

AN7163

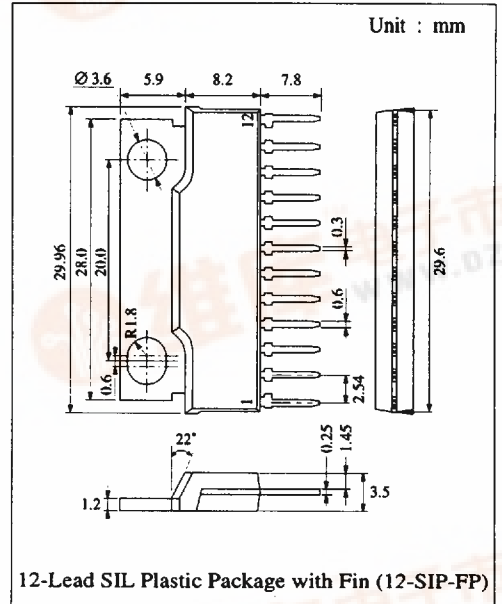
BTL 17W Audio Power Amplifier

■ Description

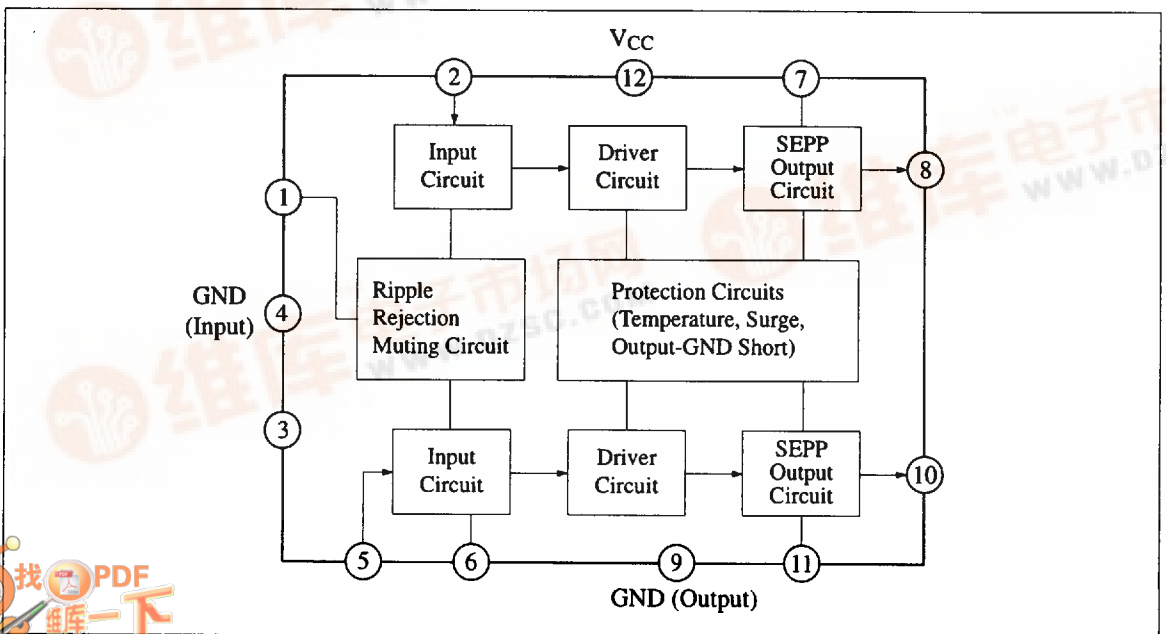
The AN7163 is a monolithic integrated circuit designed exclusively for BTL high power amplifiers in consumer applications. It is suitable for Hi-Fi and car stereo applications.

