

# TA7630P

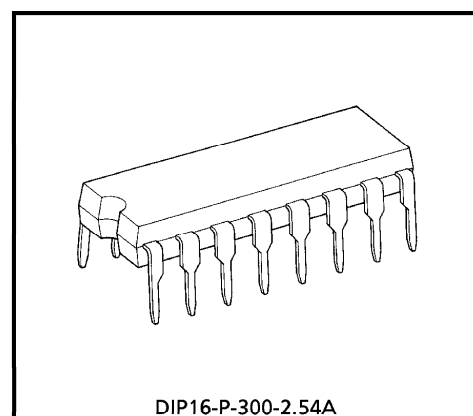
## DUAL. VOLUME / BALANCE / TONE (BASS / TREBLE)

## DC CONTROL IC

The TA7630P is DC controlled dual volume, balance, tone (Bass, treble) IC. As these dual channels are constructed on one chip, this IC is excellent in pair characteristic. It is suitable for automobile stereo, radio cassette, music center, TV multiplex sound receiver and remote controlled applications.

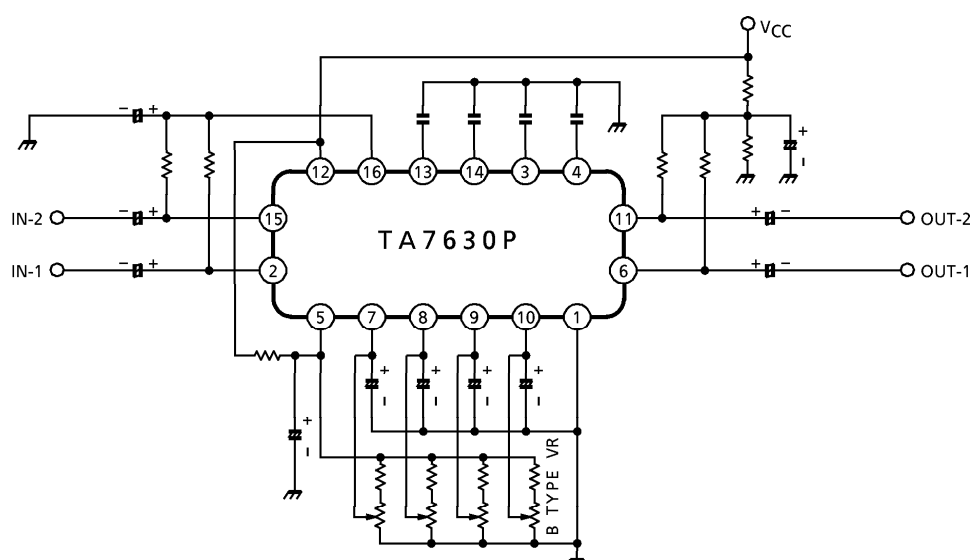
### FEATURES

- Wide Power Supply Voltage Range  
; Single Supply  $V_{CC}(\text{opr}) = 8 \sim 14\text{V}$  ( $T_a = 25^\circ\text{C}$ )  
Dual Supply  $V_{CC} - V_{EE}(\text{opr}) = \pm 4 \sim \pm 7\text{V}$  ( $T_a = 25^\circ\text{C}$ )
- Wide Volume Control Range ;  $V_R = 80\text{dB}$  (Typ.)
- Excellent Cross Talk ; C.T. = 70dB (Typ.)
- Stable for Temperature Drift.
- Wide Tone Control Range  
Control Range ;  $V_B = 10\text{dB}$  (Typ.) at  $f = 1\text{kHz} \rightarrow 100\text{Hz}$   
 $V_T = 12\text{dB}$  (Typ.) at  $f = 1\text{kHz} \rightarrow 20\text{kHz}$



Weight : 1.00g (Typ.)

### BLOCK DIAGRAM



961001EBA2

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## PIN CONNECTION

| PIN No. | SYMBOL             | EXPLANATION                       | PIN No. | SYMBOL             | EXPLANATION                      |
|---------|--------------------|-----------------------------------|---------|--------------------|----------------------------------|
| 1       | V <sub>EE</sub>    | Negative Power Supply             | 9       | BASS               | Bass Control                     |
| 2       | INPUT-1            | Input channel-1                   | 10      | TRBL               | Treble control                   |
| 3       | T <sub>H</sub> (1) | Treble turning frequency setting. | 11      | OUTPUT-2           | Output channel-2                 |
| 4       | T <sub>L</sub> (1) | Bass turning frequency setting.   | 12      | V <sub>CC</sub>    | Power supply                     |
| 5       | REF CONT           | Reference control                 | 13      | T <sub>L</sub> (2) | Bass turning frequency setting   |
| 6       | OUTPUT-1           | Output channel-1                  | 14      | T <sub>H</sub> (2) | Treble turning frequency setting |
| 7       | BAL                | Balance Control                   | 15      | INPUT-2            | Input channel-2                  |
| 8       | VOL                | Volume Control                    | 16      | REF SIG            | Reference signal                 |

## MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC        | SYMBOL                | RATING   | UNIT |
|-----------------------|-----------------------|----------|------|
| Supply Voltage        | V <sub>CC</sub>       | 14       | V    |
| Power Dissipation     | P <sub>D</sub> (Note) | 750      | mW   |
| Operating Temperature | T <sub>opr</sub>      | - 25~75  | °C   |
| Storage Temperature   | T <sub>stg</sub>      | - 55~150 | °C   |

(Note) Derated above Ta = 25°C in the proportion of 6mW/°C.

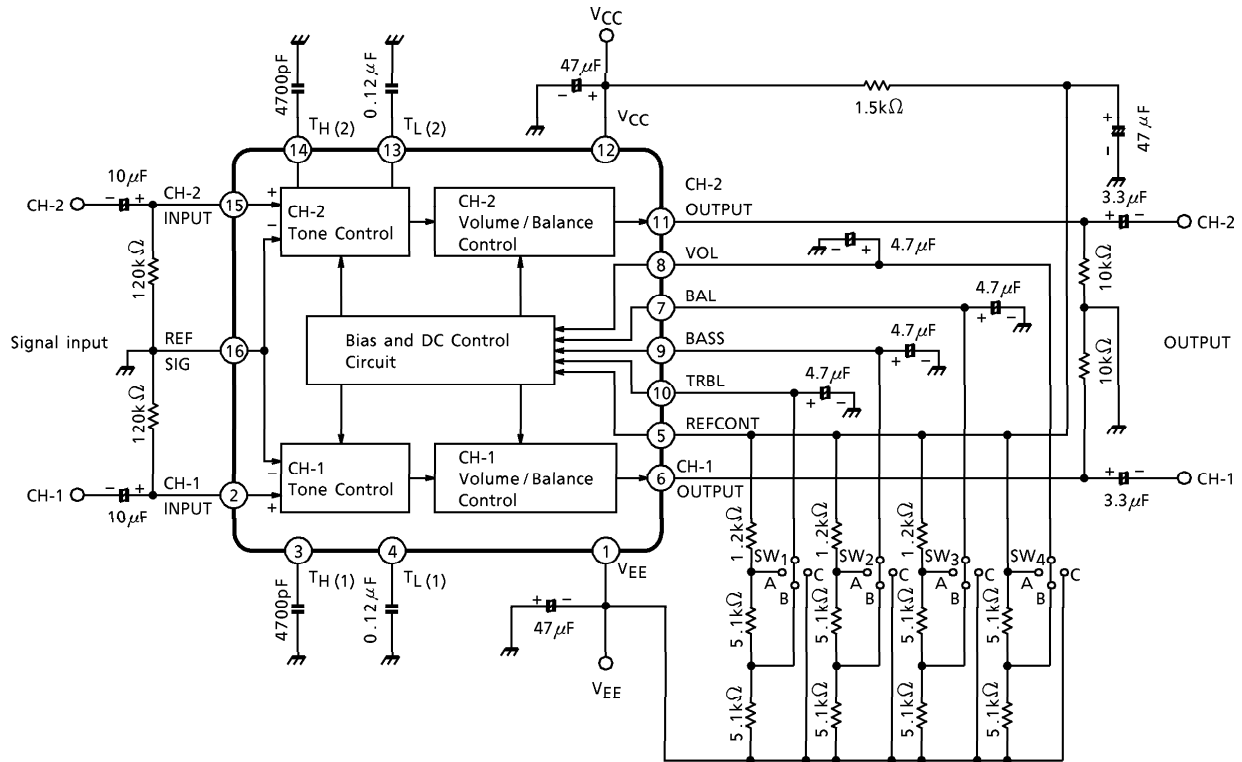
961001EBA2'

