

AN7131

5W Audio Power Amplifier Circuit

■ Description

The AN7131 is a monolithic integrated circuit designed for audio power amplifiers such as portable radio, radio cassette tape recorder and car radio. Stabilized operation due to wide supply voltage.

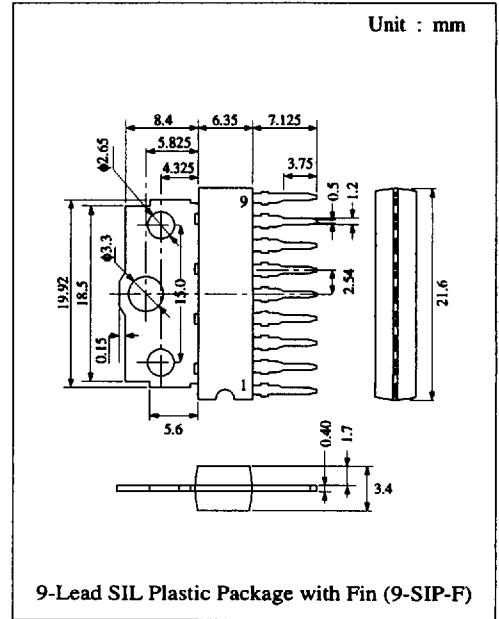
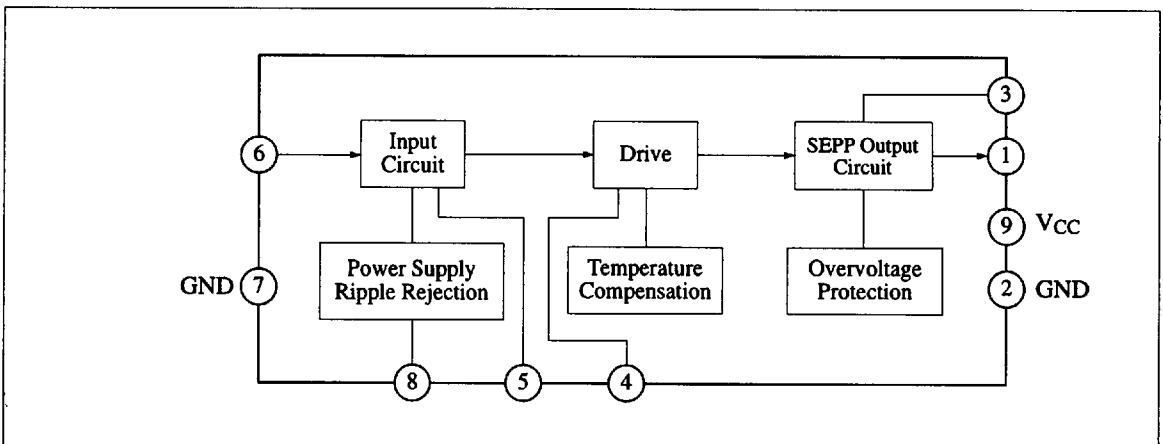
■ Features

- High gain, low distortion, low noise
- Reduction in external components
- Built-in thermal protection circuit
- Built-in over voltage protection circuit
- Incorporating automatic operating point stabilizer circuit
- Low shock noise when power is switched ON and OFF
- Low quiescent current

■ Pin

| Pin No. | Pin Name |
|---------|--------------------|
| 1 | Output |
| 2 | GND (Output) |
| 3 | Bootstrap |
| 4 | Phase Compensation |
| 5 | N.F.B. |
| 6 | Input |
| 7 | GND (Input) |
| 8 | Ripple Filter |
| 9 | Vcc |

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

| Item | Symbol | Rating | Unit |
|-------------------------------|------------------|------------|------|
| Supply Voltage *1 | V _{CC} | 24 | V |
| Supply Current | I _{CC} | 4 | A |
| Power Dissipation (Ta = 30°C) | P _D | 10 | W |
| Operating Ambient Temperature | T _{opr} | -30 ~ +75 | °C |
| Storage Temperature | T _{stg} | -40 ~ +150 | °C |

