



PA9069A

LINEAR INTEGRATED CIRCUIT

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

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 $V_{CC} = \pm 16V$, $f = 1KHz$, $THD = 10\%$, $R_L = 8 \Omega$). It has low I_Q at stand-by mode and no POP at turn ON or OFF.

FEATURES

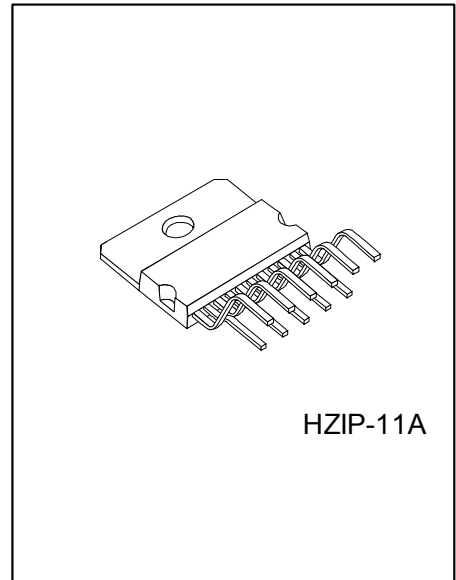
- * High output power: $P_{out} = 14 W/channel$ (Typ.)
 $V_{CC} = \pm 16V$, $R_L = 8 \Omega$, $f = 1KHz$, $THD = 10\%$
- * Operation supply voltage range ($T_a = 25^\circ C$)
 $V_{CC(OPER)} = \pm 5 \sim \pm 20V$ ($R_L = 8 \Omega$)
 $V_{CC(OPER)} = \pm 5 \sim \pm 15V$ ($R_L = 4 \Omega$)
- * Split supply
- * 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

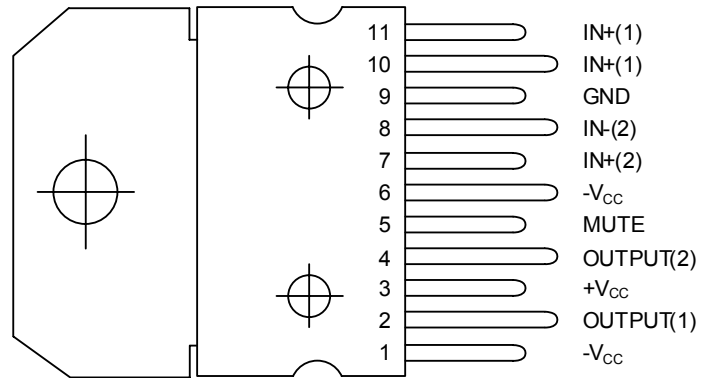


HZIP-11A

*Pb-free plating product number: PA9069AL

<p>PA9069AL-J11-A-T</p> <ul style="list-style-type: none"> (1)Packing Type (2)Package Type (3)Lead Plating 	<ul style="list-style-type: none"> (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 ($T_a = 70^\circ\text{C}$)	P_D	40	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Operating Temperature	T_{OPR}	0 ~ +70	$^\circ\text{C}$
Storage and Junction Temperature	T_{STG}	-40 ~ +150	$^\circ\text{C}$

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	θ_{JC}	2.8	$^\circ\text{C/W}$