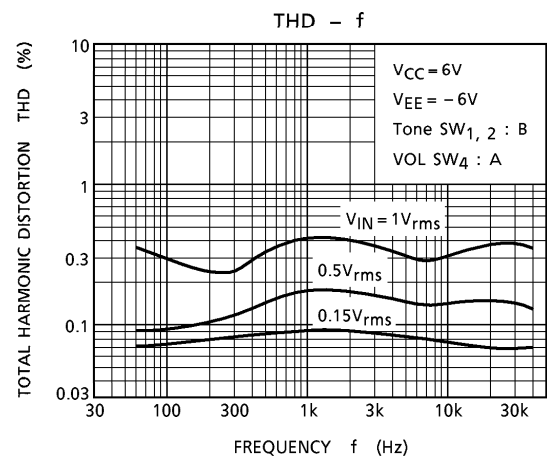
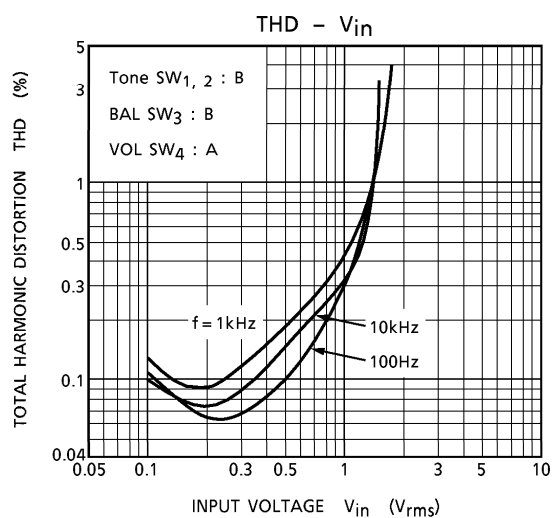
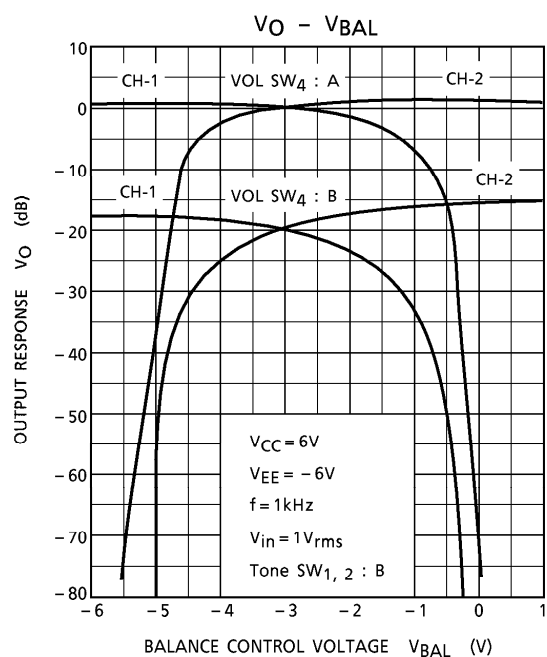
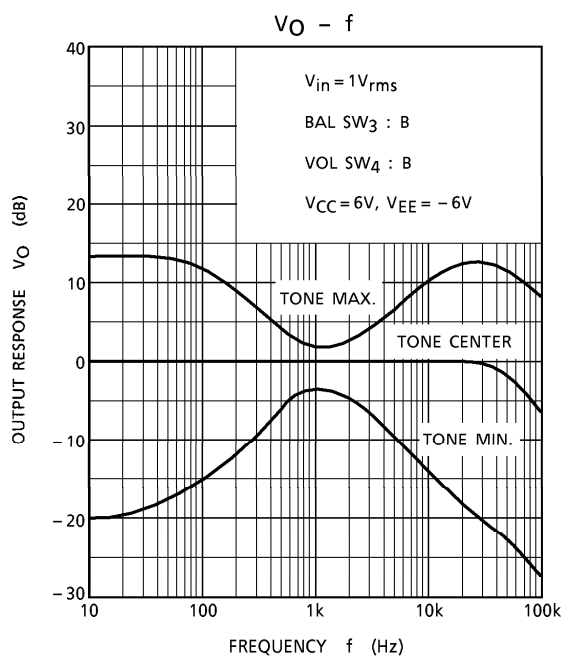
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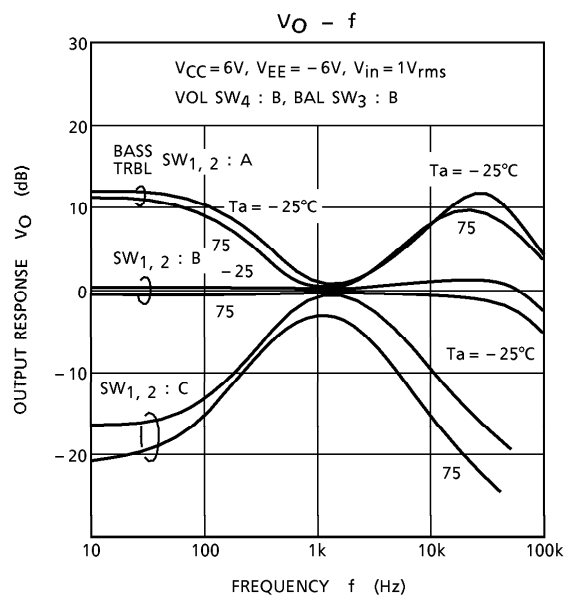
