

# AN7158N

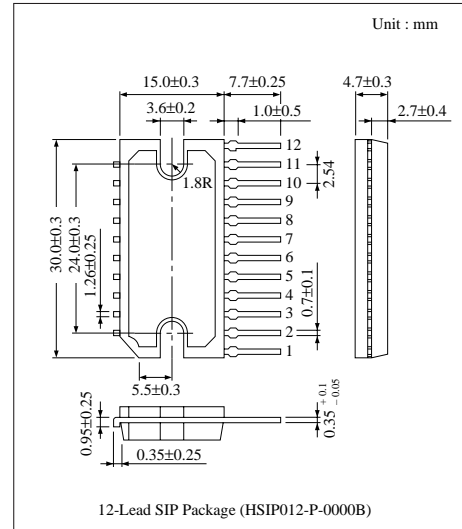
## Dual 7.5W Audio Power Amplifier Circuit

### ■ Overview

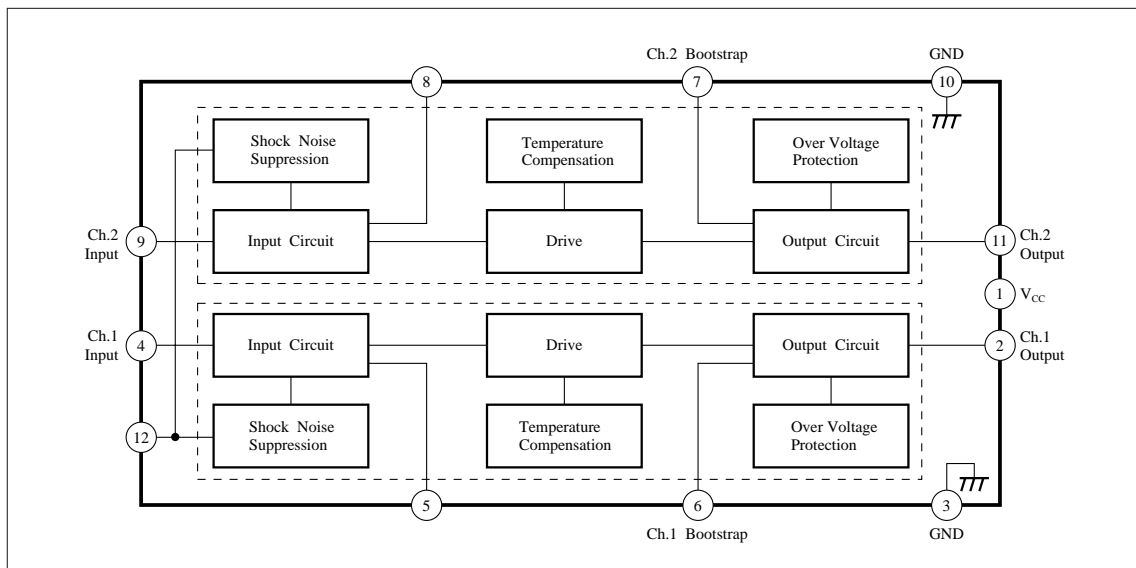
The AN7158N is an integrated circuit designed for power amplifier of 7.5W (16V, 4Ω) output with low noise and low distortion, and it suits TV set with multi-sound. Stereo operation is enabled due to incorporating two amplifiers on one chip. 12-pin SIP package enabled compact and high-densely mounted set.

### ■ Features

- Incorporating protection circuits (surge, thermal protection and etc.)
- Automatic operating point stabilizer circuit
- Low distortion, low 1/f noise
- Low shock noise from power ON/OFF operation
- Better channel separation
- Fewer external components



### ■ Block Diagram



### ■ Absolute Maximum Ratings (Ta= 25°C)

| Parameter                             | Symbol           | Rating       | Unit |
|---------------------------------------|------------------|--------------|------|
| Supply Voltage <small>Note 1)</small> | V <sub>CC</sub>  | 24           | V    |
| Supply Voltage <small>Note 2)</small> | V <sub>CC</sub>  | 20           | V    |
| Supply Current                        | I <sub>CC</sub>  | 4            | A    |
| Power Dissipation (Ta= 45°C)          | P <sub>D</sub>   | 30           | W    |
| Operating Ambient Temperature         | T <sub>opr</sub> | - 30 ~ + 75  | °C   |
| Storage Temperature                   | T <sub>stg</sub> | - 55 ~ + 150 | °C   |

Note 1) Without signal V<sub>CC</sub> = 24V (For non-stabilized supply)

Note 2) Operation V<sub>CC</sub> = 20V (For stabilized supply)

