

AN7170

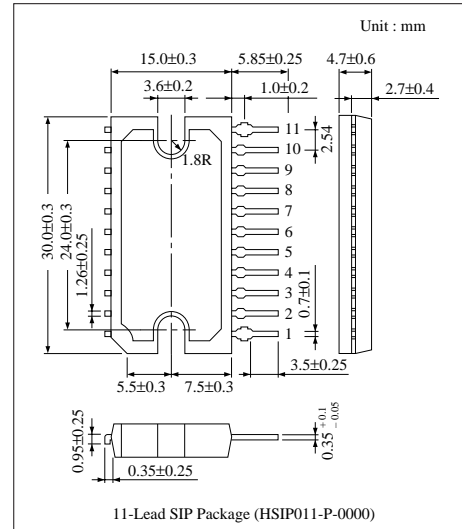
18W Audio Power Amplifier Circuit

■ Overview

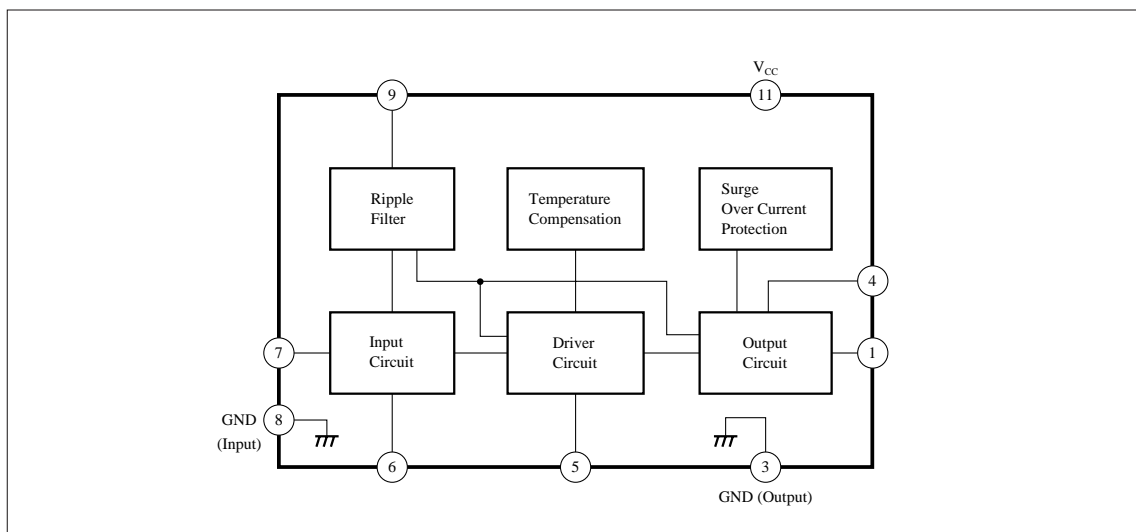
The AN7170 is an integrated circuit manufactured by high voltage process designed for power amplifier of bus, track amplifier. Wide operating supply voltage range with output of 18W at 26.4V. It can be widely used for bus, truck amp., car stereo, home entertainment stereo set and TV sound multiplex output.

■ Features

- High output power : $P_O = 18W$
- High surge voltage : $V_{CC (surge)} = 60V (max.)$
- Wide supply voltage range : $V_{CC (opr)} = 8 \sim 35V$
- Incorporating protection circuits (overvoltage, overcurrent, temperature, load short)
- Incorporating automatic operating point stabilizer circuit
- Low distortion, low 1/f noise



■ Block Diagram



■ Absolute Maximum Ratings (Ta= 25°C)

| Parameter | Symbol | Rating | Unit |
|--|------------------------|--------------|------|
| Supply Voltage (at no signal) | V _{CC} | 35 | V |
| Supply Voltage (at operation) | V _{CC} | 30 | V |
| Peak Supply Voltage ^{Note 1)} | V _{CC(surge)} | 60 | V |
| Supply Current | I _{CC} | 4 | A |
| Power Dissipation ^{Note 2)} | P _D | 31.25 | W |
| Operating Ambient Temperature | T _{opr} | - 30 ~ + 75 | °C |
| Storage Temperature | T _{stg} | - 55 ~ + 150 | °C |

