

AUDIO AMPLIFIER – SS0105

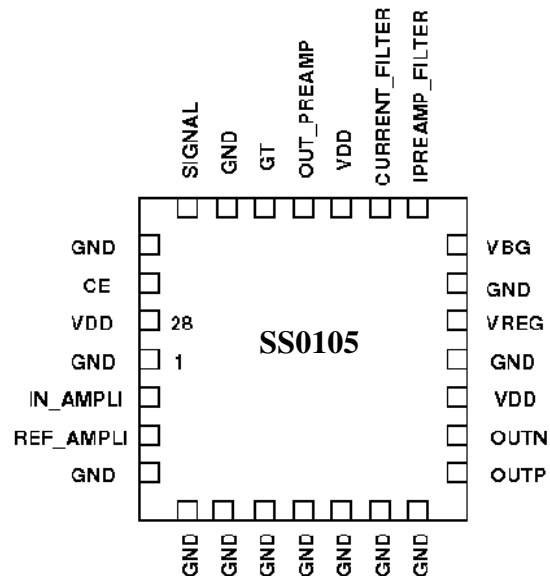
PRODUCT CODE(S): SS0105A

KEY FEATURES

- very low voltage 1 - 1.6 V DC supply
- internal voltage regulator
- microphone supply 0.9 V
- class AB operation
- open drain push-pull output stage
- differential loudspeaker, 80 ohm min
- THD < 1 %
- low quiescent current
- soft startup for popless/clickless operation
- CMOS technology
- die size 1220 um x 1220 um

PACKAGES

- naked die for space saving chip-on-board mounting
- package available on demand

PINOUT

SHORT DESCRIPTION

The SS0105A is a audio amplifier composed of a variable gain preamp and a power amplifier capable of delivering 15 mW of peak output power to a differential loudspeaker (balanced loudspeaker) with nominal impedance down to 80 ohm. The amplifier is tailored for medical hearing aid, being able to supply miniature electret condenser microphones and to drive miniature magnetic balanced receivers from a single zinc-air battery.

SS0105A proofs excellent sound quality and low distortion operation over large supply range for long lifetime application. Capacitors charge transients causing typical annoying click/pop at the startup are not audible thanks to the clickless/popless feature of the SS0105A.

The circuit is designed for chip-on-board direct mounting but packaging can be organized on demand.

