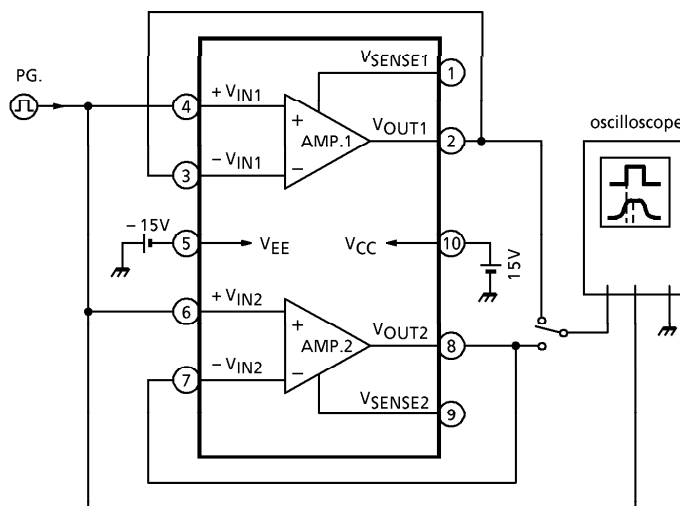
$$CMRR = 20 \log_{10} \frac{\Delta e_o}{\Delta V_{IN}}$$

$$SVRR = 20 \log_{10} \frac{\Delta e_o}{\Delta V_{CC}} \text{ or } = 20 \log_{10} \frac{\Delta e_o}{\Delta V_{EE}} \text{ (} V_{IN} = 0V \text{)}$$

$$C_T = 20 \log_{10} \frac{\Delta e_{o1}}{\Delta V_{IN}} \text{ (} SW_1 : b, SW_2 : a \text{) or } = 20 \log_{10} \frac{\Delta e_{o2}}{\Delta V_{IN}} \text{ (} SW_1 : a, SW_2 : b \text{)}$$