■ Features

- Built-in protection circuits include: overvoltage, overcurrent, thermal and output-GND short
- Small pop noise during ON/OFF
- High maximum output power (BTL): $P_O = 17W$ at $V_{CC} = 13.2V, R_L = 4\Omega$
- Few external components required
- Operating supply voltage: $V_{CC} = 7V \sim 18V$



■ Block Diagram



■ Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

| Item | Symbol | Rating | Unit |
|-------------------------------|------------------------|------------|------------------|
| Supply Voltage | V_{CC} | 24 | V |
| Supply Current | I_{CC} | 4 | A |
| Power Dissipation | P_D | 41.7 | W |
| Surge Supply Voltage | $V_{CC(\text{surge})}$ | 50 | V |
| Operating Ambient Temperature | T_{opr} | -30 ~ +75 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 ~ +150 | $^\circ\text{C}$ |

Operating Supply Voltage Range: $V_{CC} = 7.0\text{V} \sim 18.0\text{V}$

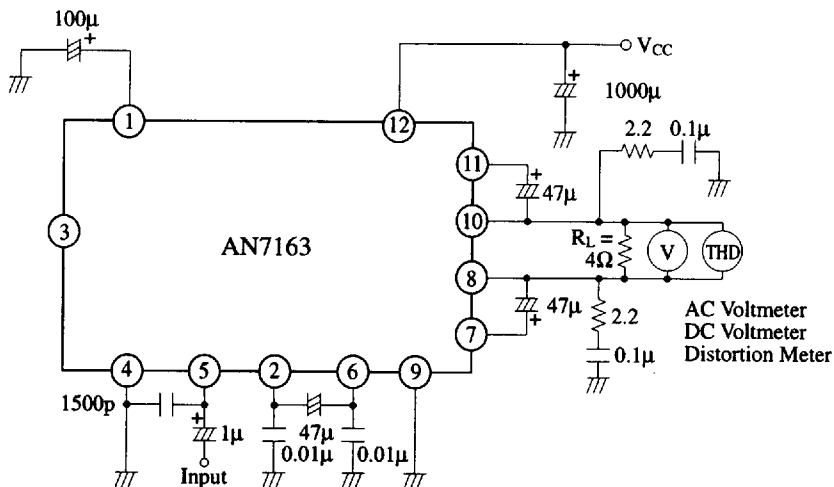
■ Electrical Characteristics ($V_{CC}=13.2\text{V}$, $f=1\text{kHz}$, $R_L=4\Omega$, $T_a=25^\circ\text{C}$)

| Item | Symbol | Condition | min. | typ. | max. | Unit |
|---------------------------|------------------------|--------------------------------------------------------------------------------------------------|------|------|------|------|
| Quiescent Current | I_{CQ} | $V_{in} = 0\text{mV}$ | | 40 | 80 | mA |
| Output Noise Voltage | V_{no} | $V_{in} = 0\text{V}$, $R_g = 10\text{k}\Omega$, $f = 15\text{Hz} \sim 30\text{kHz}$, 12dB/OCT | | 0.7 | 1.2 | mV |
| Output Offset Voltage | $V_{O(\text{offset})}$ | $V_{in} = 0\text{mV}$ | -200 | | 200 | mV |
| Voltage gain | G_v | $V_{in} = 5\text{mV}$ | 49 | 51 | 53 | dB |
| Total Harmonic Distortion | THD | $V_{in} = 5\text{mV}$ | | 0.15 | 0.5 | % |
| Output Power | P_O | THD = 10% | 15 | 17 | | W |
| Ripple Rejection | RR | $V_{in} = 0\text{V}$, $R_g = 0\Omega$, $V_r = 300\text{mV}$, $f_r = 120\text{Hz}$ | 35 | 45 | | dB |

