

AN5276

5 W × 2-ch (19V, 8 Ω) power amplifier with variable audio output and volume control

Overview

The AN5276 is a monolithic integrated circuit designed for 5.0 W (19 V, 8 Ω) output audio power amplifier. It is a dual channel SEPP IC suitable for stereo operation in TV application.

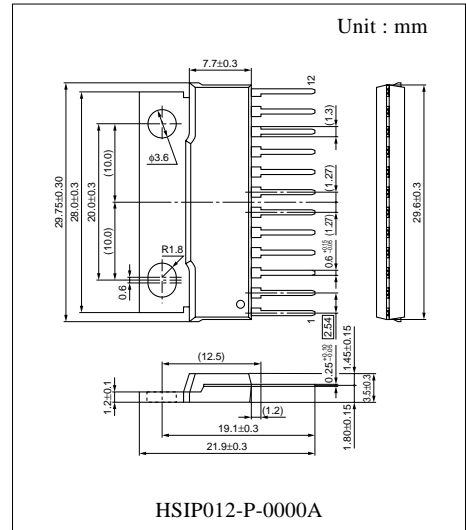
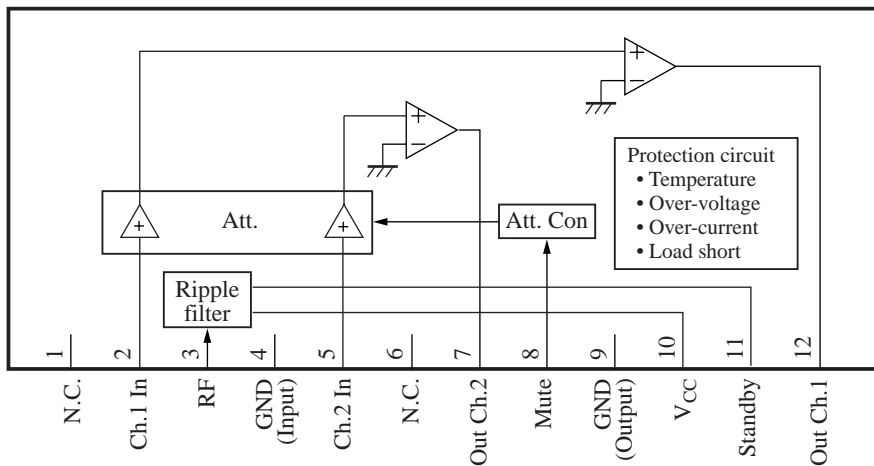
Features

- Few external components :
 - No Boucherot cells(output C, R)
 - No Bootstrap Capacitors
 - No Negative Feedback Capacitors
- Built-in muting circuit
- Built-in stand-by circuit
- Built-in various protection circuits (Load-short, thermal, over-voltage and current)
- High ripple rejection(55 dB)
- Compatible with AN5275, AN5277
- Operating voltage range 10 V to 24 V(19 V typ.)

Applications

- TV

Block Diagram



■ Pin Descriptions

Pin No.	Descriptions	Pin No.	Descriptions
1	N.C.	7	Ch.2 output
2	Ch.1 input	8	Mute
3	Ripple filter	9	Output GND
4	Input GND	10	V _{CC}
5	Ch.2 input	11	Standby
6	N.C.	12	Ch.1 output

■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V _{CC}	26.0	V
Supply current	I _{CC}	4.0	A
Power dissipation *2	P _D	37.5	W
Operating ambient temperature *1	T _{opr}	-25 to +75	°C
Storage temperature *1	T _{stg}	-55 to +150	°C

Note) *1 : Except these items, all other measurements are taken at T_a = 25 °C.

*2 : T_a = 75 °C.

