



9097247 TOSHIBA. ELECTRONIC

02E 16935 D

**TA7233P**

T-74-05-01

## ELECTRICAL CHARACTERISTICS

(Unless otherwise specified,  $V_{CC}=12V$ ,  $R_L=4\Omega$ ,  $R_g=600\Omega$ ,  $f=1kHz$ ,  $T_a=25^\circ C$ )

| CHARACTERISTIC            | SYMBOL       | TEST CIR-CUIT | TEST CONDITION  | MIN. | TYP. | MAX. | UNIT       |
|---------------------------|--------------|---------------|---|------|------|------|------------|
| Quiescent Current         | $I_{CCQ}$    |               | $V_{in}=0$  | -    | 35   | 60   | mA         |
| Output Power              | $P_{OUT(1)}$ |               | THD=10%   | 3.8  | 4.5  | -    | W          |
|                           | $P_{OUT(2)}$ |               | THD=10%, $V_{CC}=9V$  | 2.0  | 2.5  | -    |            |
| Total Harmonic Distortion | THD          |               | $P_{OUT}=1W/CH.$  | -    | 0.1  | 0.8  | %          |
| Voltage Gain              | $G_V(1)$     |               | $R_f=150\Omega$<br>$V_{OUT}=0.775V_{rms}$                               | 43   | 45   | 47   | dB         |
|                           | $G_V(2)$     |               | $R_f=0$ , $V_{OUT}=0.775V_{rms}$  | -    | 57   | -    |            |
| Input Resistance          | $R_{IN}$     |               | -   | -    | 30   | -    | $k\Omega$  |
| Output Noise Voltage      | $V_{NO}$     |               | $R_g=10k\Omega$<br>$BW=20Hz \sim 20kHz$                                 | -    | 0.4  | 0.7  | $mV_{rms}$ |
| Ripple Rejection Ratio    | R.R.         |               | $R_g=600\Omega$<br>$f_{ripple}=100Hz$                                   | -    | 45   | -    | dB         |
| Cross Talk                | CT           |               | $R_g=10k\Omega$ , $Ampl \leftrightarrow 2$<br>$V_{OUT}=0dBm$ , $f=1kHz$ | -    | 60   | -    | dB         |
| Input Offset Voltage      | $V_5, V_7$   |               | -   | -    | 35   | 60   | mV         |