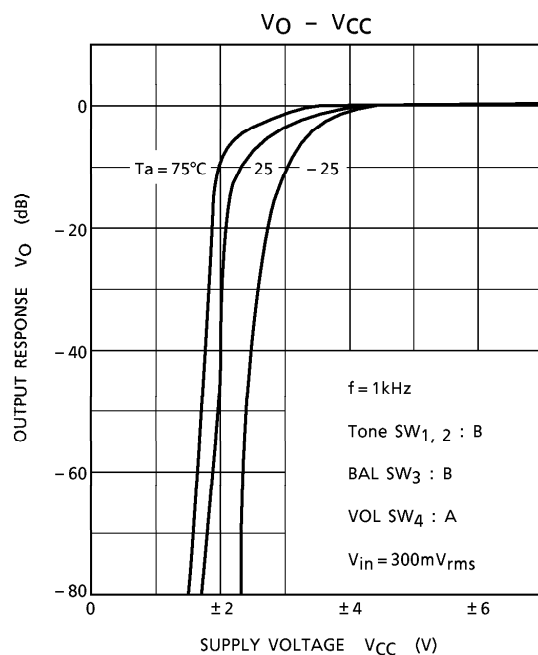
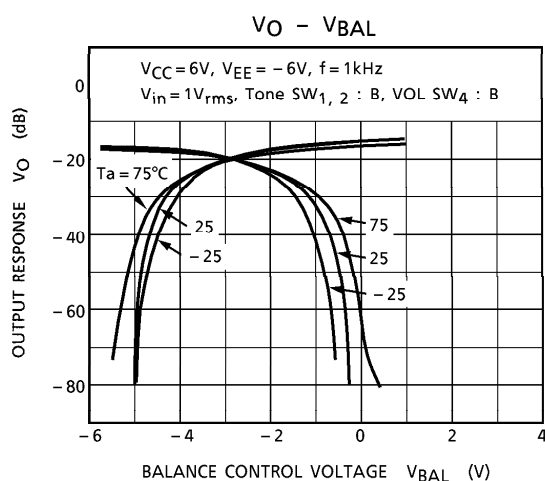
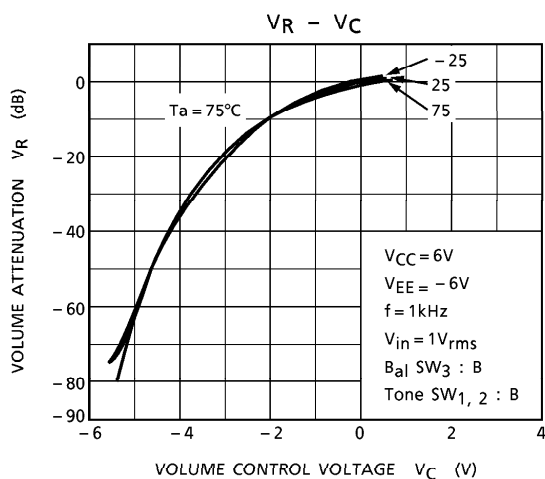
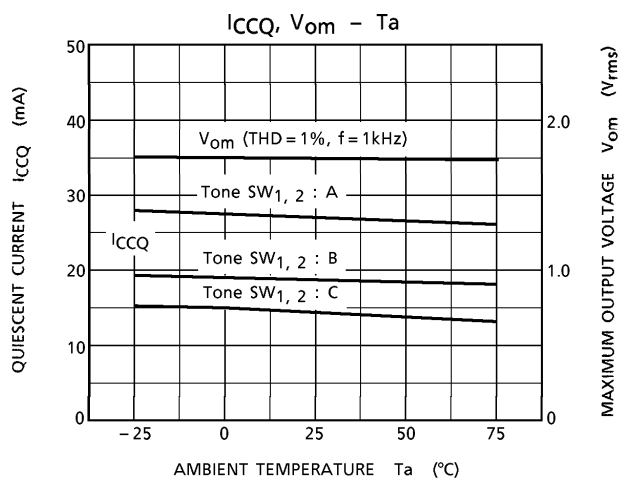
**ELECTRICAL CHARACTERISTICS** (Unless otherwise specified,  $V_{CC} = 6V$ ,  $V_{EE} = -6V$ ,  $f = 1kHz$ ,  $T_a = 25^\circ C$ )