■ Pin

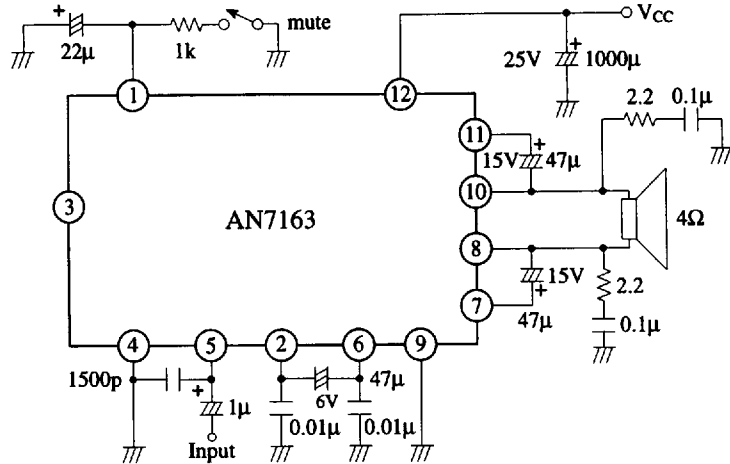
| Pin No | Pin Name | Pin No | Pin Name |
|--------|----------------|--------|----------------|
| 1 | Ripple Filter | 7 | Bootstrap Ch.2 |
| 2 | N.F.B. Ch.2 | 8 | Output Ch.2 |
| 3 | Centre Control | 9 | GND (Output) |
| 4 | GND (Input) | 10 | Output Ch.1 |
| 5 | Input | 11 | Bootstrap Ch.1 |
| 6 | N.F.B. Ch.1 | 12 | V_{CC} |

Test Circuit

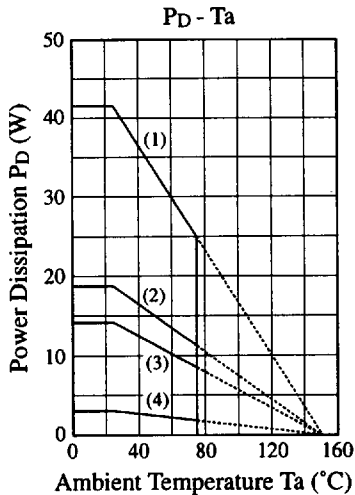
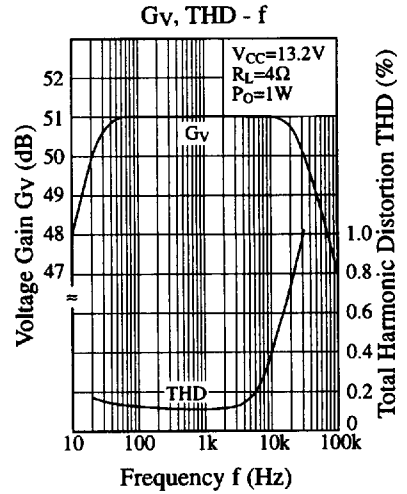
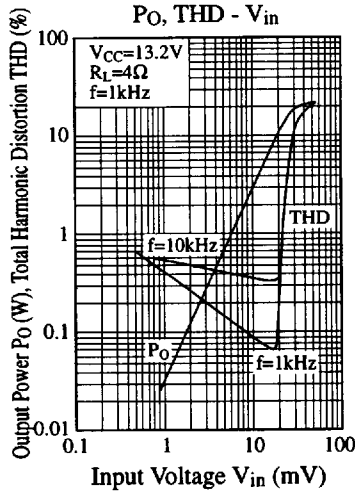
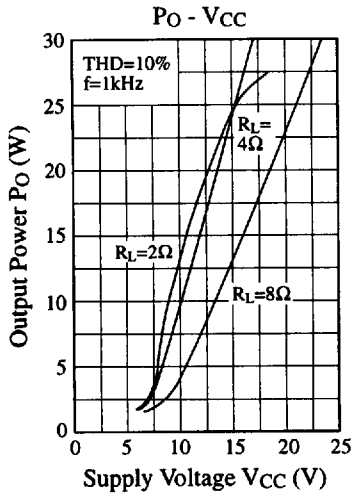


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Application Circuit



Characteristics Curve



- (1) $T_c = T_a$ ($\theta_{j-c} = 3^\circ\text{C/W}$)
- (2) With a $100\text{cm}^2 \times 3\text{mm}$ Al heat sink (black colour coated) or a $200\text{cm}^2 \times 2\text{mm}$ Al heat sink (not lacquered)
- (3) With a $100\text{cm}^2 \times 2\text{mm}$ Al heat sink (not lacquered)
- (4) Without heat sink