## TYPICAL DC VOLTAGE OF EACH TERMINAL

 $(V_{CC}=12V, T_a=25^\circ C)$ 

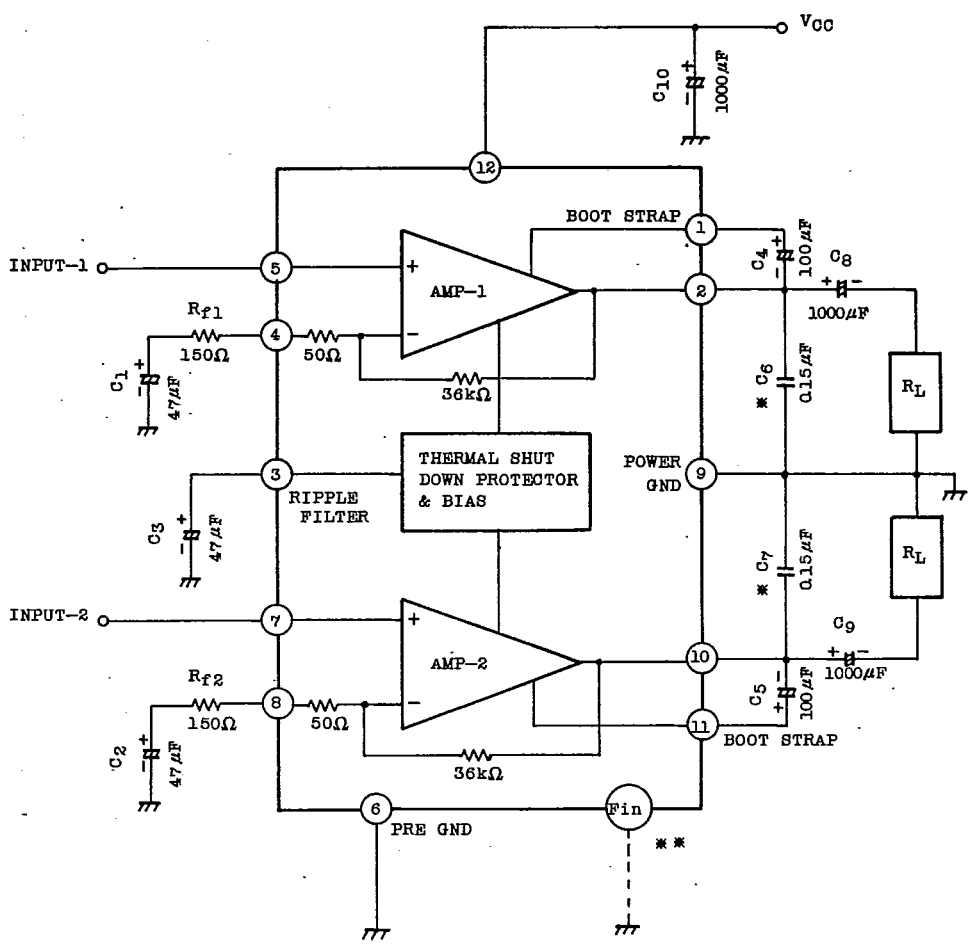
| TERMINAL No.   | 1    | 2 | 3   | 4   | 5     | 6   | 7     | 8   | 9   | 10 | 11   | 12       |
|----------------|------|---|-----|-----|-------|-----|-------|-----|-----|----|------|----------|
| DC Voltage (V) | 11.5 | 6 | 6.7 | 0.7 | 0.035 | GND | 0.035 | 0.7 | GND | 6  | 11.5 | $V_{CC}$ |

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BLOCK DIAGRAM, TEST CIRCUIT



- \* C<sub>6</sub>, C<sub>7</sub> : Polystyroll capacitor
- \*\* Heat Sink (Fin) : Connect to GND or open

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## APPLICATION INFORMATION

## 1. VOLTAGE GAIN ADJUSTMENT

The voltage gain :  $G_v$  is determined by  $R_1$ ,  $R_2$  and  $R_f$ .

$$G_v = 20 \log \frac{R_f + R_1 + R_2}{R_f + R_1}$$

When  $R_f = 0$

$$G_v = 57 \text{dB (Typ.)}$$

When  $R_f = 150 \Omega$

$$G_v = 45 \text{dB (Typ.) is given.}$$

The recommended voltage gain is more than 40dB.

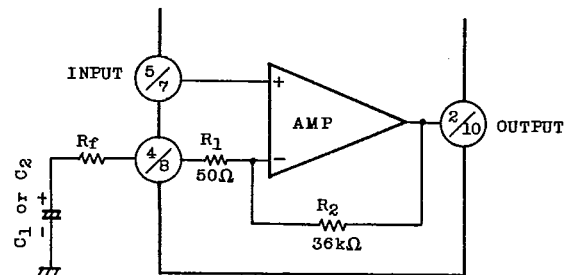


Fig. 1

## 2. AUDIO MUTING

Audio muting can be accomplished by connecting 3 pin (ripple filter) to GND as shown in Fig.2.

Then, the bias circuit are cut off. Amount of muting attenuation is about 60dB.

The ripple filter :  $C_3$  is in dead states at muting on. Therefore, the ripple rejection ratio should be checked at muting on/off in applications.

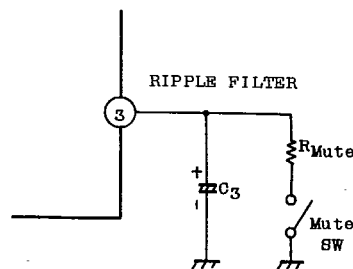


Fig. 2

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**3. INPUT AMPLIFIER**

The first stage is a PNP transistor, the input terminal voltage ( $Q_1$  base) is 60mV and less, and the volume :  $V_R$  can be directly coupled without a coupling capacitor.

But volume slide noise should be checked at volume up/down in applications.