| CHARACTERISTIC                    | SYMBOL       | TEST CIR-CUIT | TEST CONDITION                                                                                                          | MIN. | TYP.  | MAX. | UNIT          |
|-----------------------------------|--------------|---------------|-------------------------------------------------------------------------------------------------------------------------|------|-------|------|---------------|
| Quiescent Current                 | $I_{CCQ(1)}$ | —             | $V_{CC}, V_{EE} = \pm 4V$                                                                                               | —    | 11    | 17   | mA            |
|                                   | $I_{CCQ(2)}$ | —             | VOL/BAL/BASS/TRBL SW <sub>1~4</sub> : B                                                                                 | 10   | 18    | 25   |               |
| Maximum Input Voltage             | $V_{in}$     | —             | BASS/TRBL/BAL SW <sub>1~4</sub> : B<br>VOL SW <sub>4</sub> : A, THD = 1%                                                | —    | —     | 1    | $V_{rms}$     |
| Maximum Output Voltage            | $V_{out}$    | —             | BASS/TRBL/BAL SW <sub>1, 2, 3</sub> : B<br>VOL SW <sub>4</sub> : A, THD = 1%                                            | 1    | —     | —    | $V_{rms}$     |
| Voltage Gain                      | $G_V$        | —             | $V_{in} = 1V_{rms}$<br>BASS/TRBL/BAL SW <sub>1~3</sub> : B<br>VOL SW <sub>4</sub> : A                                   | -0.5 | 2.0   | 4.5  | dB            |
| Channel Balance                   | C.B. -1      | —             | BASS/TRBL/BAL SW <sub>1~3</sub> : B<br>VOL SW <sub>4</sub> : A, $V_{in} = 1V_{rms}$                                     | -3   | 0     | 3    | dB            |
|                                   | C.B. -2      | —             | VOL/BASS/TRBL/BAL SW <sub>1~4</sub> : B<br>$f = 100Hz \sim 20kHz$ , $V_{in} = 0.1V_{rms}$                               | -3.5 | 0     | 3.5  |               |
| Volume Control Range              | $V_R$        | —             | BASS/TRBL/BAL SW <sub>1~3</sub> : B, $V_{in} = 1V_{rms}$<br>VOL SW <sub>4</sub> : A $\rightarrow$ C                     | 70   | 80    | —    | dB            |
| Bass Control Range                | $V_B$ MAX    | —             | VOL/BAL SW <sub>3, 4</sub> : B<br>BASS/TRBL SW <sub>1, 2</sub> : A,<br>$V_{in} = 1V_{rms}$ $f = 1kHz \rightarrow 100Hz$ | 7    | 11    | 14   | dB            |
|                                   | $V_B$ MIN    | —             | VOL/BAL SW <sub>3, 4</sub> : B<br>BASS/TRBL SW <sub>1, 2</sub> : C,<br>$V_{in} = 1V_{rms}$ $f = 1kHz \rightarrow 100Hz$ | -15  | -11.5 | -7   |               |
| Treble Control Range              | $V_T$ MAX    | —             | VOL/BAL SW <sub>3, 4</sub> : B<br>BASS/TRBL SW <sub>1, 2</sub> : A,<br>$V_{in} = 1V_{rms}$ $f = 1kHz \rightarrow 20kHz$ | 7    | 11    | 14   | dB            |
|                                   | $V_T$ MIN    | —             | VOL/BAL SW <sub>3, 4</sub> : B<br>BASS/TRBL SW <sub>1, 2</sub> : C,<br>$V_{in} = 1V_{rms}$ $f = 1kHz \rightarrow 20kHz$ | -20  | -14   | -10  |               |
| Tone Error                        | $\Delta G_V$ | —             | VOL/BAL SW <sub>3, 4</sub> : B<br>BASS/TRBL SW <sub>1, 2</sub> : C $\rightarrow$ A<br>$V_{in} = 1V_{rms}$               | —    | 6     | 10   | dB            |
| Total Harmonic Distortion         | THD          | —             | BASS/TRBL/BAL SW <sub>1~3</sub> : B<br>VOL SW <sub>4</sub> : A, $V_{out} = 150mV_{rms}$                                 | —    | 0.1   | 0.35 | %             |
| Output Noise Voltage              | $V_{no}$     | —             | BASS/TRBL/BAL SW <sub>1~3</sub> : B<br>VOL SW <sub>4</sub> : A<br>BPF = 50Hz $\sim$ 20kHz, input open                   | —    | 130   | 300  | $\mu V_{rms}$ |
| Cross Talk                        | SEP          | —             | BASS/TRBL/BAL SW <sub>1~3</sub> : B<br>VOL SW <sub>4</sub> : A, $V_{out} = 1V_{rms}$                                    | —    | -70   | —    | dB            |
| Control Terminal Input Resistance | $R_{IN}$     | —             | pin⑧, ⑨, ⑩                                                                                                              | —    | 500   | —    | k $\Omega$    |
|                                   |              | —             | pin⑦                                                                                                                    | —    | 200   | —    |               |