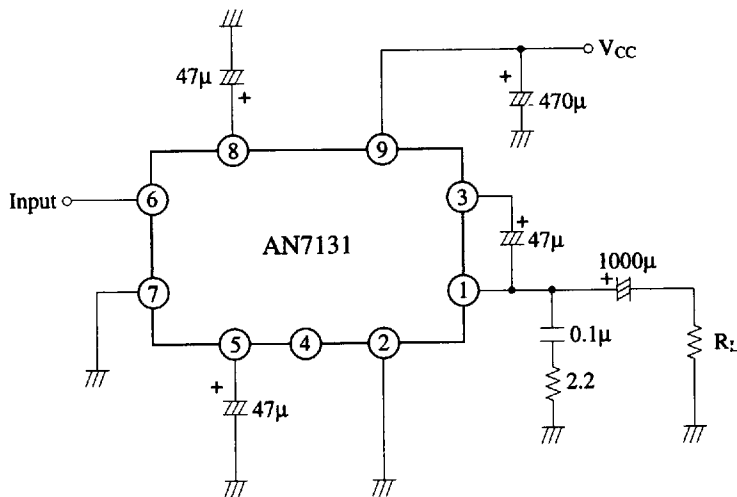
Operating Supply Voltage Range: V_{CC} = 5.0V ~ 22.0V

*1 Without input signal V_{CC} = 24V

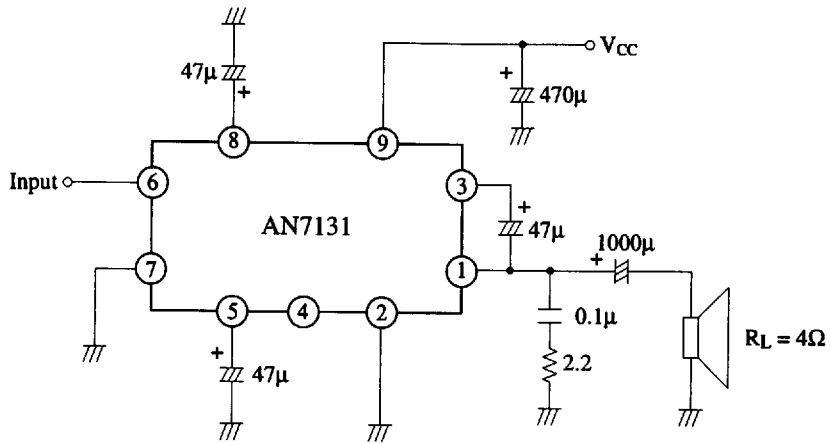
■ Electrical Characteristics (V_{CC}=13.2V, R_L=4Ω, f=1kHz, Ta=25°C)

| Item | Symbol | Condition | min. | typ. | max. | Unit |
|---------------------------|-----------------|-----------------------|------|------|------|------|
| Quiescent Current | I _{CQ} | V _{in} = 0mV | 7 | 20 | 45 | mA |
| Voltage Gain | G _V | V _{in} = 3mV | 51.5 | 53.5 | 55.5 | dB |
| Output Power | P _O | THD = 10% | 4.5 | 5 | | W |
| Total Harmonic Distortion | THD | V _{in} = 3mV | | 0.3 | 1 | % |
| Output Noise Voltage | V _{no} | R _g = 10kΩ | | 1.5 | 3 | mV |
| Input Impedance | Z _{in} | | | 30 | | kΩ |