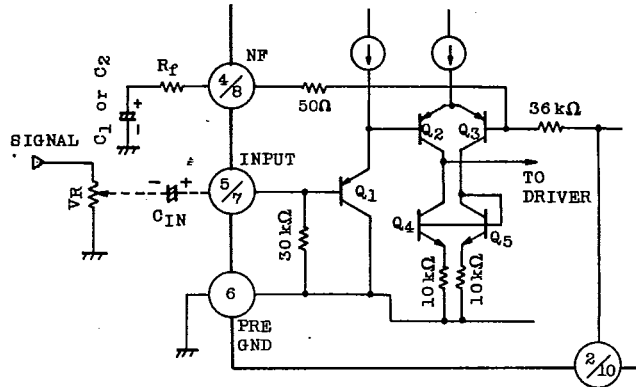


Fig. 3

**4. THERMAL SHUT DOWN CIRCUIT**

This IC built in thermal shut down protector.

The operating temperature of thermal shut down circuit is 160°C (Typ.)

**5. CAPACITOR  $C_6$ ,  $C_7$** 

The purpose of capacitor  $C_6$ ,  $C_7$  are to prevent oscillation.

These capacitors need to be small temperature coefficient.

So celamic capacitor is unsuitable.

The voltage gain less than 40dB results occasionally in a parastic oscillation.

The following capacitor layout is recommended to refer the standard print board.

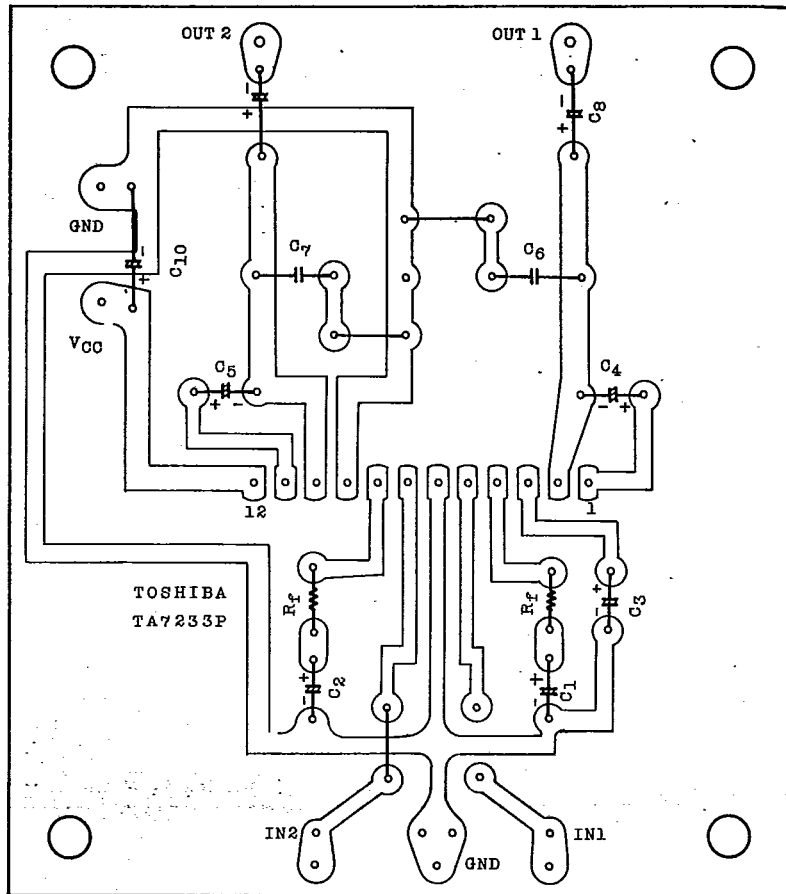
**6. INPUT VOLTAGE**

The maximum input voltage is 300mV<sub>rms</sub>(typ.). (at  $V_{CC}=12V$ ,  $R_L=4\Omega$ ,  $f=1kHz$ )

When input voltage is more 300mV<sub>rms</sub>, the output wave is turn up.

