

Features

- Operating Voltage
 - Single Supply 3V to 7V
 - Dual Supply $\pm 1.5V$ to $\pm 3.5V$
- High Signal-to-Noise Ratio 100dB
- High Slew Rate 5V/ μs
- Low Distortion -65dB
- Output Power at 10% THD+N
 - into 8Ω 290mW
 - into 16Ω 190mW
- Large Output Voltage Swing
- Excellent Power Supply Ripple Rejection
- Low Power Consumption
- Short-circuit Elimination
- Wide Temperature Range
- No Switch ON/OFF Clicks
- Available in 8 pin SOP or DIP Package

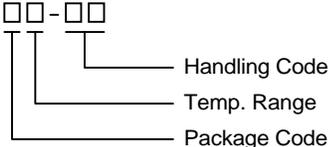
Applications

- Portable Digital Audio
- Personal Computers
- Microphone Preamplifier

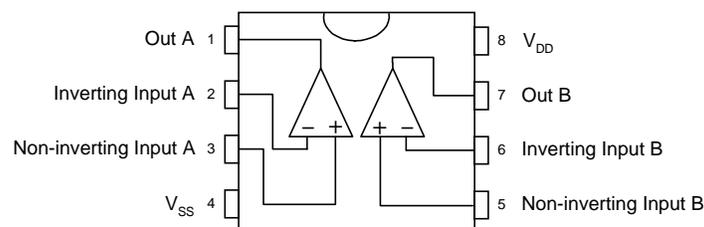
General Description

The APA4800 is an integrated class AB stereo headphone amplifier contained in an SO-8 or a DIP-8 plastic package . The APA4800 is capable of delivering 290mW of max . output power to an 8Ω load with less than 10% (THD+N) from a 5V power supply . The device has been primarily developed for portable digital audio applications .

Ordering Information

| | |
|--|--|
| <p>APA4800</p>  | <p>Package Code J : PDIP - 8 K : SOP - 8 Temp. Range I : - 40 to 85 °C Handling Code TU : Tube TR : Tape & Reel</p> |
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Block Diagram



APA4800

ANPEC reserves the right to make changes to improve reliability or manufacturability without notice, and advise customers to obtain the latest version of relevant information to verify before placing orders.

Absolute Maximum Ratings

| Symbol | Parameter | Rating | Unit |
|-------------|--|------------------|-------------|
| V_{DD} | Supply Voltage | 5 | V |
| $T_{SC(O)}$ | Output Short-circuit Duration, at $T_A=25^{\circ}C$, $P_{TOT}=1W$ | 20 | S |
| T_A | Operating Ambient Temperature range | -40 to 85 | $^{\circ}C$ |
| T_J | Maximum Junction Temperature | 150 | $^{\circ}C$ |
| T_{STG} | Storage Temperature Range | -65 to +150 | $^{\circ}C$ |
| T_S | Soldering Temperature, 10 seconds | 260 | $^{\circ}C$ |
| V_{ESD} | Electrostatic Discharge | -3000 to 3000 *1 | V |

Note: *1. Human body model : C=100pF, R=1500 Ω , 3 positive pulses plus 3 negative pulses

Thermal Characteristics

| Symbol | Parameter | Value | Unit |
|------------|---|-------|------|
| R_{THJA} | Thermal Resistance from Junction to Ambient in Free Air | | |
| | DIP-8 | 109 | K/W |
| | SO-8 | 210 | K/W |

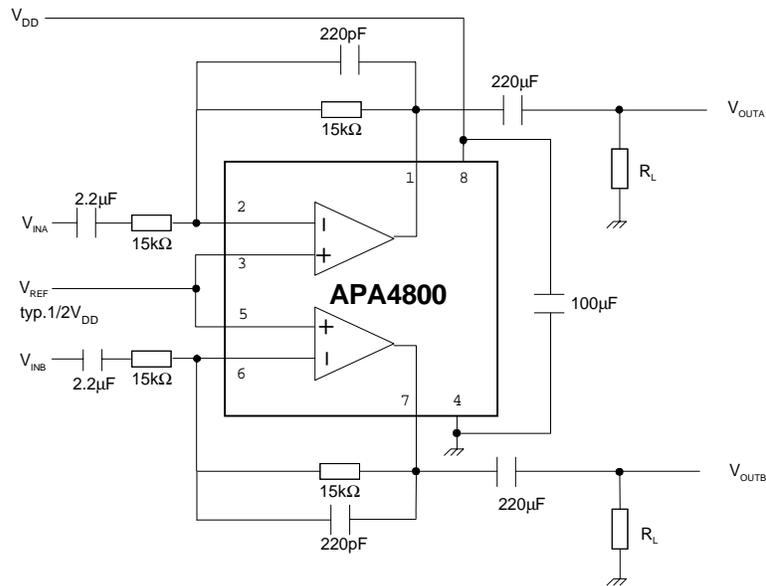
Electrical Characteristics $T_A=25^{\circ}C$, $f=1kHz$ (unless otherwise noted)

