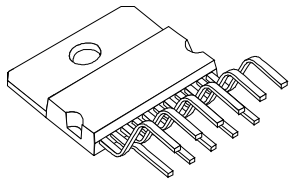
# PA9069A

**LINEAR INTEGRATED CIRCUIT**

## 14W+14W STEREO AMPLIFIER WITH MUTE & STAND-BY



HZIP-11A

*Pb-free plating product number: PA9069AL

### ■ DESCRIPTION

The UTC **PA9069A** is a stereo 14+14W class AB Dual Audio Power amplifier with mute and ST-BY control. This IC provides high output power of 14 watts per channel (at $V_{CC}$ = ±16V, f =1KHz, THD = 10%, $R_L$ = 8 Ω). It has low $I_Q$ at stand-by mode and no POP at turn ON or OFF.

### ■ FEATURES

* High output power: Pout = 14 W/channel (Typ.)
  $V_{CC}$= ±16V, $R_L$ = 8Ω, f =1KHz, THD = 10%
*Operation supply voltage range (Ta = 25°C)
  $V_{CC(OPR)}$ = ±5~±20V ($R_L$ = 8 Ω)
  $V_{CC(OPR)}$ = ±5~±15V ($R_L$ = 4 Ω)
* Split supply
* Built in overload protection circuit.
* Built in thermal shut down protector circuit.
* Built in audio muting circuit (POP free).
* Built in standby circuit.

### ■ APPLICATION

* Hi-Fi music centers
* Stereo TV sets

### ■ ORDERING INFORMATION

| Order Number | | Package | Packing |
|---|---|---|---|
| Normal | Lead Free Plating | | |
| PA9069A-J11-A-T | PA9069AL-J11-A-T | HZIP-11A | Tube |

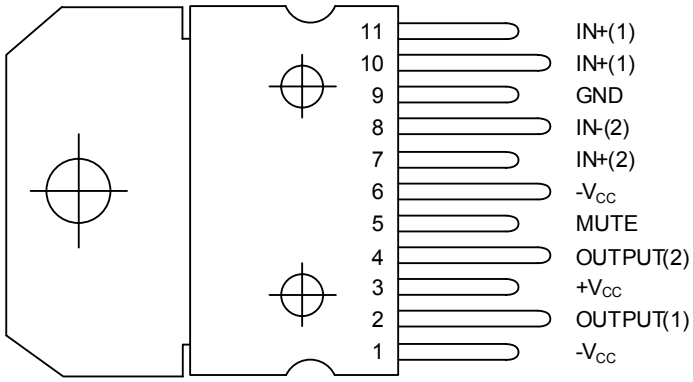
PA9069AL-J11-A-T

(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) T: Tube
(2) J11-A: HZIP-11A
(3) Lead Free Plating, Blank: Pb/Sn


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## ■ PIN CONNECTION



## ■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | RATING | UNIT |
|---|---|---|---|
| DC Supply Voltage | $V_{CC}$ | ±22 | V |
| Output Power Current (internally limited) | $I_{OUT}$ | 3 | A |
| Total Power Dissipation (Ta = 70°C) | $P_D$ | 40 | W |
| Junction Temperature | $T_J$ | +150 | °C |
| Operating Temperature | $T_{OPR}$ | 0 ~ +70 | °C |
| Storage and Junction Temperature | $T_{STG}$ | -40 ~ +150 | °C |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

## ■ THERMAL DATA

| PARAMETER | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Thermal Resistance Junction-Case | $\theta_{JC}$ | 2.8 | °C/W |

## ■ ELECTRICAL CHARACTERISTICS

($V_{CC}$ = ±16V; $R_L$ =8Ω; $R_S$ =50Ω; $G_V$ =30dB, f =1KHz; Ta =25°C)