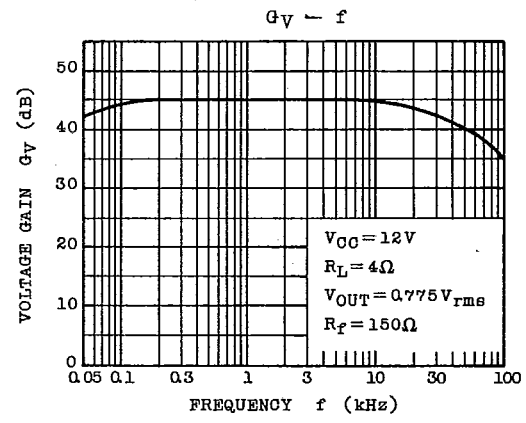
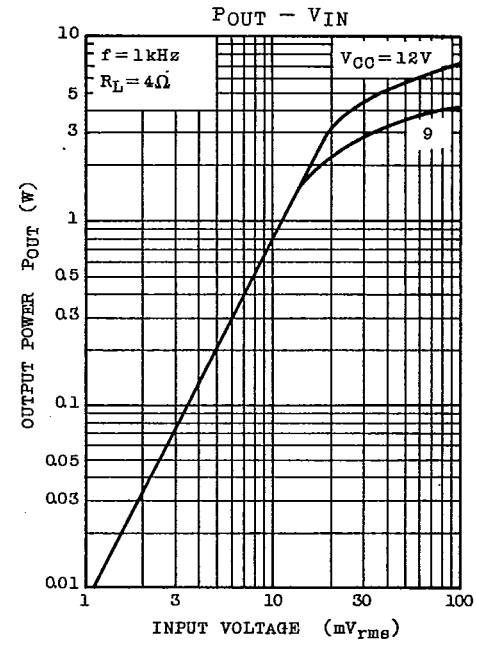
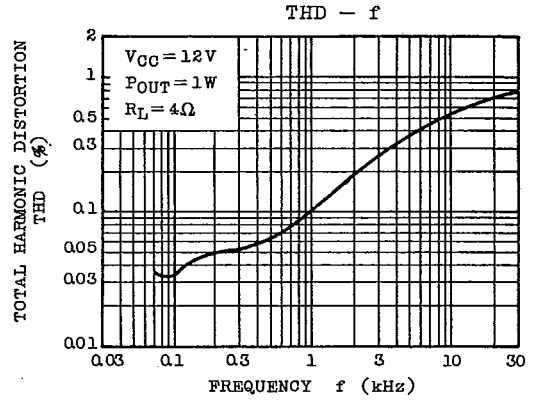
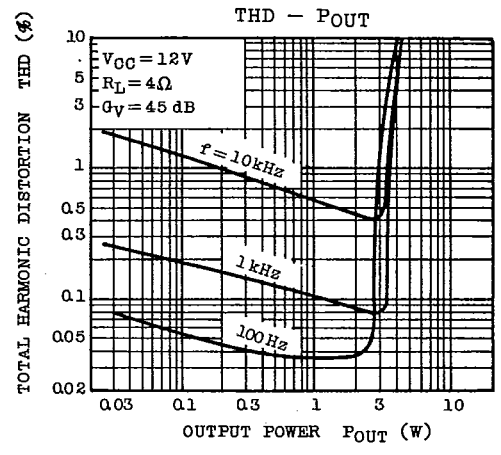
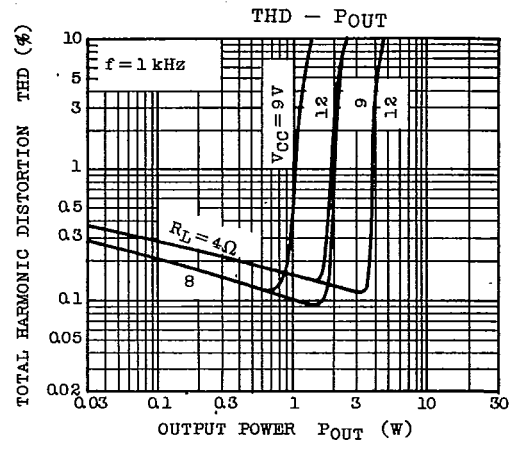
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## STANDARD PRINT PATTERN