Note 1) Pulse Voltage application t = 0.2s

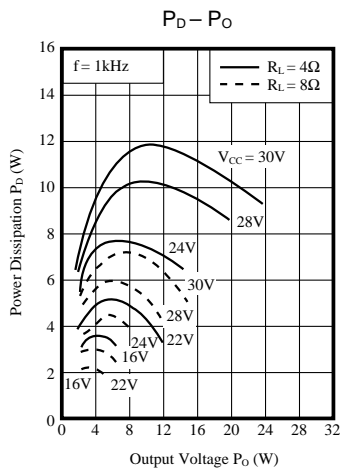
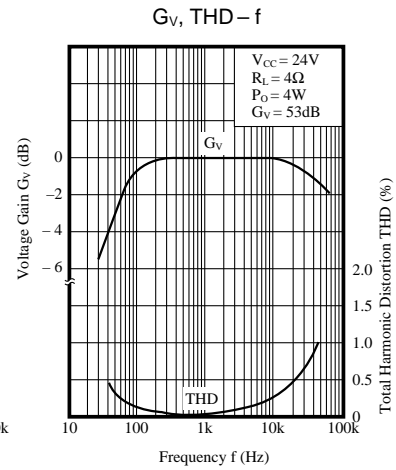
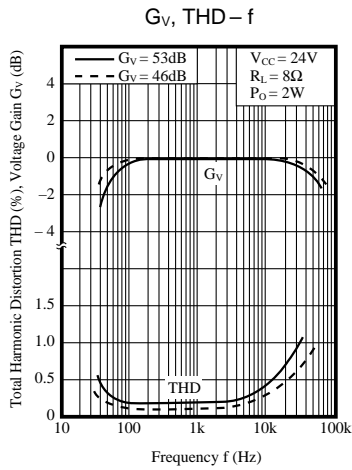
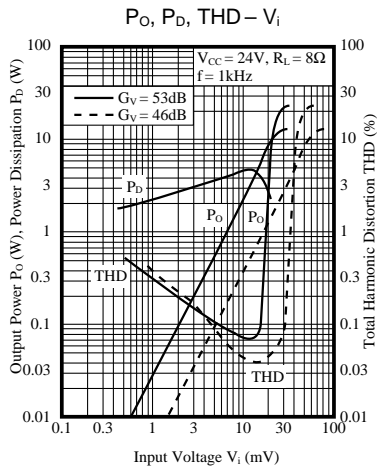
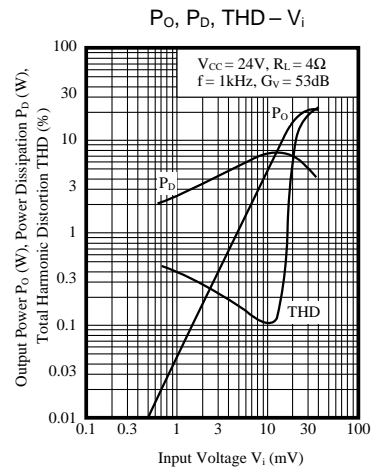
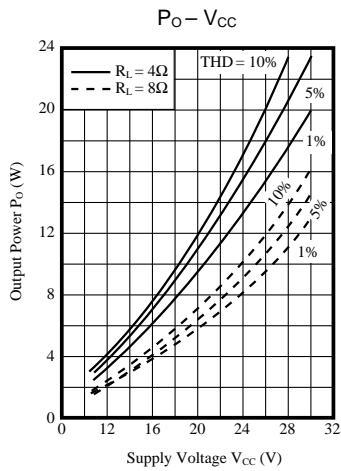
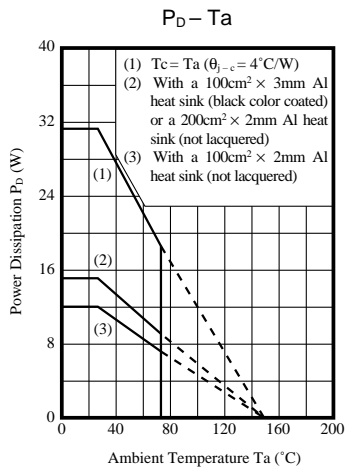
Note 2) Ta = 25°C (θ_{j-c} = 4°C/W)