■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V _{CC}	10.0 to 24.0	V

■ Electrical Characteristics at $V_{CC} = 19\text{ V}$, $f = 1\text{ kHz}$, $R_L = 8\ \Omega$, $T_a = 25\text{ }^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Quiescent current	I_{CQ}	$V_{IN} = 0\text{ mV}$	—	35	70	mA
Output end noise voltage *1	V_{NO}	No input, $R_g = 10\text{ k}\Omega$	—	0.22	0.4	mV
Voltage gain	G_V	$V_{IN} = 57\text{ mV}$	32	34	36	dB
Total harmonic distortion	THD	$V_{IN} = 57\text{ mV}$	—	0.2	0.4	%
Maximum Output Power	P_O	$V_{CC} = 22\text{ V}$, THD = 10 %	5.6	7.0	—	W
Maximum Output power	P_O	$V_{CC} = 19\text{ V}$, THD = 10 %	4.0	5.0	—	W
Ripple rejection ratio *1	RR	$V_r = 1\text{ V}_{rms}$ $f_r = 120\text{ Hz}$, $R_g = 10\text{ k}\Omega$	45	55	—	dB
Channel balance	CB	$V_{IN} = 57\text{ mV}$	-1.0	0	1.0	dB
Muting Ratio	MR	$V_{IN} = 57\text{ mV}$	70	80	—	dB
Muting control voltage	V_{MUTE}	$V_{IN} = 57\text{ mV}$, MR $\geq 70\text{ dB}$	3.0	—	—	V
Standby control voltage 'on'	V_{STD-ON}	No input, $I_{CC} \leq 0.1\text{ mA}$	—	—	5.0	V
Standby control voltage 'off'	$V_{STD-OFF}$	No input, $I_{CC} \geq 17\text{ mA}$	8.5	—	—	V
Channel crosstalk	CT	$V_{IN} = 57\text{ mV}$, $R_g = 10\text{ k}\Omega$	50	60	—	dB

Note) *1 : For this measurement, use the 20 Hz to 20 kHz (12 dB/OCT) filter.

■ Terminal Equivalent Circuits

Pin No.	Equivalent circuit	Description	DC voltage (V)
1	—	Not connected	—
2		Ch.1 input This is the amplifier input pin.	0
3		Ripple filter This is the pin to connect the positive terminal of a ripple filter capacitor.	$V_{CC} - 1.5V_{BE}$
4	—	Input GND Input ground pin	0
5		Ch.2 input This is the amplifier input pin.	—
6	—	Not connected	—

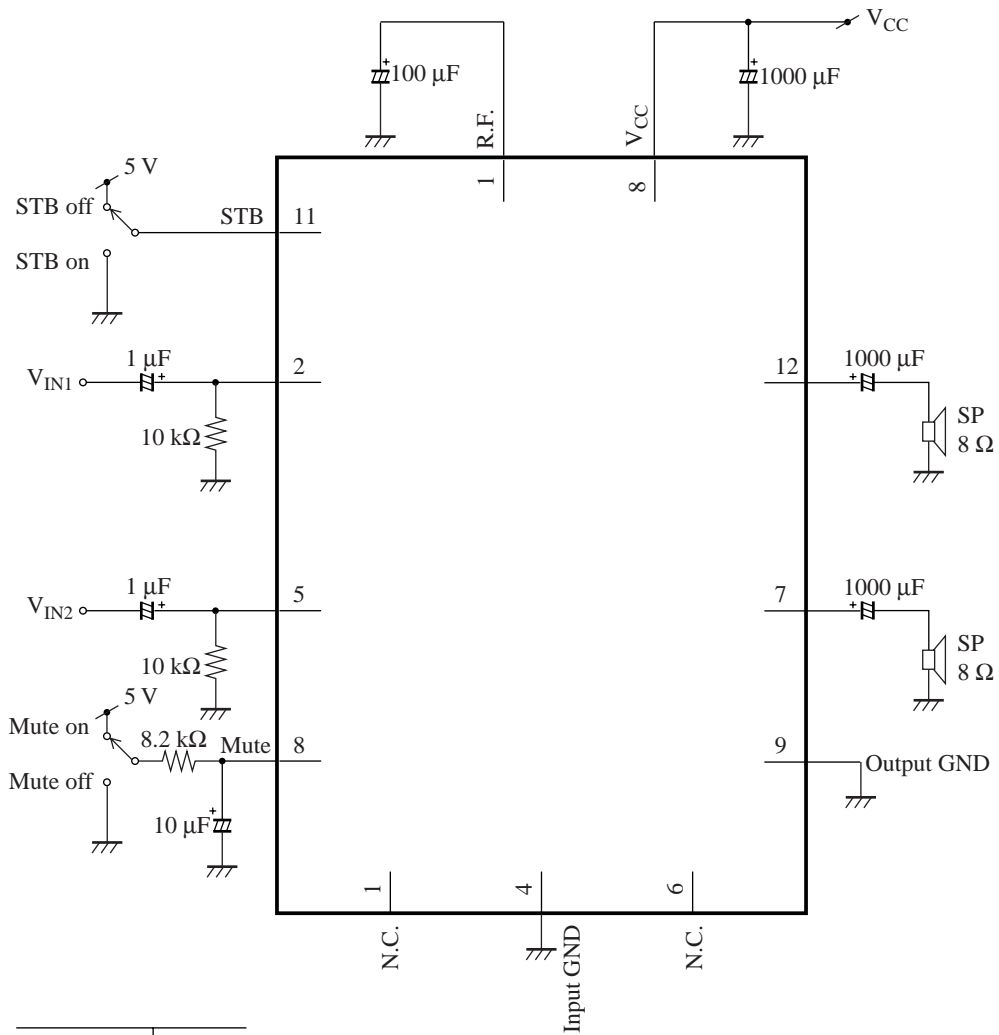
■ Terminal Equivalent Circuits (continued)