■ ELECTRICAL CHARACTERISTICS

($V_{CC} = \pm 16\text{V}$; $R_L = 8\Omega$; $R_S = 50\Omega$; $G_V = 30\text{dB}$; $f = 1\text{KHz}$; $T_a = 25^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Supply Voltage Range	V_{CC}	$R_L = 8\Omega$	± 5		± 20	V
		$R_L = 4\Omega$	± 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		K Ω
OUTPUT SECTION						
Output Power	P_{OUT}	THD=10%, $V_{CC} = \pm 12.5\text{V}$	$R_L = 8\Omega$	12	14	W
			$R_L = 4\Omega$	8	10	W
		THD = 1%, $V_{CC} = \pm 12.5\text{V}$	$R_L = 8\Omega$	9	11	W
			$R_L = 4\Omega$	6	7.5	W
Total Harmonic Distortion	THD	$R_L = 8\Omega$; $P_{OUT} = 1\text{W}$; $f = 1\text{KHz}$;		0.03		%
		$R_L = 8\Omega$; $P_{OUT} = 0.1$ to 7W $f = 100\text{Hz} \sim 15\text{KHz}$			0.7	%
		$R_L = 4\Omega$; $P_{OUT} = 1\text{W}$; $f = 1\text{KHz}$		0.02		%
		$R_L = 4\Omega$; $V_{CC} = \pm 10\text{V}$; $P_{OUT} = 0.1 \sim 5\text{W}$ $f = 100\text{Hz} \sim 15\text{KHz}$			1	%
Cross Talk	C_T	$f = 1\text{KHz}$		70		dB
		$f = 10\text{KHz}$	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
		$f = 20\text{Hz}$ to 22KHz		4	8	μV
Supply Voltage Rejection (each channel)	SVR	$f = 100\text{Hz}$; $V_R = 0.5\text{V}$		60		dB
THERMAL PROTECTION						
Thermal Shut-down Junction Temperature	T_J			145		$^\circ\text{C}$
MUTE FUNCTION [ref: +V_{CC}] (Note)						
Mute /Play Threshold	V_{TMUTE}		-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	V_{TST-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 $\leq 650\mu\text{A}$

