

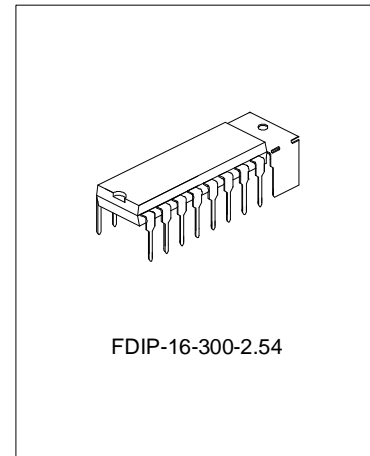
2-CH AUDIO POWER AMPLIFIER(1W X2)

DESCRIPTION

SA7412 is a dual channel audio power amplifier capable of delivering 1W per channel of maximum output power to a 8Ω load using a single 9V supply at 10% THD.

FEATURES

- * Fixed gain
- * Single supply operation
- * Integrated standby and mute function
- * Integrated volume and input switch function
- * Integrated monitor function
- * Internal thermal protection



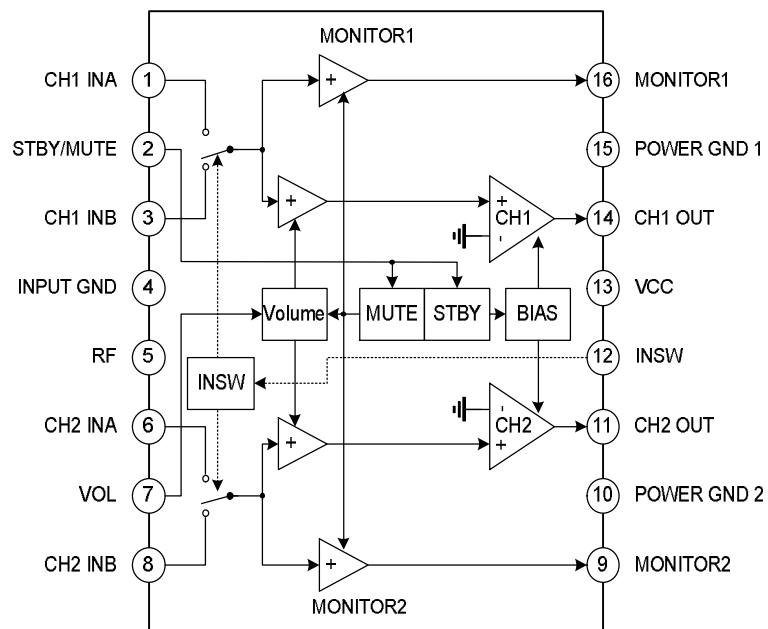
APPLICATIONS

- * Audio power amplifier with high performance
- * TV
- * Monitor

ORDERING INFORMATION

Device	Package
SA7412	FDIP-16-300-2.54

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (T_{amb}=25°C, unless otherwise specified)

Characteristic	Symbol	Value	Unit
Storage Temperature	T _{stg}	-55 ~ +150	°C
Operating Ambient Temperature	T _{opr}	-25 ~ +70	°C
Operating Ambient Pressure	P _{opr}	1.013×10 ⁵ ± 0.61×10 ⁵	Pa
Operating Constant Acceleration	G _{opr}	9810	m/s ²
Operating Shock	S _{opr}	4900	m/s ²
Supply Voltage	V _{CC}	15.0 (*)	V
Supply Current	I _{CC}	1.5	A
Power Dissipation	PD	2 (**)	W
Operating Supply Voltage Range	V _{CC}	7.5 ~ 13.5	V

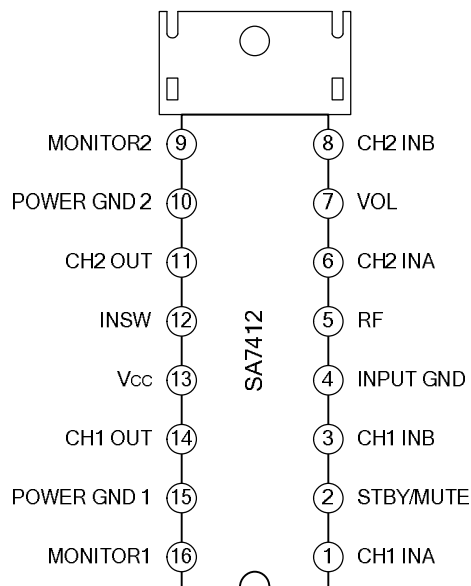
Note: (*) No signal input;

(**) T_{amb}=75°C and without heatsink.