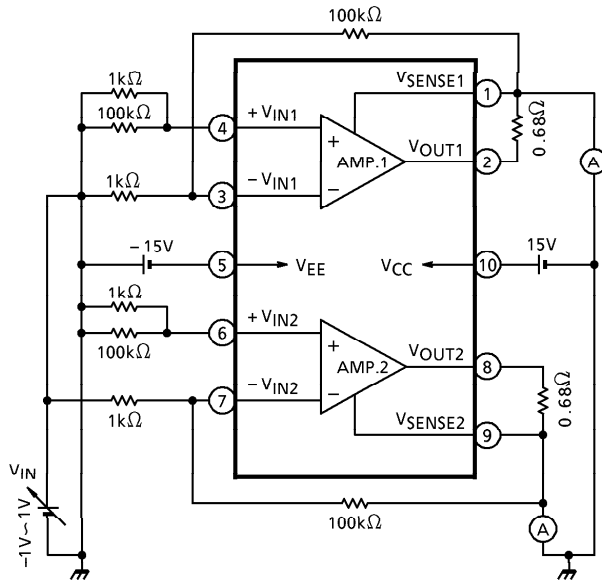
TEST CIRCUIT 6

SR



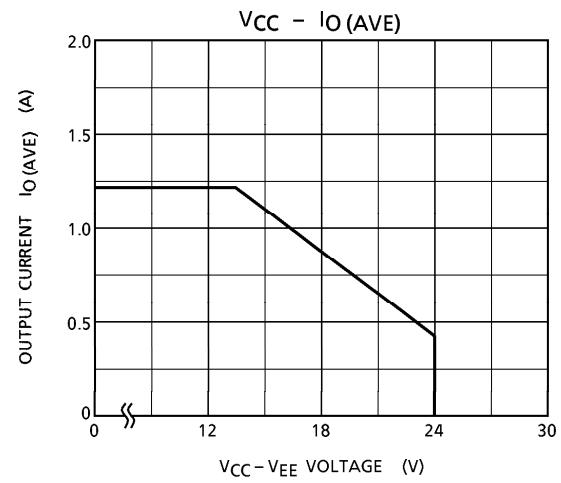
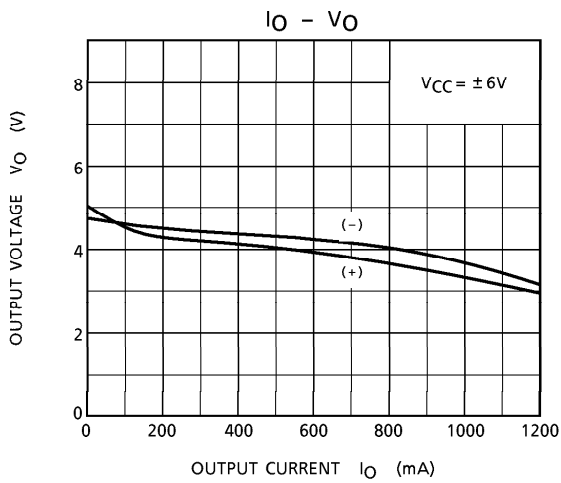
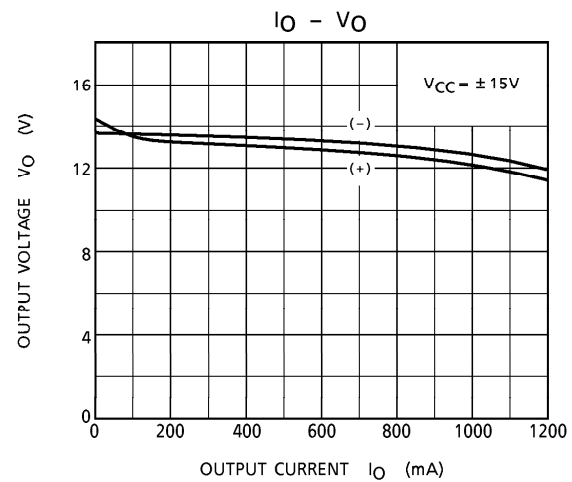
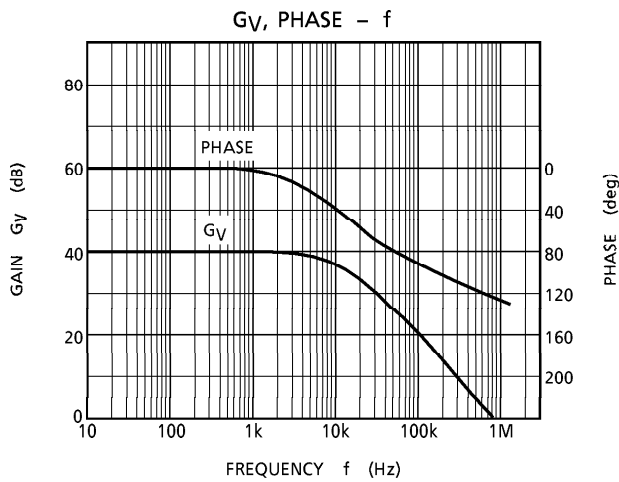
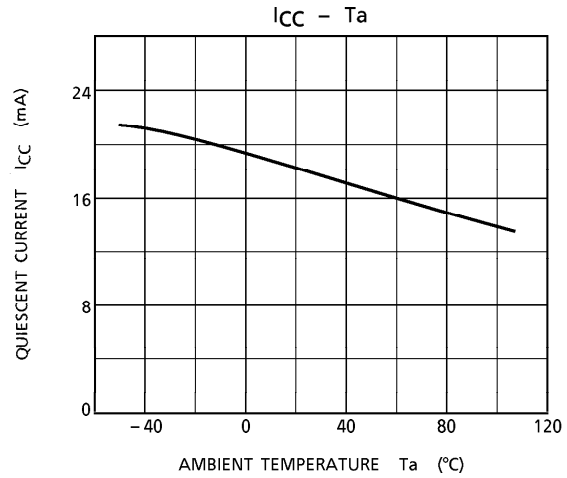
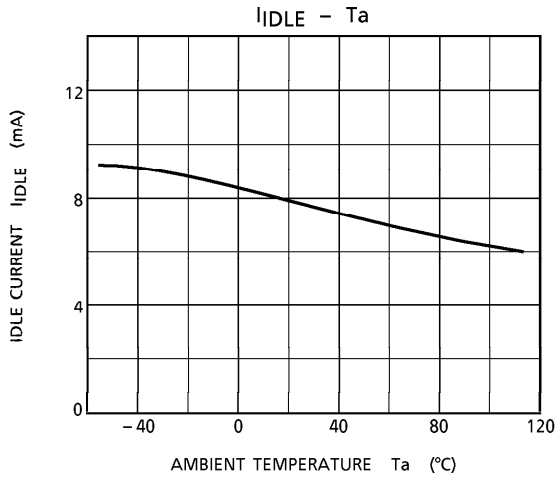
TEST CIRCUIT 7