**TEST CIRCUIT**

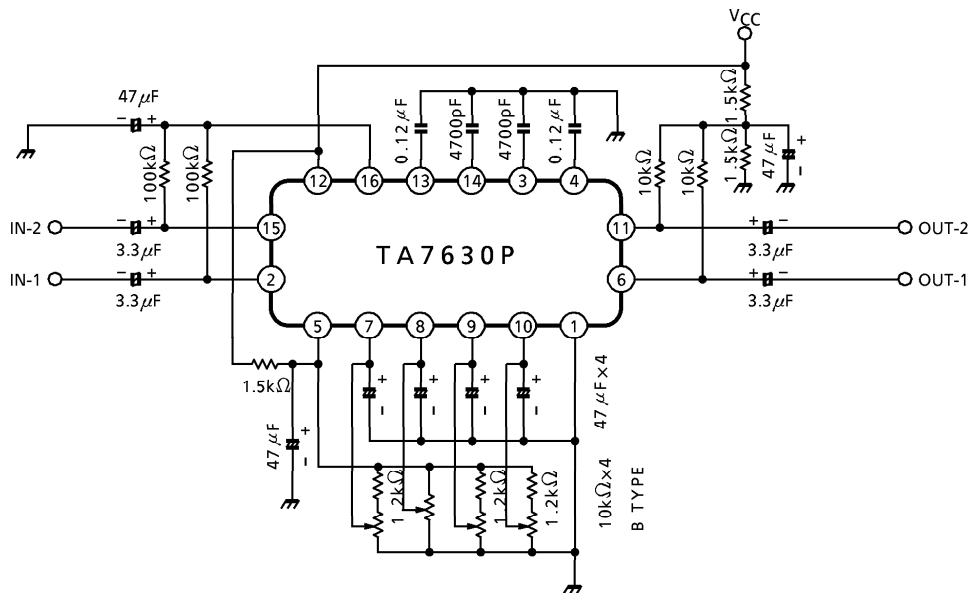




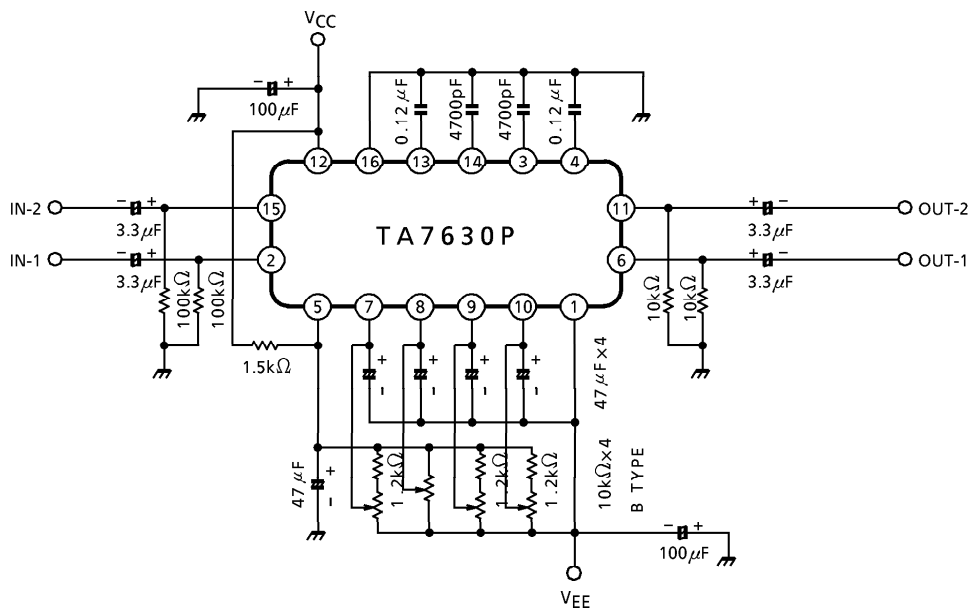


## APPLICATION CIRCUITS

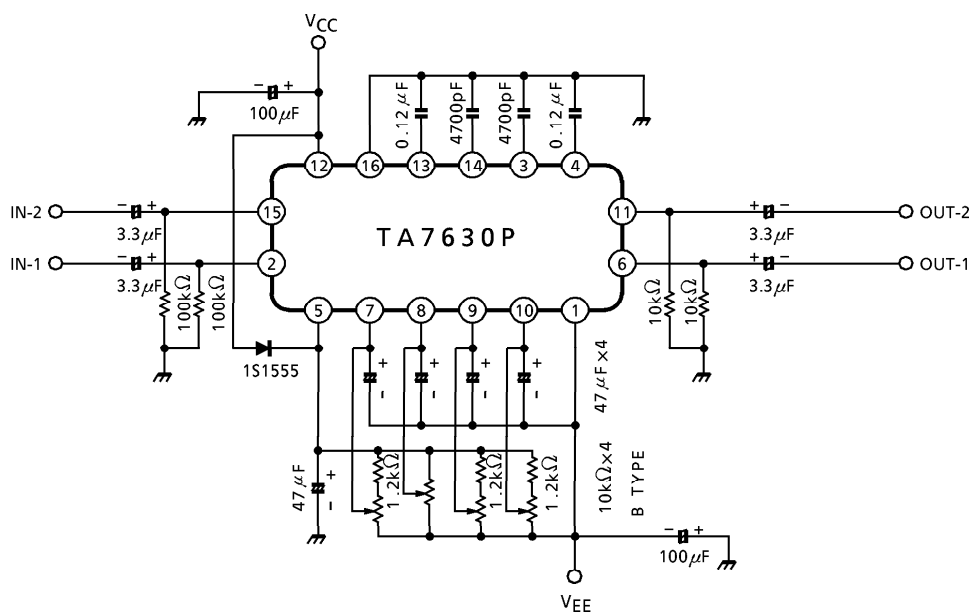