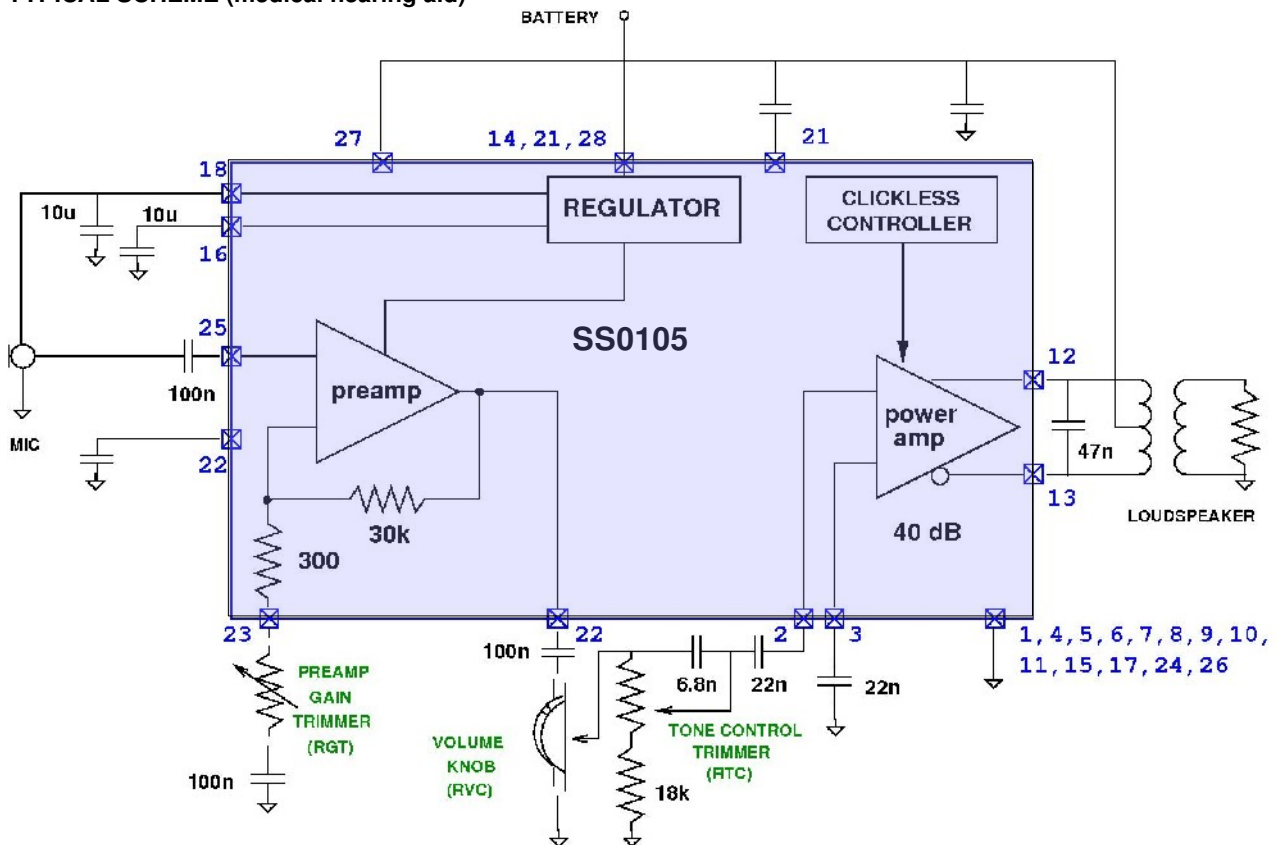
APPLICATIONS

- medical hearing aid audio amplifier
- portable audio systems

PINLIST

#	NAME	DESCRIPTION	NOTE
1	GND	Ground	
2	IN_AMPLI	Power amplifier audio input (from tone control network)	
3	REF_AMPLI	Power amplifier reference input	
4	GND	Ground	
5	GND	Ground	
6	GND	Ground	
7	GND	Ground	
8	GND	Ground	
9	GND	Ground	
10	GND	Ground	
11	GND	Ground	
12	OUTP	Positive output to loudspeaker	

13	OUTN	Negative output to loudspeaker
14	VDD	Power supply
15	GND	Ground
16	VREG	Microphone supply
17	GND	Ground
18	VBG	Bandgap reference voltage
19	IPREAMP_FILTER	Preamp filter
20	CURRENT_FILTER	Soft startup filter
21	VDD	Power supply
22	OUT_PREAMP	Preamplifier output (to volume control network)
23	GT	Gain trimmer
24	GND	Ground
25	SIGNAL	Input signal
26	GND	Ground
27	CE	Chip enable
28	VDD	Power supply

TYPICAL SCHEME (medical hearing aid)

Fig. 1: Typical application.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min	Max
VDD	Supply voltage		3.6
VI	Input voltage		VDD
TS	Storage temperature	-40	125
ESD	Electrostatic discharge robustness	2 kV HBM	

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max
VDD	Supply voltage	1.1	1.6
TJ	Operating junction temperature	- 20	60

ELECTRICAL CHARACTERISTICS (PRELIMINARY RESULTS)

Conditions: temperature 25 °C, VDD=1.3 V, RGT=0, RVC=10k, loudspeaker 80 ohm differential.

Parameter	Condition	Min	Typ	Max	Unit	Note
Preamp gain	PRG RGT=0	40	41	42	dB	
Input common mode	CMIN		any		V	AC coupling required
Microphone supply voltage	VREG	0.91	0.93	0.95	V	
Input referred noise	IRN		3		uVrms	note 1
Preamp THD	PRTHD Freq=1kHz			0.5	%	note 2
Input impedance	ZIN DC measurement	29	30	31	kΩ	
Power amplifier gain	PAG Freq=1kHz	39	40	42	dB	
Quiescent current	IQ		1.5		mA	
Maximum drive current	IMAX THD=10%, Vout=1.36 Vpk		17.5		mA	
Power amplifier input impedance	PAZIN	25	27	30	kΩ	
Overall THD	THD Freq=1kHz		1		%	note 3

note 1	Integrated over the bandwidth 0.2-10 kHz
note 2	Preamp output peak amplitude 140mV, RVC = 10 kΩ
note 3	Output peak amplitude 0.9 V, Rload = 160 Ω diff. (loudspeaker)

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