APPLICATION CIRCUITS

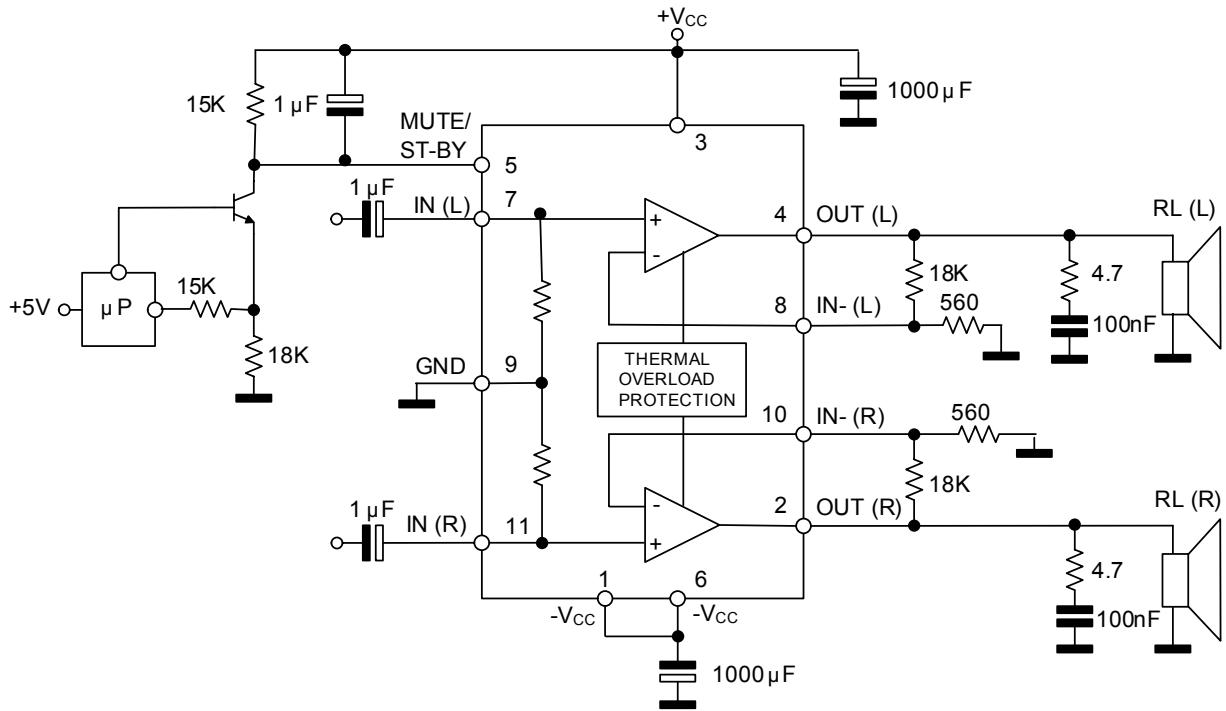


Figure 1. Typical Application Circuit

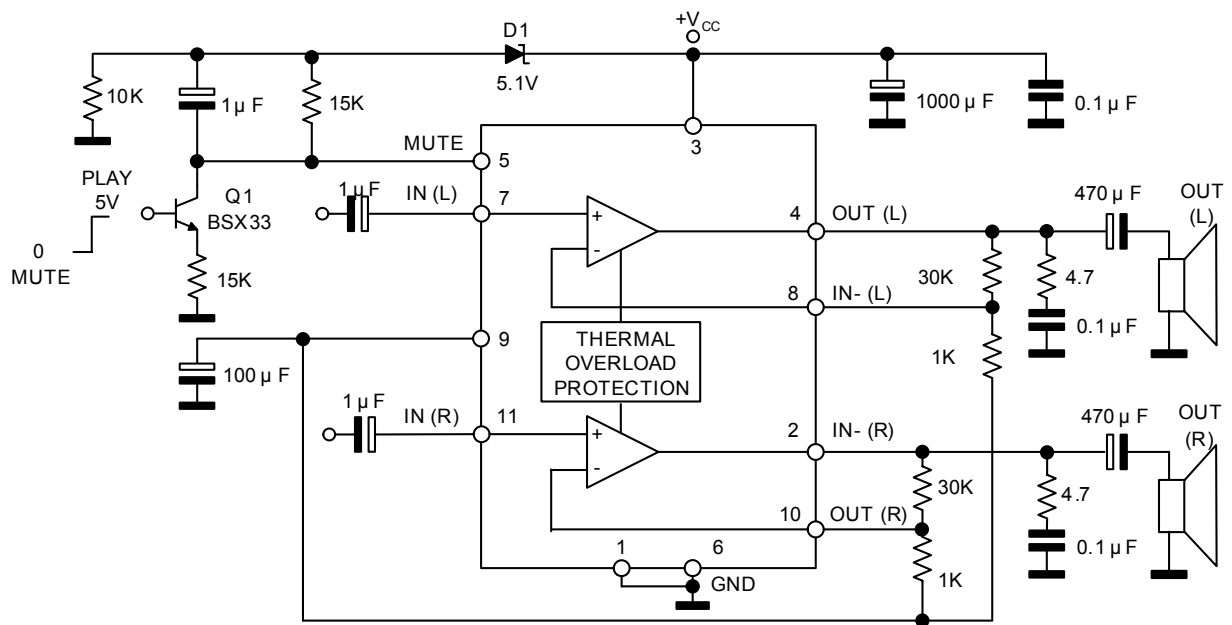


Figure 2. Single Supply Application

■ APPLICATION CIRCUITS(Cont.)