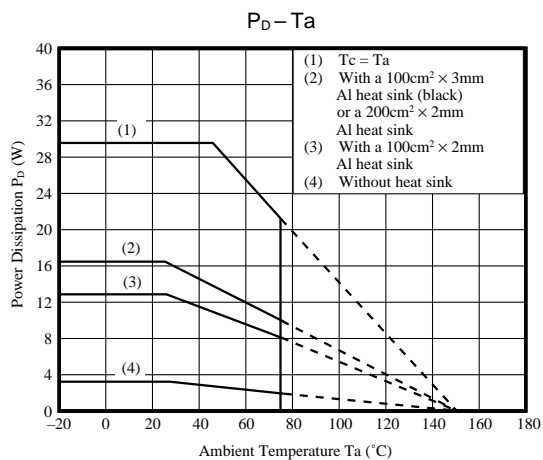
### ■ Electrical Characteristics (Ta = 25°C)

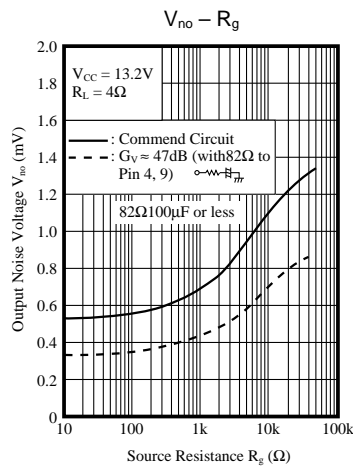
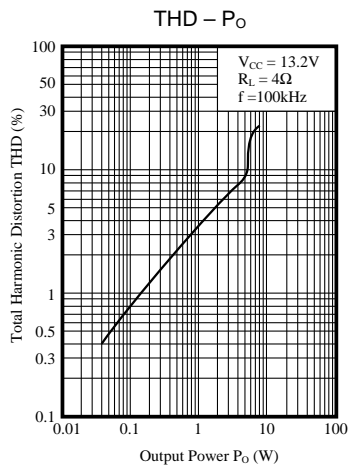
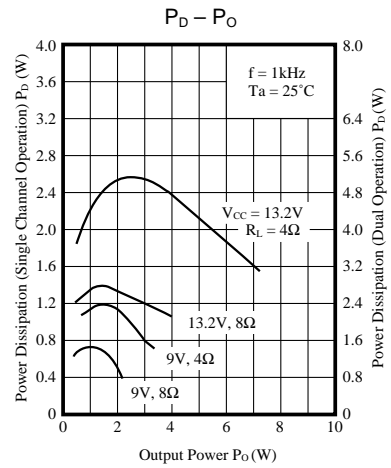
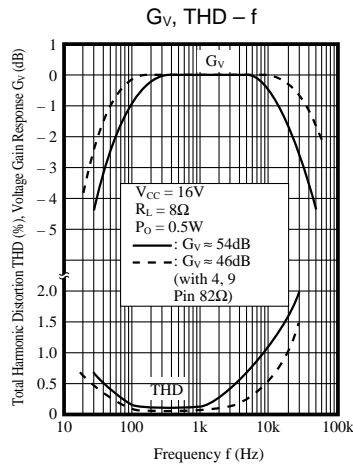
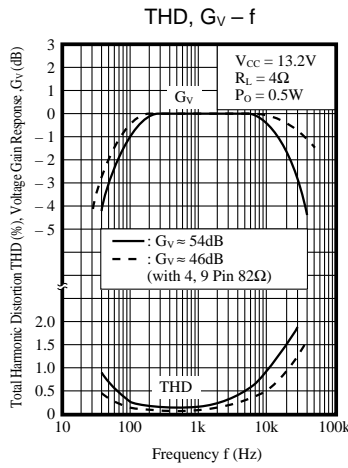
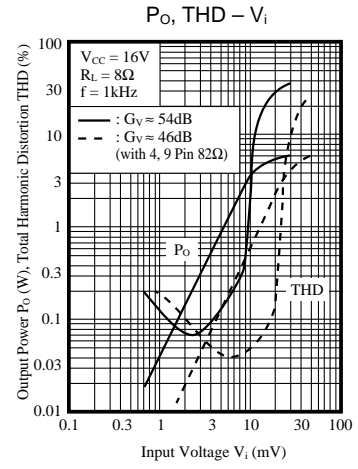
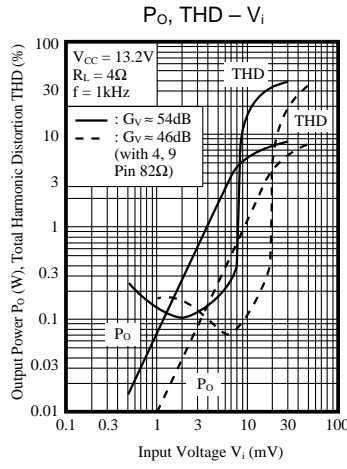
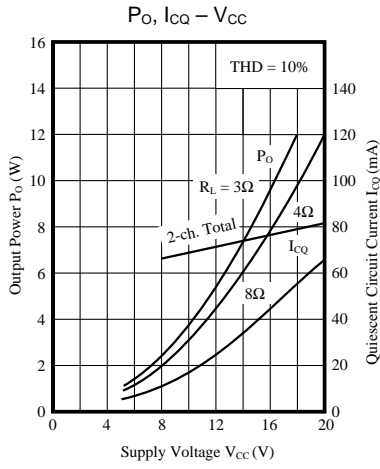
• V<sub>CC</sub>=13.2V, R<sub>L</sub>= 4Ω, f =1kHz