■ Electrical Characteristics (V_{CC}= 26.4V, f = 1kHz, Ta= 25°C)

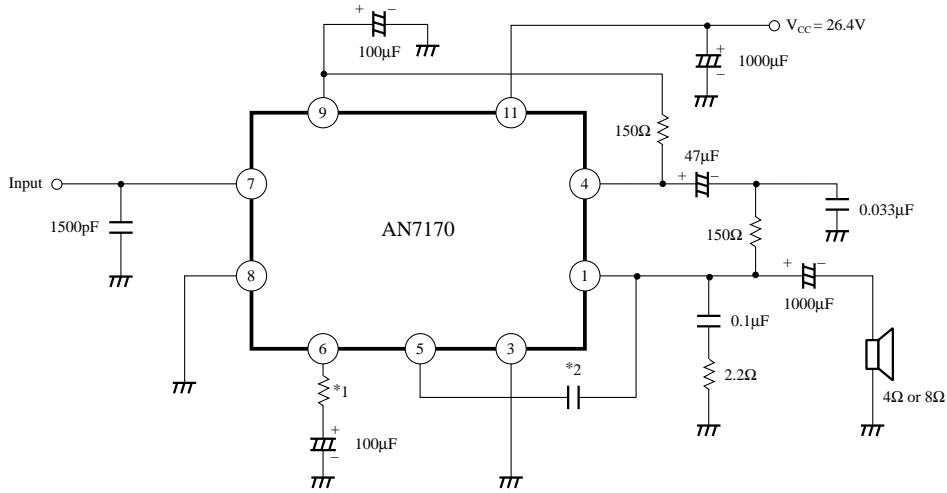
| Parameter | Symbol | Condition | min. | typ. | max. | Unit |
|------------------------------|-----------------|---|------|------|------|------|
| (R_L= 8Ω) | | | | | | |
| Quiescent Circuit Current | I _{CQ} | V _i = 0mV | 40 | 75 | 160 | mA |
| Voltage Gain | G _V | V _i = 3mV | 51 | 53 | 55 | dB |
| No Distortion Maximum Output | P _O | THD= 1% | 8 | 9.5 | — | W |
| | | THD= 10% | 10.5 | 12 | — | W |
| Total Harmonic Distortion | THD | V _i = 3mV | — | 0.1 | 0.7 | % |
| Output Noise Voltage | V _{no} | R _g = 10kΩ, DIN A Filter | — | 0.7 | 1.5 | mV |
| Ripple Rejection Ratio | RR | V _i = 0mV, R _g = 0Ω | — | 40 | — | dB |
| Input Impedance | Z _i | | — | 30 | — | kΩ |
| (R_L= 4Ω) | | | | | | |
| No Distortion Maximum Output | P _O | THD= 1% | — | 13 | — | W |
| | | THD= 10% | — | 18 | — | W |

■ Pin Descriptions

| Pin No. | Pin Name | Pin No. | Pin Name |
|---------|--------------------|---------|-----------------|
| 1 | Output | 7 | Input |
| 2 | NC | 8 | GND (Input) |
| 3 | GND (Output) | 9 | Ripple Filter |
| 4 | Bootstrap | 10 | NC |
| 5 | Phase Compensation | 11 | V _{CC} |
| 6 | Negative Feedback | — | — |



■ Application Circuit



- *1. 82Ω at $G_V = 46\text{dB}$, $R = 0$ at $G_V = 53\text{dB}$
- *2. 12pF at $G_V = 46\text{dB}$, 8pF at $G_V = 53\text{dB}$
($C = 0$ is allowable for frequency characteristics adjustment in high band)

■ Printed Circuit Board Layout