| PARAMETER | SYMBOL | TEST CONDITION | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| Supply Voltage Range | $V_{CC}$ | $R_L$= 8Ω | | ±5 | | ±20 | V |
| | | $R_L$= 4Ω | | ±5 | | ±15 | V |
| Total Quiescent Current | $I_Q$ | | | | 60 | 100 | mA |
| **INPUT SECTION** | | | | | | | |
| Input Offset Voltage | $V_{I(OFF)}$ | | | -25 | | 25 | mV |
| Bias Current | $I_{BIAS}$ | | | | 500 | | nA |
| Input Resistance | $R_{iN}$ | | | 15 | 20 | | KΩ |
| **OUTPUT SECTION** | | | | | | | |
| Output Power | $P_{OUT}$ | THD=10%,$V_{CC}$= ±12.5V | $R_L$= 8Ω | 12 | 14 | | W |
| | | | $R_L$= 4Ω | 8 | 10 | | W |
| | | THD = 1%, $V_{CC}$= ±12.5V | $R_L$= 8Ω | 9 | 11 | | W |
| | | | $R_L$= 4Ω | 6 | 7.5 | | W |
| Total Harmonic Distortion | THD | $R_L$= 8Ω; $P_{OUT}$= 1W; f = 1KHz; | | | 0.03 | | % |
| | | $R_L$= 8Ω; $P_{OUT}$=0.1 to 7W<br>f = 100Hz ~ 15KHz | | | | 0.7 | % |
| | | $R_L$= 4Ω; $P_{OUT}$= 1W; f = 1KHz | | | 0.02 | | % |
| | | $R_L$= 4Ω; $V_{CC}$= ±10V, $P_{OUT}$=0.1 ~ 5W<br>f = 100Hz ~ 15KHz | | | | 1 | % |
| Cross Talk | $C_T$ | f = 1KHz | | | 70 | | dB |
| | | f = 10KHz | | 50 | 60 | | dB |
| Slew Rate | SR | | | 6.5 | 10 | | V/μs |
| Open Loop Voltage Gain | $G_{VO}$ | | | | 80 | | dB |
| Total Output Noise | eN | A Curve | | | 3 | | μV |
| | | f = 20Hz to 22KHz | | | 4 | 8 | μV |
| Supply Voltage Rejection (each channel) | SVR | f = 100Hz; $V_R$= 0.5V | | | 60 | | dB |
| **THERMAL PROTECTION** | | | | | | | |
| Thermal Shut-down Junction Temperature | $T_J$ | | | | 145 | | °C |
| **MUTE FUNCTION [ref: +$V_{CC}$] (Note)** | | | | | | | |
| Mute /Play Threshold | $VT_{MUTE}$ | | | -7 | -6 | -5 | V |
| Mute Attenuation | $A_{MUTE}$ | | | 60 | 70 | | dB |
| **STAND-BY FUNCTIONS [ref: +$V_{CC}$] (only for Split Supply)** | | | | | | | |
| Stand-by Mute threshold | $VT_{ST-BY}$ | | | -3.5 | -2.5 | -1.5 | V |
| Stand-by Attenuation | $A_{ST-BY}$ | | | | 110 | | dB |
| Quiescent Current ( Stand-by) | $I_{Q(ST-BY)}$ | | | | 3 | 6 | mA |