| Symbol | Parameter | Test Conditions | APA4800 | | | Unit |
|-------------------------------|--|---|---------|-------------|------|---------------|
| | | | Min. | Typ. | Max. | |
| V_{DD} | Power Supply Voltage | | 2.7 | | 5.5 | V |
| $V_{DD}=5V$ | | | | | | |
| I_{DD} | Supply Current | No Load | | 2.5 | | mA |
| $V_{I(O/S)}$ | Input Offset Voltage | | | 5 | 50 | mV |
| AC Characteristics | | | | | | |
| (THD+N)/S | Total Harmonic Distortion plus Noise to Signal Ratio | $P_O=200mW$, $R_L=8\Omega$, $f=1kHz$ $P_O=120mW$, $R_L=16\Omega$, $f=1kHz$ | | 0.1 0.05 | | % |
| P_O | Output Power | (THD+N)/S=0.2%, $f=1kHz$ $R_L=8\Omega$ $R_L=16\Omega$ | | 210 140 | | mW |
| P_O | Output Power | (THD+N)/S=10%, $f=1kHz$ $R_L=8\Omega$ $R_L=16\Omega$ | | 290 190 | | mW |
| PSRR | Power Supply Rejection Ratio | $C_B=2.2 \mu F$, $V_{RIPPLE}=200mV_{rms}$, $f=120Hz$ | | 55 | | dB |
| S/N | Signal to Noise Ratio | $R_L=8\Omega$ | | 20 | | μV_{rms} |

Electrical Characteristics Cont. $T_A=25^{\circ}\text{C}$, $f=1\text{kHz}$ (unless otherwise noted)

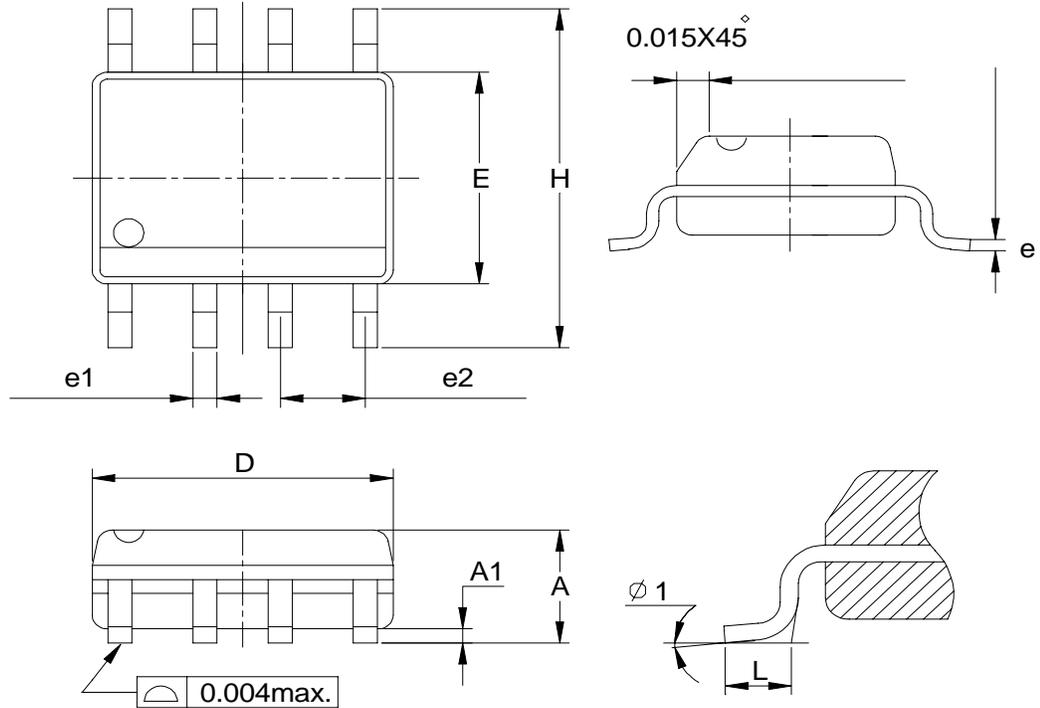
| Symbol | Parameter | Test Conditions | APA4800 | | | Unit |
|--------------------------------------|--|---|---------|----------|------|------|
| | | | Min. | Typ. | Max. | |
| $V_{DD}=3\text{V}$ | | | | | | |
| I_{DD} | Supply Current | No Load | | 2.2 | | mA |
| $V_{I(OS)}$ | Input Offset Voltage | | | 5 | | mV |
| AC Characteristics | | | | | | |
| (THD+N)/S | Total Harmonic Distortion plus Noise to Signal Ratio | $P_O=50\text{mW}$, $R_L=8\Omega$, $f=1\text{kHz}$ $P_O=40\text{mW}$, $R_L=16\Omega$, $f=1\text{kHz}$ | | 0.15 | | % |
| P_O | Output Power | (THD+N)/S=0.2%, $f=1\text{kHz}$ $R_L=8\Omega$ $R_L=16\Omega$ | | 60 45 | | mW |
| P_O | Output Power | (THD+N)/S=10%, $f=1\text{kHz}$ $R_L=8\Omega$ $R_L=16\Omega$ | | 90 65 | | mW |

Test And Application Circuits



Packaging Information

SOP-8 pin (Reference JEDEC Registration MS-012)



| Dim | Millimeters | | Inches | |
|----------|-------------|------|---------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.35 | 1.75 | 0.053 | 0.069 |
| A1 | 0.10 | 0.25 | 0.004 | 0.010 |
| D | 4.80 | 5.00 | 0.189 | 0.197 |
| E | 3.80 | 4.00 | 0.150 | 0.157 |
| H | 5.80 | 6.20 | 0.228 | 0.244 |
| L | 0.40 | 1.27 | 0.016 | 0.050 |
| e1 | 0.33 | 0.51 | 0.013 | 0.020 |
| e2 | 1.27BSC | | 0.50BSC | |
| $\phi 1$ | 0° | 8° | 0° | 8° |