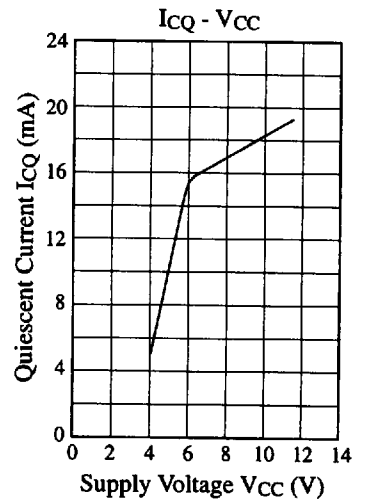
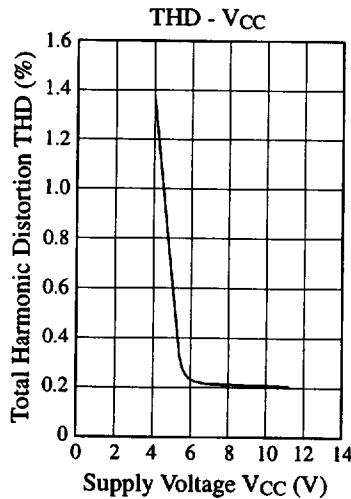
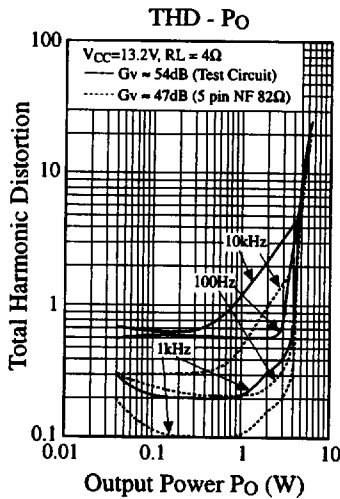
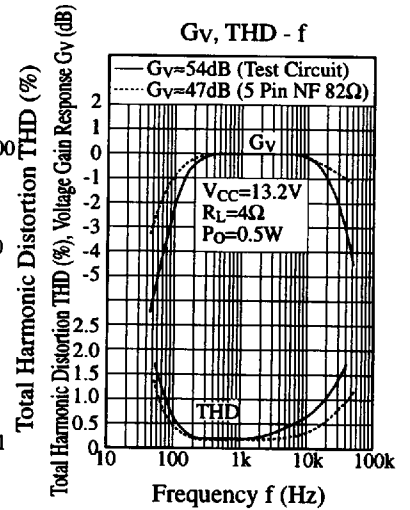
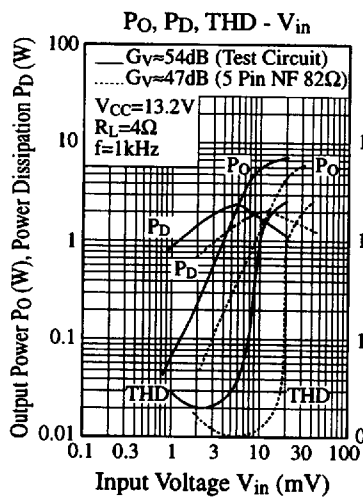
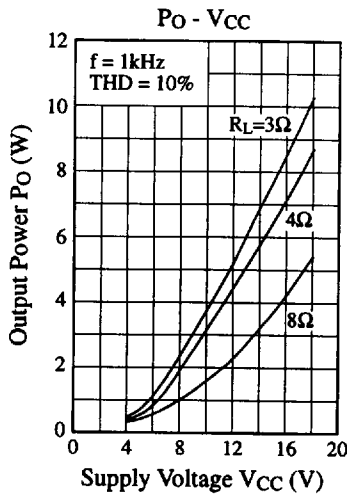
Test Circuit



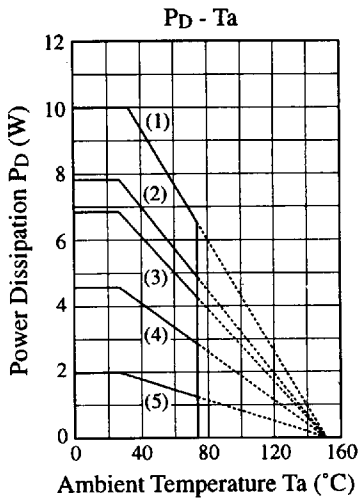
■ Application Circuit



■ Characteristics Curve



■ Characteristics Curve (Continue)



- (1) $T_c = T_a$
- (2) With a 100 x 100 x 3mm Al heat sink (black colour coated)
- (3) Without a 200 x 200 x 2mm Al heat sink
- (4) With a 25 x 25 x 2mm Al heat sink
- (5) Without heat sink

■ Printed Circuit Board Layout (Scale: 1:1)