### 1. Single power supply



### 2. Dual power supply



## 3. Application circuit using diode at reference terminal

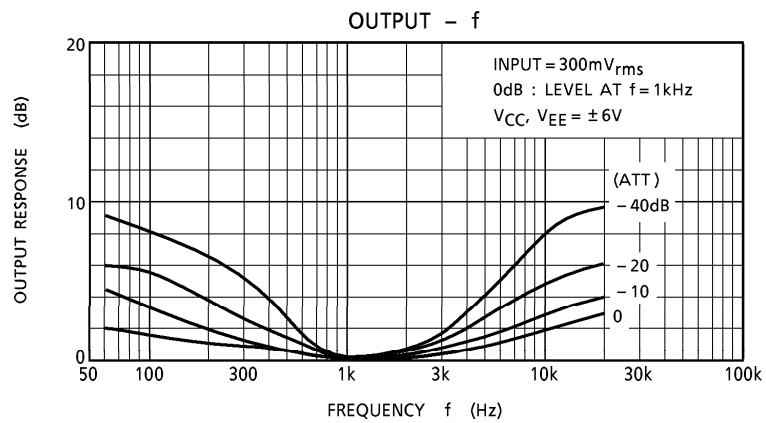
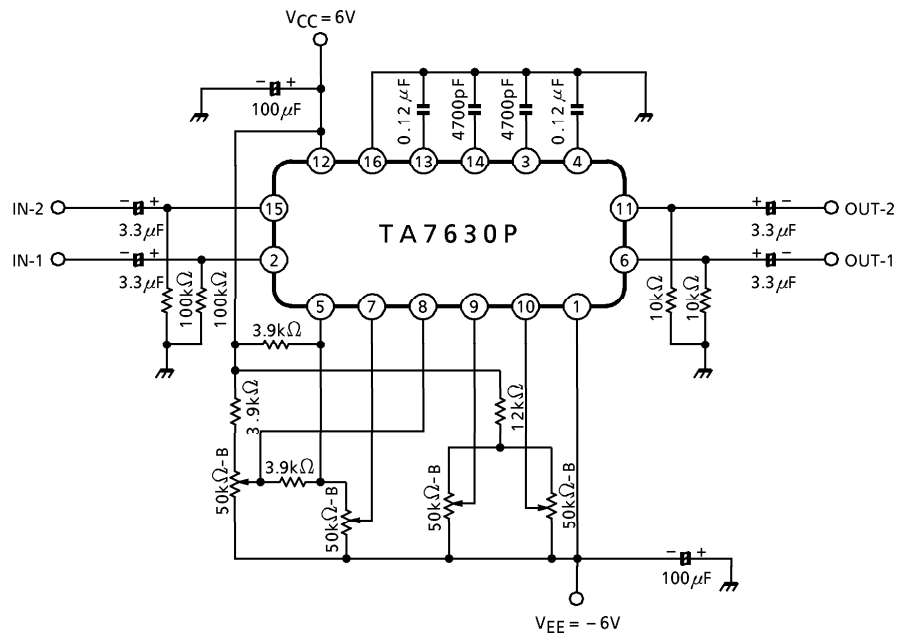


