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Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



AN5277

Dual Channel SEPP Power Amplifier

■ Overview

The AN5277 is a monolithic integrated circuit designed for 10.0 W (26 V, 8 W) 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 standby circuit
- Built-in various protection circuits (Load-short, thermal, over-voltage and current)
- High ripple rejection(55 dB)
- Compatible with AN5275, AN5276
- Operating voltage range 10 ~ 32 V(26 V typ.)

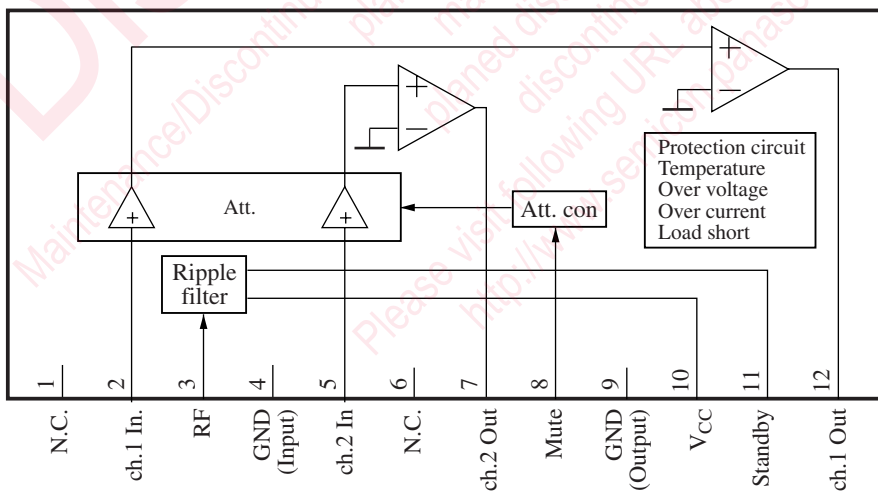
■ Applications

- TV

■ Package

- HSIP012-P-0000E

■ Block Diagram



■ Pin Descriptions

Pin No.	Description	Pin No.	Description
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	Ratings	Unit
Supply voltage	V _{CC}	35.0	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 : T_a = 25 °C except operating ambient temperature and storage temperature.

*2 : At T_a = 70 °C.

■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V _{CC}	10.0 to 32.0	V

■ Electrical Characteristics at V_{CC} = 26 V, R_L = 8 Ω, f = 1 kHz, T_a = 25 °C

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Quiescent current	I _{CQ}	V _{IN} = 0 mV	—	40	80	mA
Output end noise voltage *1	V _{NO}	No input, R _G = 10 k	—	0.22	0.4	mV
Voltage gain	G _V	V _{IN} = 57 mV	32	34	36	dB
Total harmonic distortion *1	THD	V _{IN} = 57 mV	—	0.2	0.4	%
Maximum output power	P _O	V _{CC} = 26 V, THD = 10 %	8.0	10.0	—	W
Ripple rejection ratio *1	RR	V _R = 1 V _{rms} , f _R = 120 Hz, R _G = 10 kΩ,	45	55	—	dB
Channel balance	CB	V _{IN} = 57 mV	-1.0	0	1.0	dB
Muting ratio	MR	V _{IN} = 57 mV	70	80	—	dB
Muting control voltage	V _{MUTE}	V _{IN} = 57 mV, MR ≥ 70 dB	3.0	—	—	V
Standby control voltage 'on'	V _{STDON}	No input, I _{CC} ≤ 0.1 mA	—	—	5.0	V
Standby control voltage 'off'	V _{STDOFF}	No input, I _{CC} ≥ 20 mA	8.5	—	—	V
Channel crosstalk	CT	V _{IN} = 57 mV, R _G = 10 kΩ	50	60	—	dB