ELECTRICAL CHARACTERISTICS (Unless otherwise specified: V_{CC}= 9V; R_L=8Ω, T_{amb}=25°C, f = 1kHz)

Characteristics	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Quiescent Current	I _{CQ}	STBY/MUTE=5V; No input; V _{OL} =0V	--	32	80	mA
Standby Current	I _{STBY}	STBY/MUTE=0V; No input; V _{OL} =0V	--	5	50	μA
Stand-by On Voltage	V _{stby-on}	V _{OL} =0V; No input; I _{supply} ≅ 50μA	0	--	0.3	V
Stand-by Off Voltage	V _{stby-off}	V _{OL} =0V; No input; I _{supply} ≅ 14mA	1.2	--	--	V
Output End Noise Voltage	V _{no}	STBY/MUTE =5.0V; No input; V _{OL} =0V; R _g =10kΩ	--	0.15	0.5	mV _{rms}
Ripple Rejection Ratio	RR	STBY/MUTE =5.0V; V _{OL} =0V; R _g =10kΩ; V _{ripple} =1V _{rms} ; f _{ripple} =120Hz	30	50	--	dB
Voltage Gain	GV	STBY/MUTE =5.0V; P _o =0.25W; V _{OL} =3.3V	31.5	33.5	35.5	dB
Total Harmonic Distortion	THD	STBY/MUTE =5.0V; P _o =0.25W; V _{OL} =3.3V	--	0.25	0.4	%
Maximum Output Power	P _O	STBY/MUTE =5.0V; THD=10%; V _{OL} =3.3V	0.8	1.0	--	W
Mid Volume Gain	GV _{mid}	STBY/MUTE =5.0V; V _{OL} =1.5V	24.5	27.5	30.5	dB
Min Volume Attenuation Ratio	ATT _{min}	STBY/MUTE=5.0V; V _{OL} =0V~3.3V	65	75	--	dB
Muting Ratio	MR	V _{OL} =3.3V; STBY/MUTE=1.8V~ 5.0V	65	75	--	dB
Mute On Voltage	Mute-on	V _{OL} =3.3V; MR ≅ 65dB	0	--	1.8	V
Mute Off Voltage	Mute-off	V _{OL} =3.3V; GV ≅ 31.5dB	3.8	--	5.0	V
Under Voltage Lock Up	UVLO	STBY/MUTE=5.0V; I _{CQ} <1mA; No Output	--	6.5	7.5	V
Crosstalk Between Channel A and B	CT	STBY/MUTE =5.0V; V _{OL} =3.3V	45	60	--	dB
Channel Balance	CB	STBY/MUTE =5.0V; V _{OL} =3.3V	-1	0	1	dB
Monitor Output Gain	G _{MO}	STBY/MUTE =5.0V; V _{OL} =3.3V	-2	-0.5	2	dB
Voltage Threshold to Select Input A	V _{SWA}	STBY/MUTE =5.0V; V _{OL} =3.3V; P _o =0.25W	0	--	0.6	V
Voltage Threshold to Select Input B	V _{SWB}	STBY/MUTE =5.0V; V _{OL} =3.3V; P _o =0.25W	2.5	--	5.0	V

PIN CONFIGURATION



PIN DESCRIPTION

Pin No.	Pin Name	Pin Description
1	CH1 INA	Input A of Channel 1.
2	STBY/MUTE	Standby and Mute.
3	CH1 INB	Input B of Channel 1.
4	INPUT GND	Signal GND.
5	RF	Ripple Rejection.
6	CH2 INA	Input A of Channel 2.
7	VOL	Volume.
8	CH2 INB	Input B of Channel 2.
9	MONITOR2	Monitor of Channel 2.
10	POWER GND 2	Power GND 2.
11	CH2 OUT	Output of Channel 2.
12	INSW	Switch between INA and INB.
13	VCC	Supply Voltage.
14	CH1 OUT	Output of Channel 1.
15	POWER GND 1	Power GND 1.
16	MONITOR1	Monitor of Channel 1.

FUNCTION DESCRIPTION

1. Standby and Mute Function

The STBY/MUTE controls the amplifier status by three different thresholds:

- ∅ When STBY is between 0V and 0.3V, the bias of amplifier is off and the amplifier is in standby mode.
- ∅ When STBY is between 1.2V and 1.8V, the bias of amplifier is on but the gain of the circuit is zero. The amplifier is in mute mode.
- ∅ When STBY is between 3.8V and 5.0V, the amplifier is play mode.

2. Volume Function

The gain of amplifier can be adjusted by changing the voltage of VOL.

3. INSW Function

The INSW controls the different input of amplifier:

- ∅ When INSW is between 0V and 0.6V, the circuit selects input A.
- ∅ When INSW is between 2.5V and 5.0V, the circuit selects input B.

4. Monitor Function

SA7412 integrates monitor circuits so that we can monitor output wave by MONITOR2 and MONITOR1 at any time.