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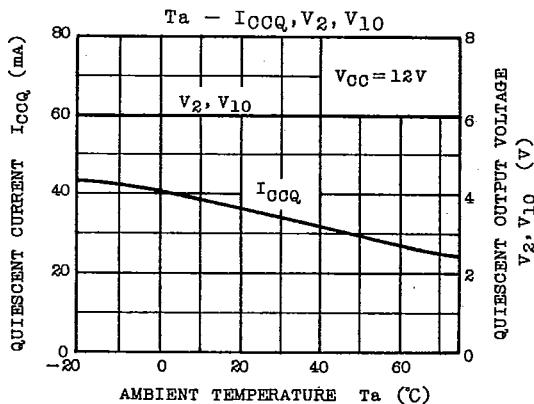
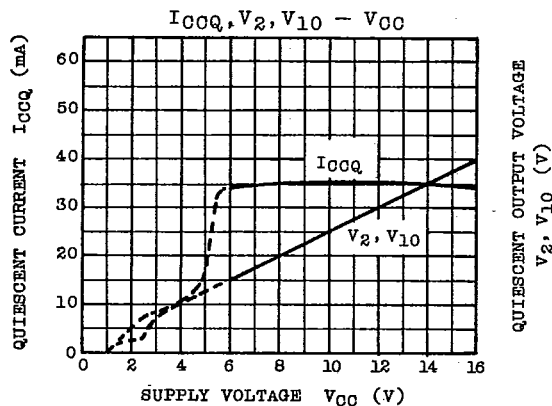
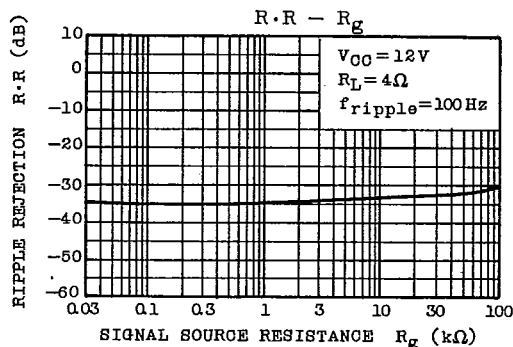
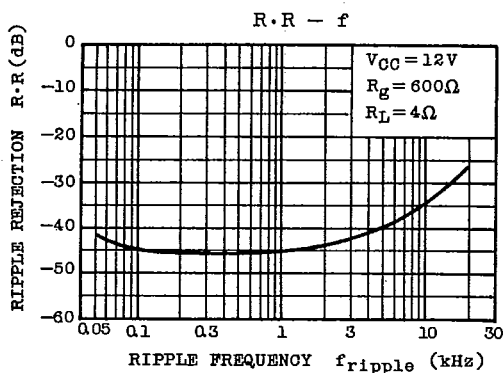
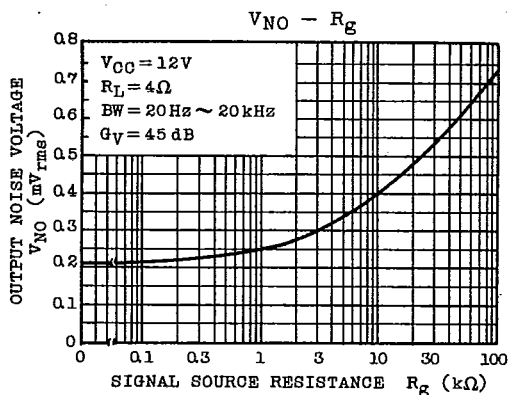
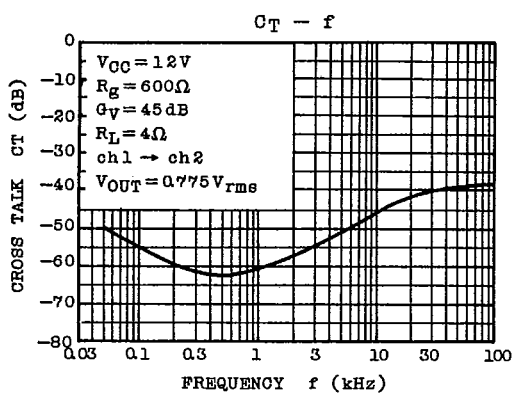