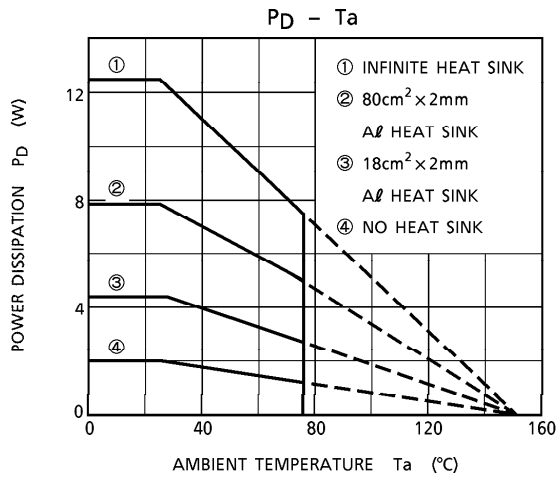
I_{SC}



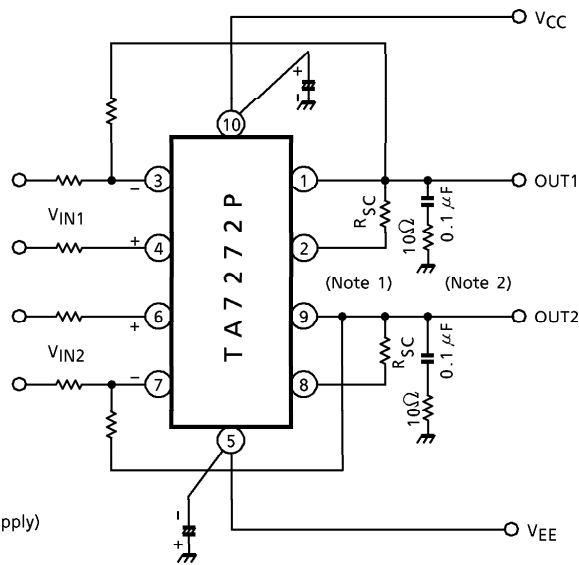
$$I_{SC} = V_M / 0.68\Omega$$

V_M : V_{IN} detection resistance voltage when a change in V_{IN} triggers the current delimiter.





APPLICATION CIRCUIT 1

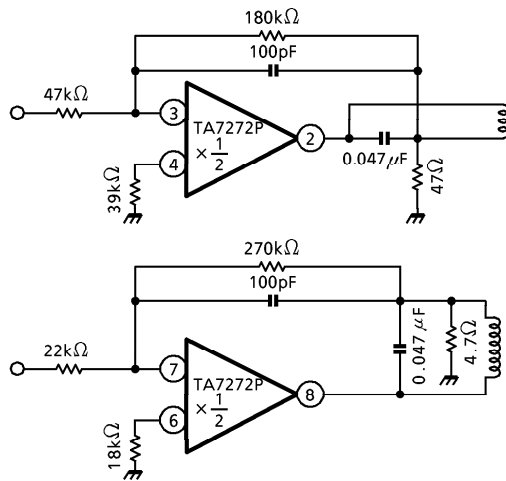


(Usable at a Single Power Supply)