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

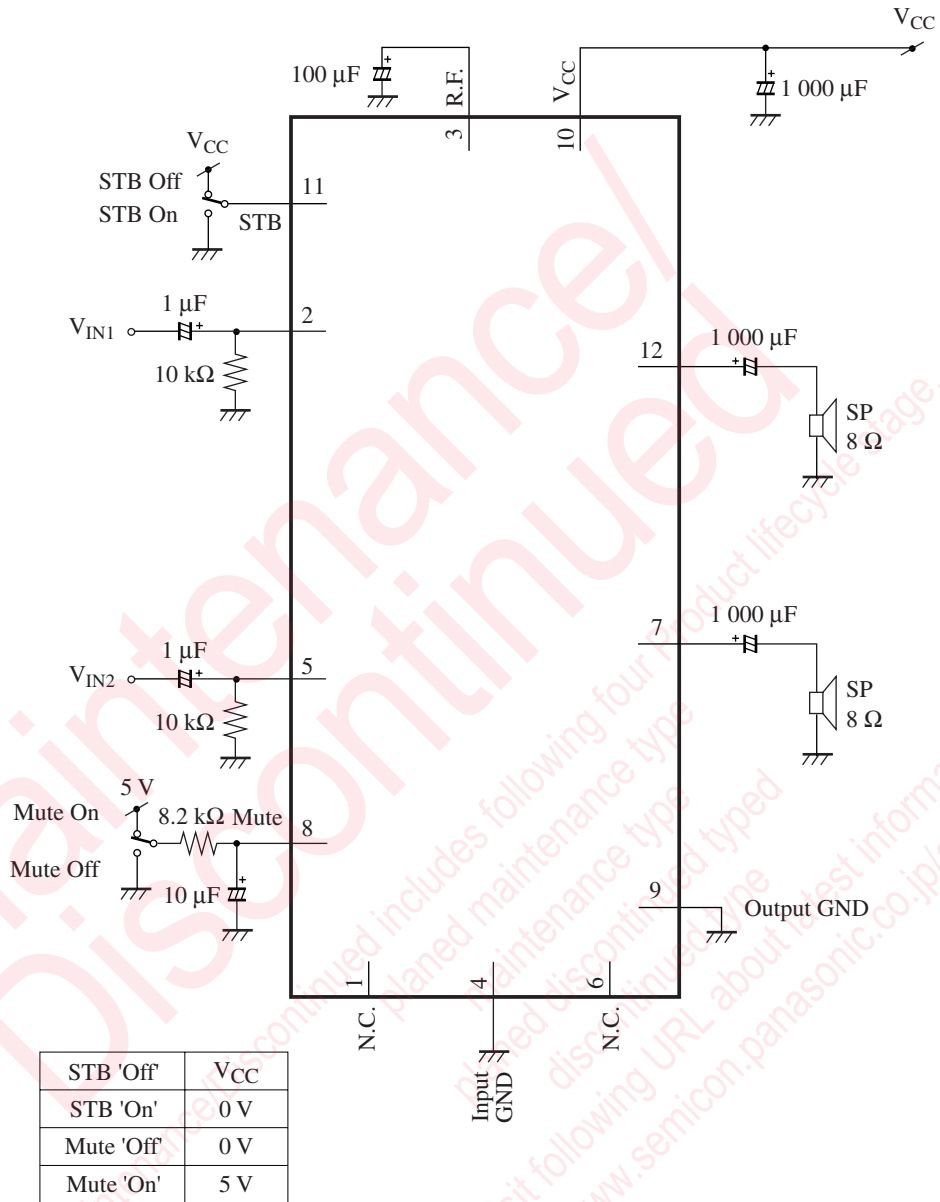
■ Terminal Equivalent Circuit

Pin No.	Equivalent Circuit	Description	DC Voltage
1	—	Not connected	—
2		ch.1 Input : This is the amplifier input pins.	0 V
3		Ripple Filter : This is the pin to connect the positive terminal of a ripple filter capacitor.	$V_{CC} - 1.5 V_{BE}$
4	—	Input GND : Input ground pin.	0 V
5	Refer to Pin2	ch.2 Input : This is the amplifier input pins.	—
6	—	Not connected	—
7		ch.2 Output : ch.2 output pin	$V_{CC}/2$

■ Terminal Equivalent Circuit (continued)

Pin No.	Equivalent Circuit	Description	DC Voltage
8		<p>Mute :</p> <p>Mute input pin.</p> <p>Mute 'On' = 5 V</p> <p>Mute 'Off' = 0 V</p>	—
9	—	Output GND : ch.1 & ch.2 output ground.	0 V
10	—	V _{CC} : This is the power supply pin.	typ. : 26 V
11		<p>Standby :</p> <p>This is the standby control pin.</p>	—
12		<p>ch.1 Output :</p> <p>ch.1 output pin</p>	V _{CC} /2

■ Application Circuit Example



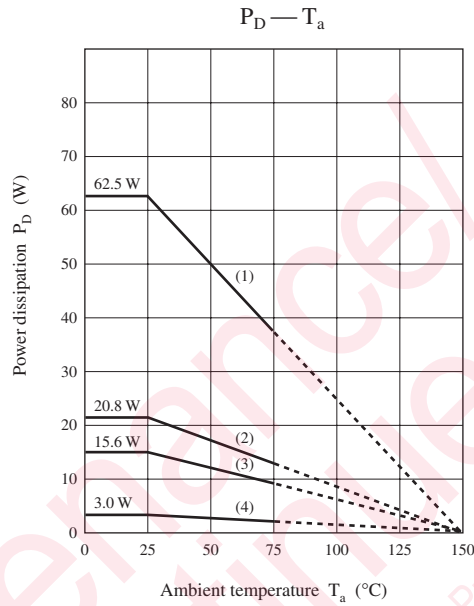
■ Usage Notes

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. Load short protection will only prevent the IC from damaging if operating V_{CC} < 30 V
5. The temperature protection circuit will operate at T_j around 150 °C.

However, if temperature decrease, the protection circuit will automatically be deactivated and resume normal operation.

■ Technical Information

- $P_D - T_a$ Curves of HSIP012-P-0000E



1. $T_C = T_a, 62.5 \text{ W} (\theta_{j-c} = 2 \text{ }^\circ\text{C/W})$
2. $20.83 \text{ W} (\theta_f = 4.0 \text{ }^\circ\text{C/W})$
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. $15.63 \text{ W} (\theta_f = 6.0 \text{ }^\circ\text{C/W})$
With a $100 \text{ cm}^2 \times 2 \text{ mm}$ Al heat sink (not lacquered)
4. 3.0 W at $T_a = 25 \text{ }^\circ\text{C} (\theta_{j-a} = 42 \text{ }^\circ\text{C/W})$
Without heat sink

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