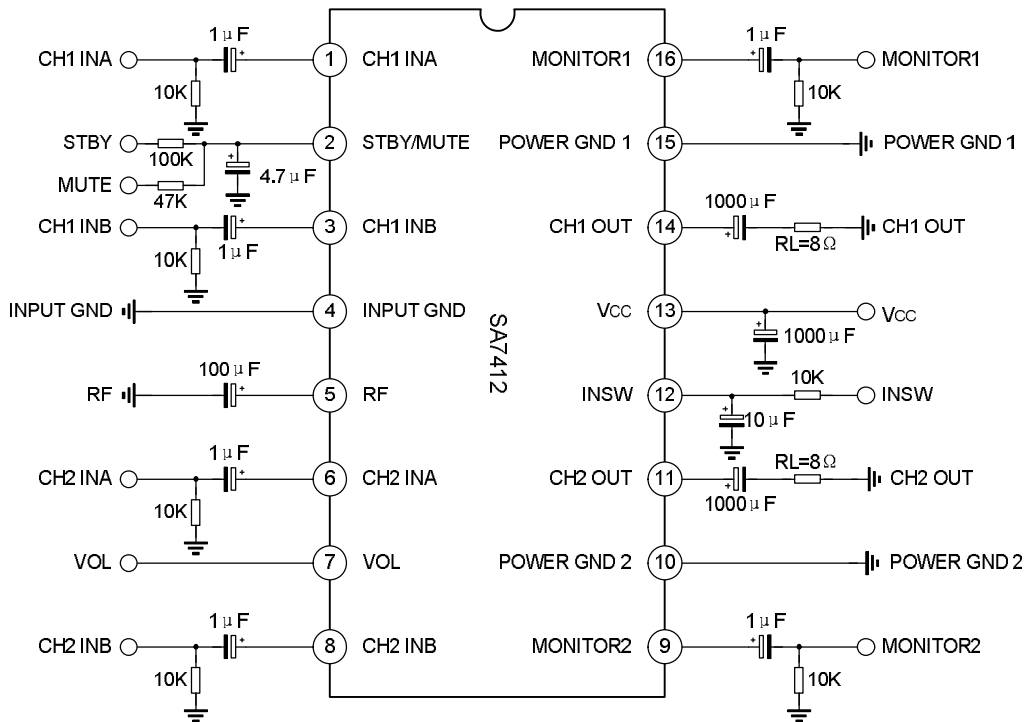
5. Thermal Protection

The thermal protection circuit operates at a T_j of approximately 145°C. The thermal protection circuit is reset automatically when the temperature drops.

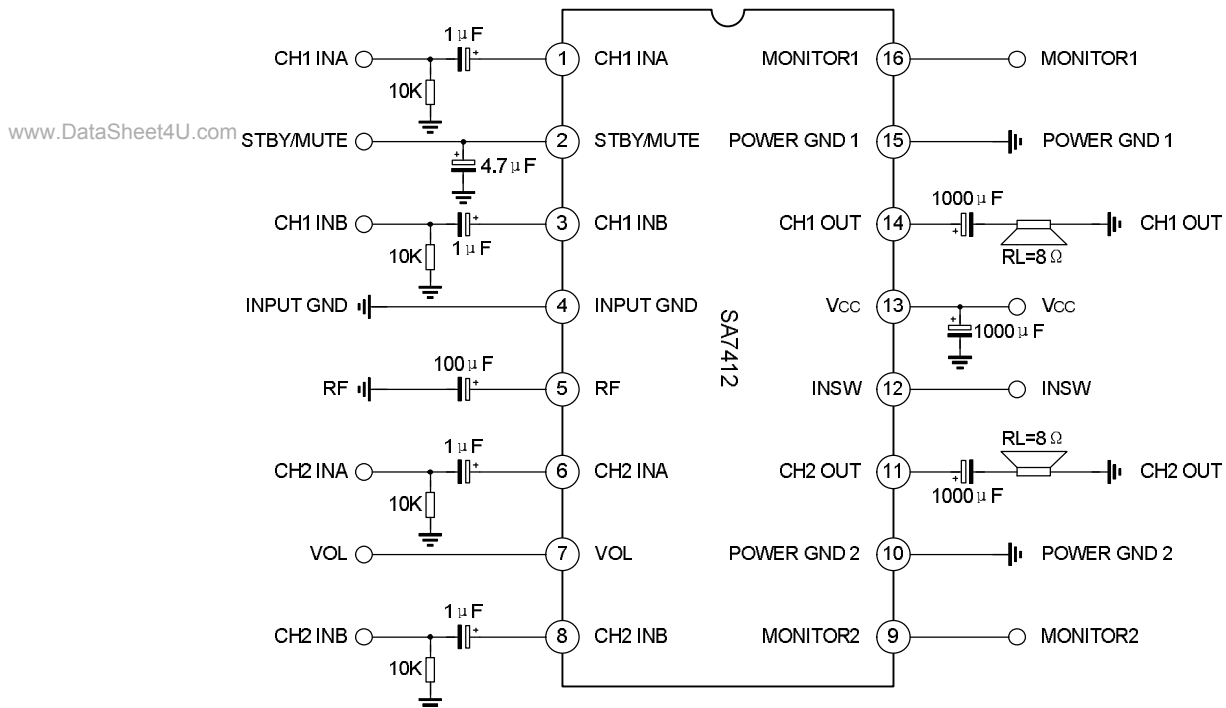
6. Absence of Short Protection

Make sure that the IC is free of output pin short to ground, output pin short to VCC, IC mount in reverse direction and load short because there is no such protection in the IC. The IC will be damaged under such conditions and smoke may be observed.

TEST CIRCUIT



TYPICAL APPLICATION CIRCUIT



PACKAGE OUTLINE

FDIP-16-300-2.54

UNIT: mm