Note: In mute condition the current drawn from Pin 5 must be ≤650μA

## ■ APPLICATION CIRCUITS

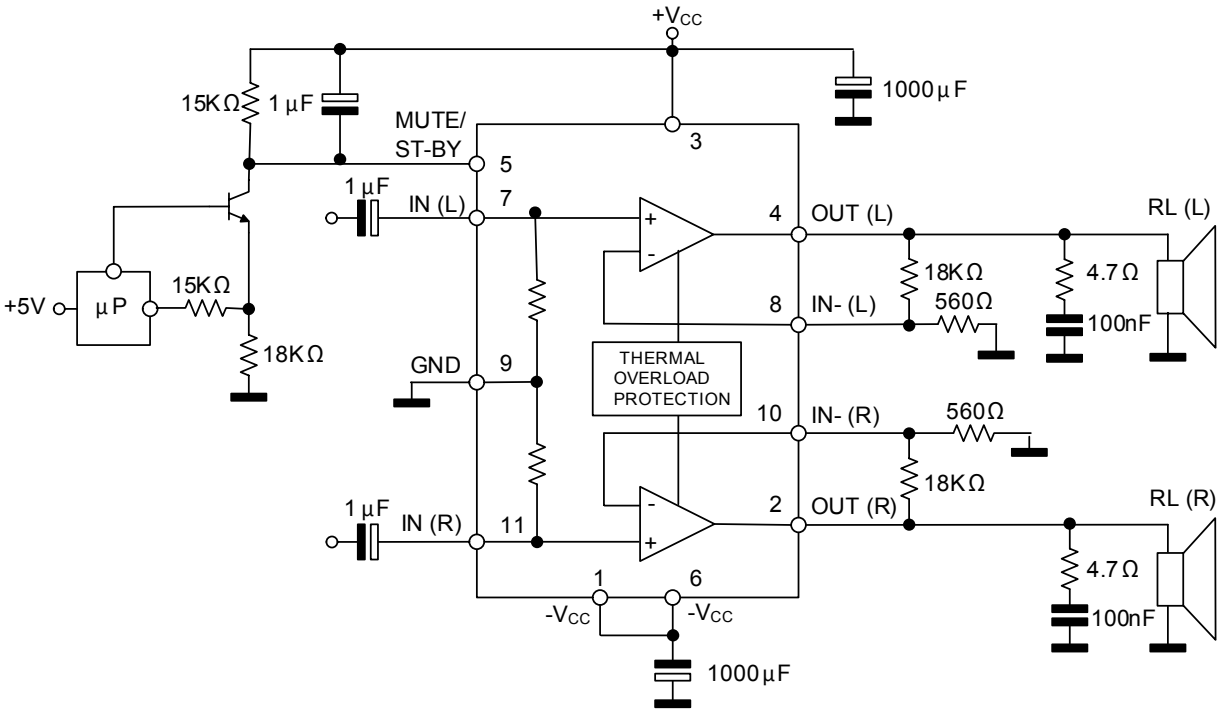



Figure 1. Typical Application Circuit

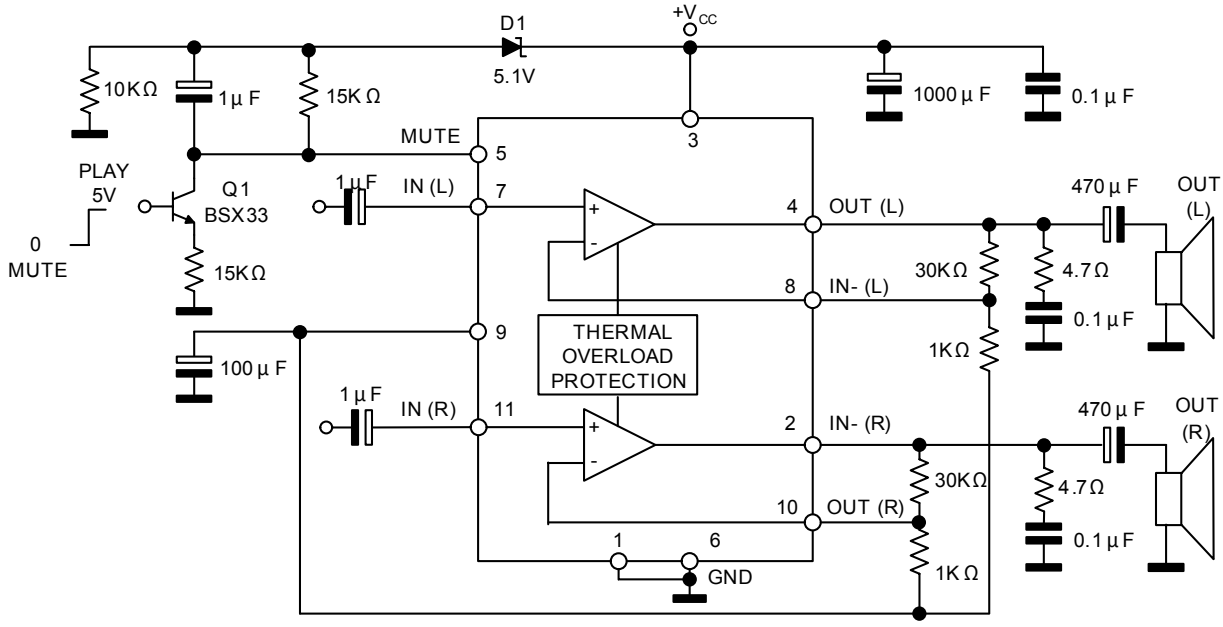



Figure 2. Single Supply Application

■ APPLICATION CIRCUITS(Cont.)