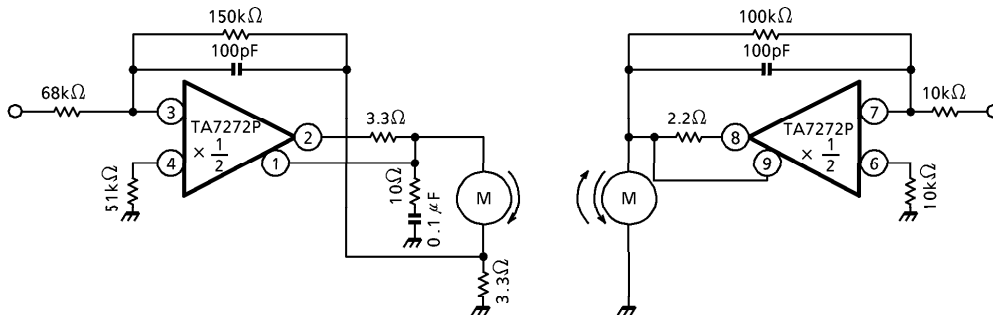
(Note 1) $I_{SC} \doteq \frac{0.7 (V)}{R_{SC} (\Omega)} (A)$

(Note 2) When crossover distortion becomes, noticeable at frequencies higher than 80kHz, change the value of the capacitor, which functions as a compensating circuit, to about 0.33μF, In this case, resistor is not needed.

APPLICATION CIRCUIT 2 (Actuator)



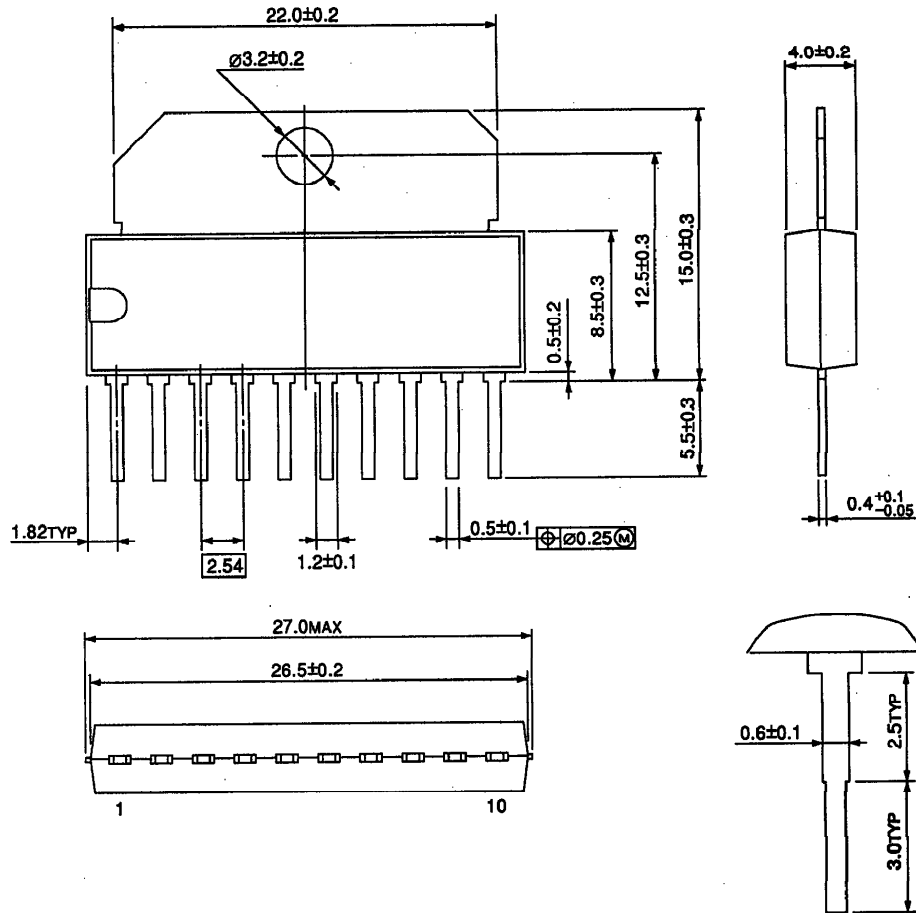
APPLICATION CIRCUIT 3 (Speed and carriage control)



(Note) Utmost care is necessary in the design of the output line, V_{CC}, V_{EE} and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

OUTLINE DRAWING
HSIP10-P-2.54

Unit : mm



Weight : 2.47g (Typ.)