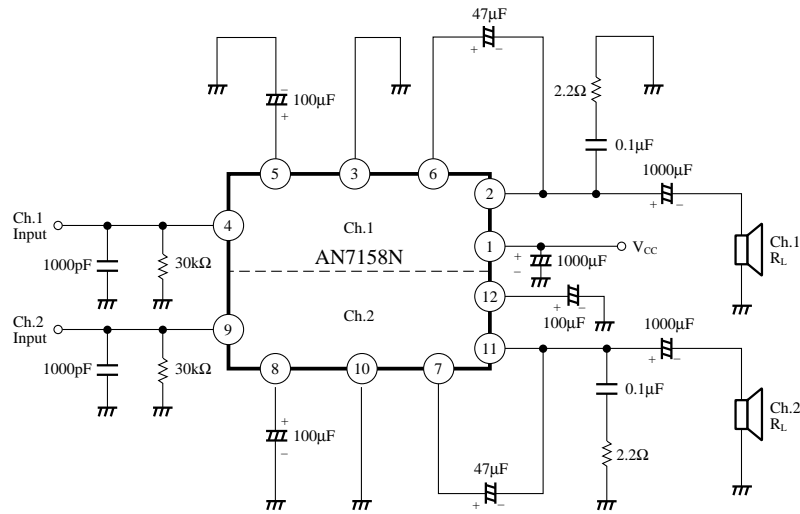
| Parameter                 | Symbol          | Condition                       | min. | typ. | max. | Unit |
|---------------------------|-----------------|---------------------------------|------|------|------|------|
| Quiescent Circuit Current | I <sub>CQ</sub> | V <sub>i</sub> = 0mV            | 40   | 70   | 120  | mA   |
| Voltage Gain              | G <sub>V</sub>  | V <sub>i</sub> = 3mV            | 52   | 54   | 56   | dB   |
| Output Power              | P <sub>O</sub>  | THD = 10%                       | 4.8  | 5.5  | —    | W    |
| Total Harmonic Distortion | THD             | V <sub>i</sub> = 3mV            | —    | 0.15 | 1    | %    |
| Output Noise Voltage      | V <sub>no</sub> | R <sub>g</sub> = 10kΩ           | —    | 1    | 3    | mV   |
| Channel Balance           | CB              | V <sub>i</sub> = 3mV            | —    | 0    | 1    | dB   |
| Separation                | Sep.            |                                 | 45   | 50   | —    | dB   |
| Ripple Rejection Ratio    | RR              | f = 60Hz, R <sub>g</sub> = 600Ω | —    | 40   | —    | dB   |

• V<sub>CC</sub>=16V, R<sub>L</sub>= 8Ω, f =1kHz

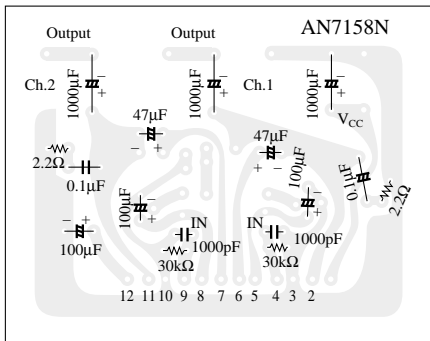
| Parameter                 | Symbol          | Condition                                   | min. | typ. | max. | Unit |
|---------------------------|-----------------|---|------|------|------|------|
| Quiescent Circuit Current | I <sub>CQ</sub> | V <sub>i</sub> = 0mV                        | 40   | 80   | 140  | mA   |
| Voltage Gain              | G <sub>V</sub>  | V <sub>i</sub> = 4mV                        | 52   | 54   | 56   | dB   |
| Output Power              | P <sub>O</sub>  | THD = 10%                                   | 4    | 4.5  | —    | W    |
|                           |                 | R <sub>L</sub> = 4Ω, THD = 10%              | —    | 7.5  | —    | W    |
| Total Harmonic Distortion | THD             | V <sub>i</sub> = 4mV                        | —    | 0.1  | 1    | %    |
| Output Noise Voltage      | V <sub>no</sub> | R <sub>g</sub> = 10kΩ                       | —    | 1    | 3    | mV   |
| Crosstalk                 | CT              | V <sub>i</sub> = 4mV, R <sub>g</sub> = 10kΩ | 45   | —    | —    | dB   |







■ Printed Circuit Board Layout



■ Pin Descriptions

| Pin No. | Pin Name        | Pin No. | Pin Name       |
|---------|-----------------|---------|----------------|
| 1       | V <sub>CC</sub> | 7       | Bootstrap Ch.2 |
| 2       | Output Ch.1     | 8       | N.F.B Ch.2     |
| 3       | GND             | 9       | Input Ch.2     |
| 4       | Input Ch.1      | 10      | GND            |
| 5       | N.F.B Ch.1      | 11      | Output Ch.2    |
| 6       | Bootstrap Ch.1  | 12      | Ripple Filter  |