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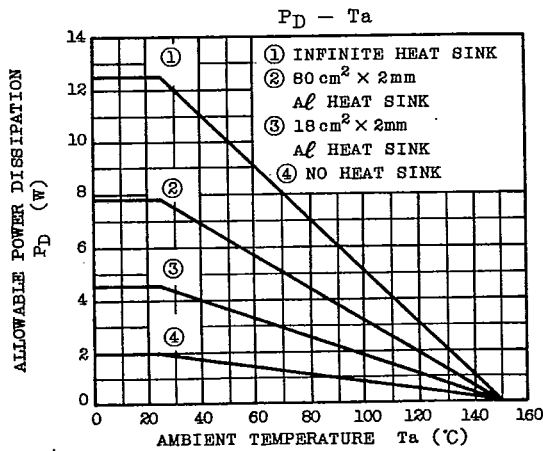
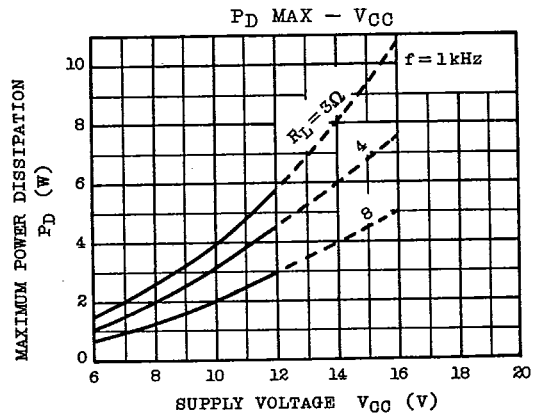
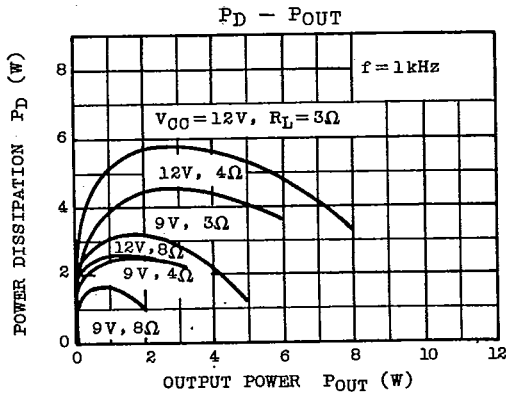
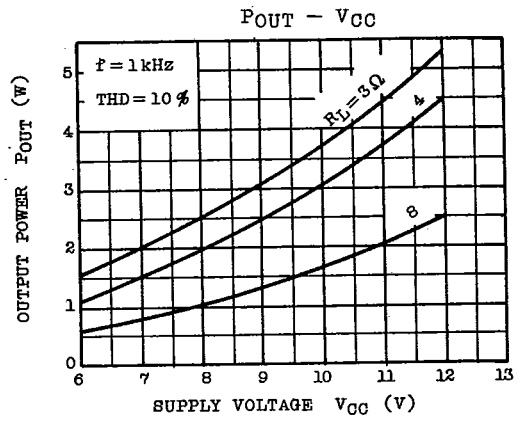
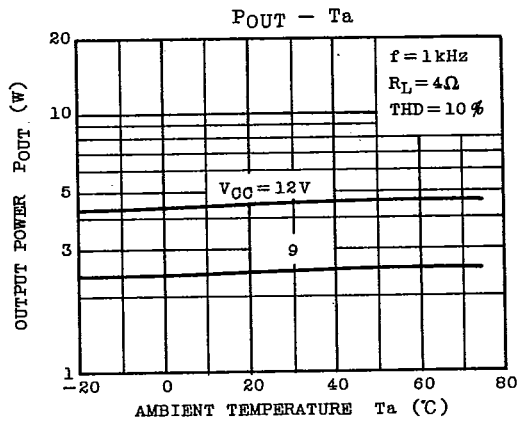
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