Pin No.	Equivalent circuit	Description	DC voltage (V)
7		<p>Ch.2 output Ch.2 output pin</p>	<p>$V_{CC}/2$</p>
8		<p>Mute Mute input pin. Mute 'on' = 5 V Mute 'off' = 0 V</p>	<p>—</p>
9	<p>—</p>	<p>Output GND Ch.1 & Ch.2 output ground.</p>	<p>0</p>
10	<p>—</p>	<p>V_{CC} This is the power supply pin.</p>	<p>19 V(typ.)</p>

■ Terminal Equivalent Circuits (continued)

Pin No.	Equivalent circuit	Description	DC voltage (V)
11		<p>Standby This is the standby control pin.</p>	<p>—</p>
12		<p>Ch.1 output Ch.1 output pin</p>	<p>$V_{CC}/2$</p>

■ Application Circuit Example



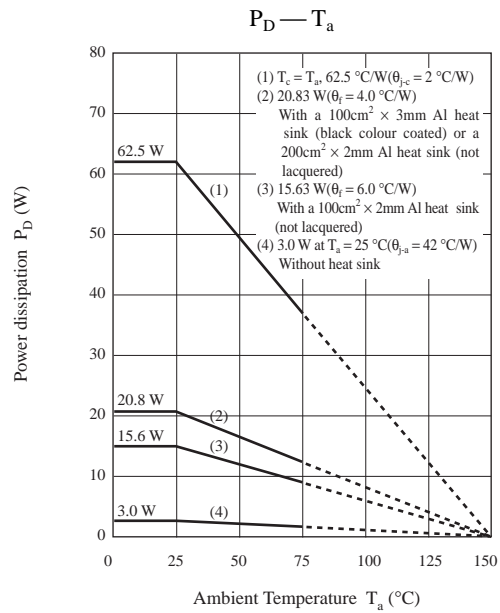
STB off	V _{CC}
STB on	0 V
Mute off	0 V
Mute on	5 V

■ Usage Notes

- 1) External heatsink is needed when used. External heatsink should be fixed to the chassis.
- 2) Fin of the IC can be connected to GND.
- 3) Please prevent output to V_{CC} short and output to GND short.
- 4) The temperature protection circuit will operate at T_J around 150 °C. However, if temperature decreases, the protection circuit would automatically be deactivated and resume normal operation.

■ Technical Information

- $P_D - T_a$ curves of HSI P012-P-0000A



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