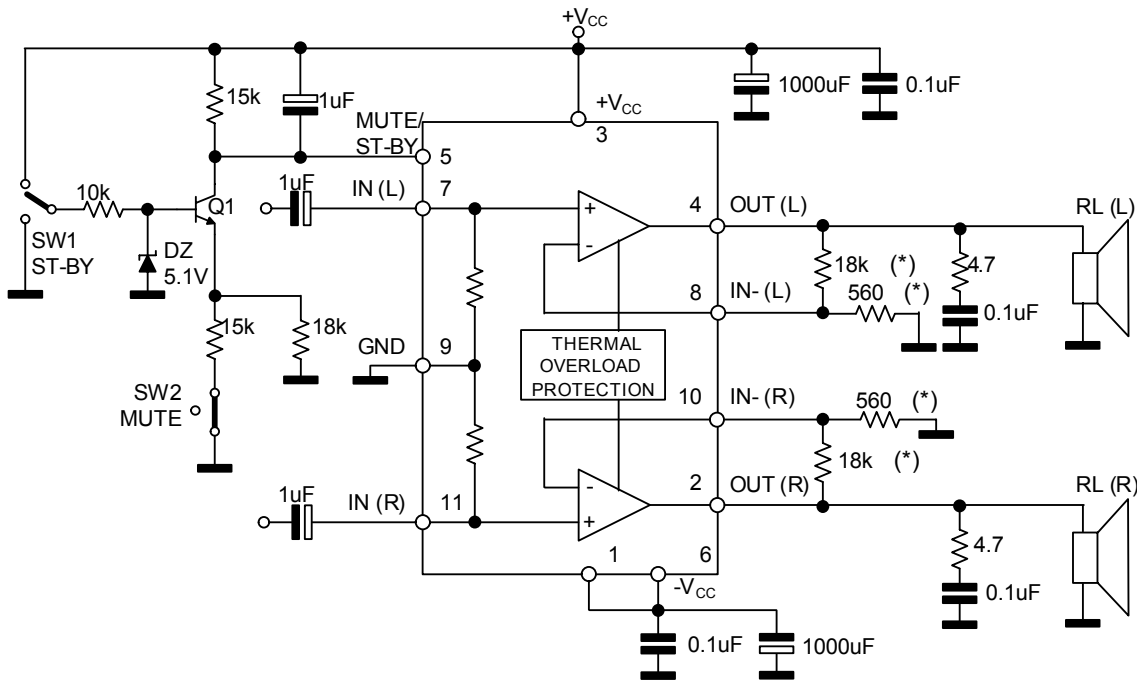


Figure 3. Test and Application Circuit(Stereo Configuration)

(*) Closed loop gain has to be $\geq 25\text{dB}$

■ 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} > +V _{CC} -2.5V	Stand-by mode
+V _{CC} -2.5V > V _{PIN5} > +V _{CC} -6V	Mute mode
V _{PIN5} < +V _{CC} -6V	Play mode

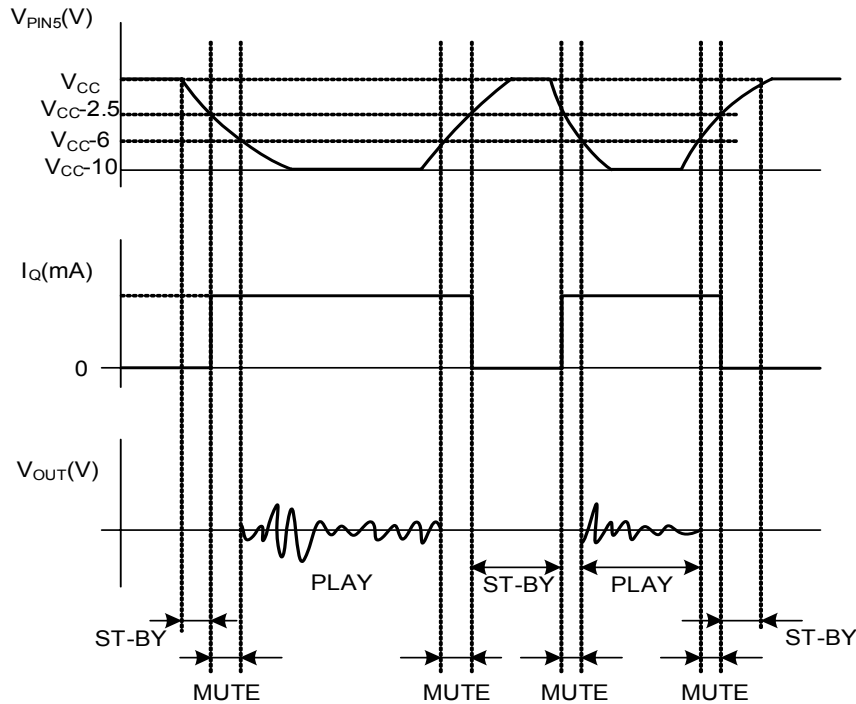


Figure 4.

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