The application circuit using diode between Pin⑤ and Pin⑫ has the following merits.

1. When each control terminal is driven by high impedance, the electrolytic capacitor between terminal ⑤ and GND operates as the back up capacitor, so that the rise time is short at the ON-OFF repetition of supply voltage.
2. When the current drain into the each control terminal varies by control voltage, the voltage of terminal ⑤ scarcely varies.

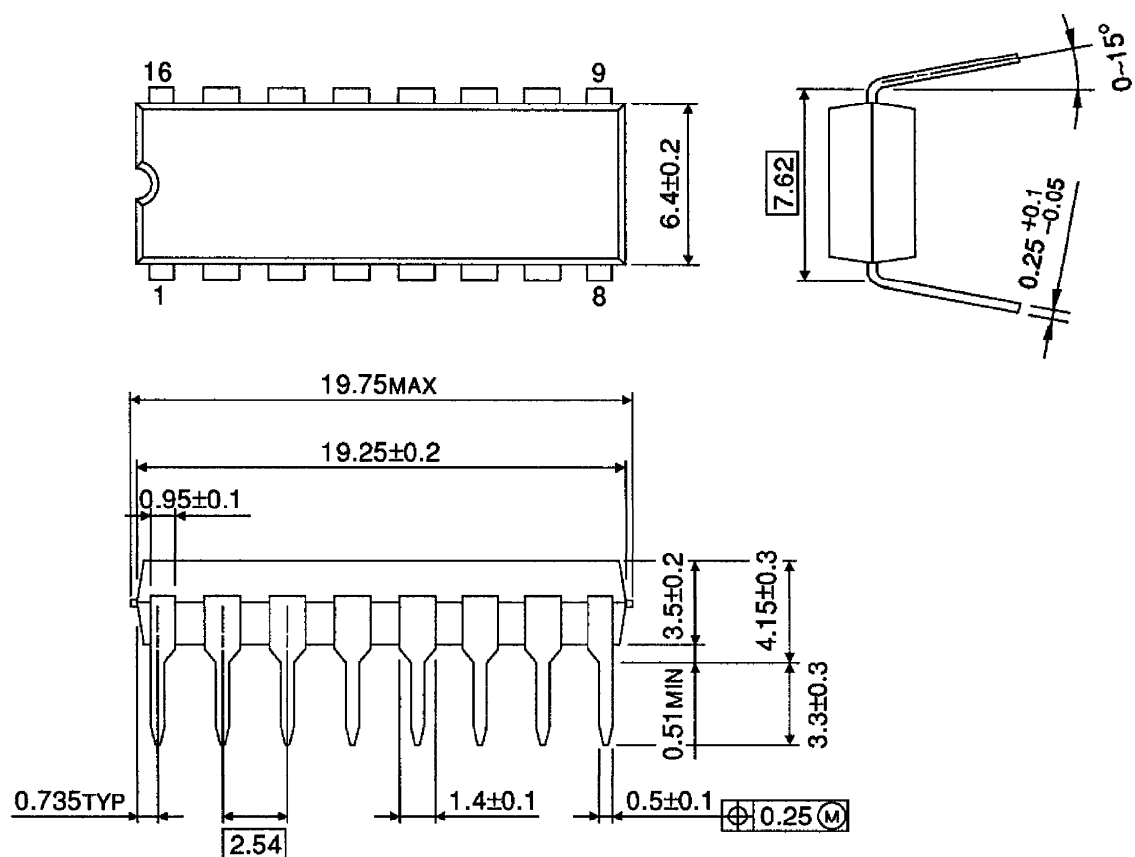
It means a stable reference voltage.

4. Quasi-loudness circuit



**OUTLINE DRAWING**  
DIP16-P-300-2.54A

Unit : mm



Weight : 1.00g (Typ.)