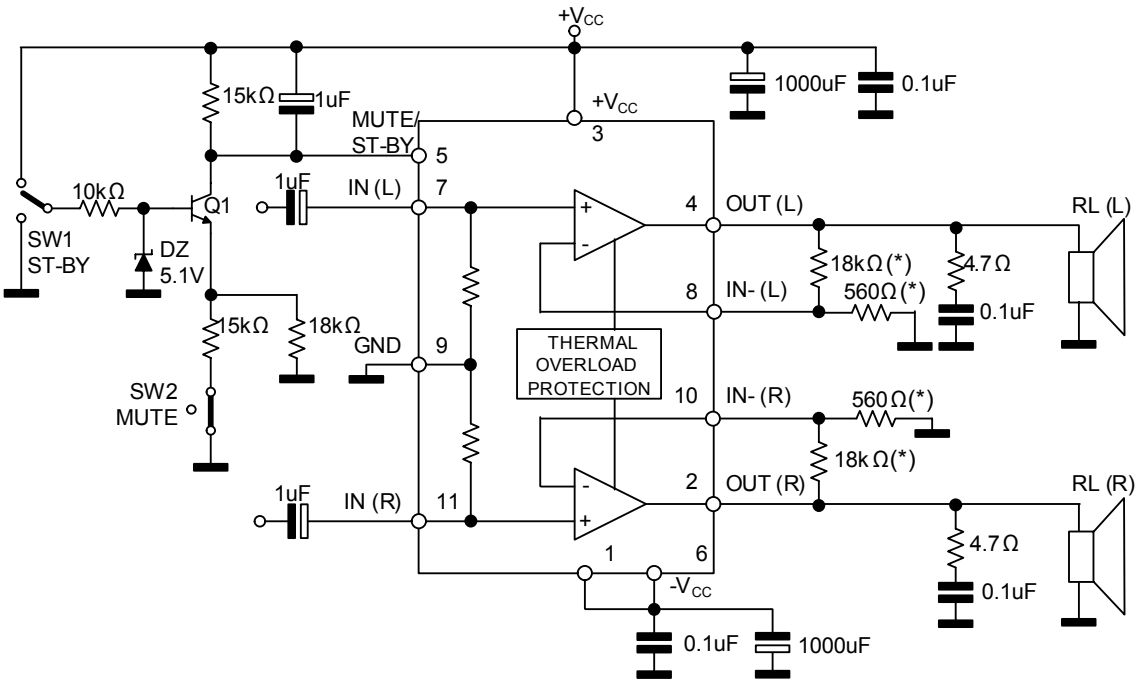



Figure 3. Test and Application Circuit(Stereo Configuration)

(*) Closed loop gain has to be ≥25dB

## ■ MUTE STAND-BY FUNCTION

The pin 5 (MUTE/STAND-BY) controls the amplifier status by two different thresholds, referred to $+V_{CC}$.

| $V_{PIN5}$ | amplifier status |
|---|---|
| $V_{PIN5} \geqq +V_{CC}$ -2.5V | Stand-by mode |
| $+V_{CC}$ -2.5V $> V_{PIN5} > +V_{CC}$ -6V | Mute mode |
| $V_{PIN5} \leqq +V_{CC}$ -6V | Play mode |

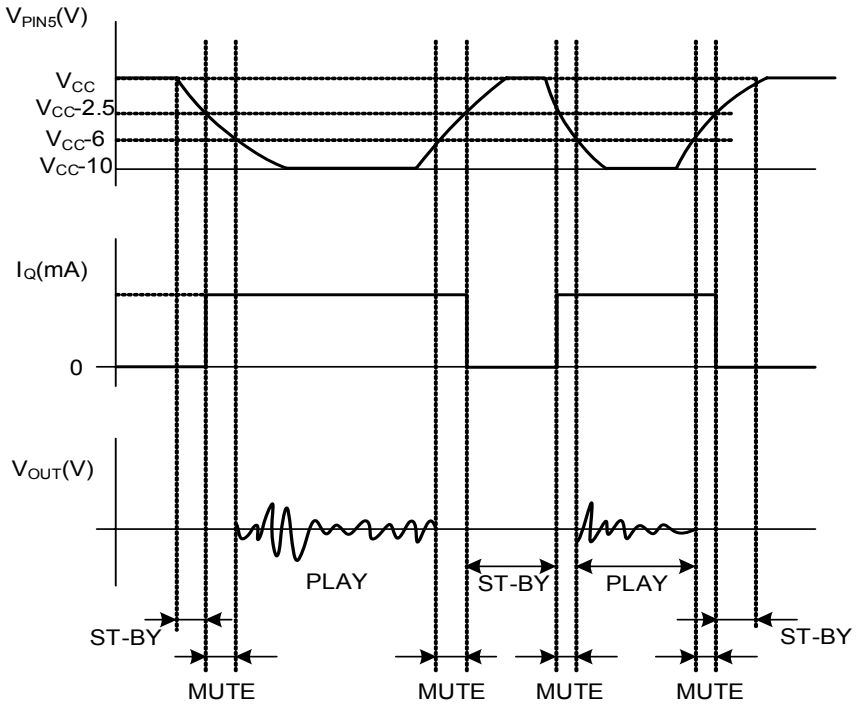



Figure 4.

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