Panasonic

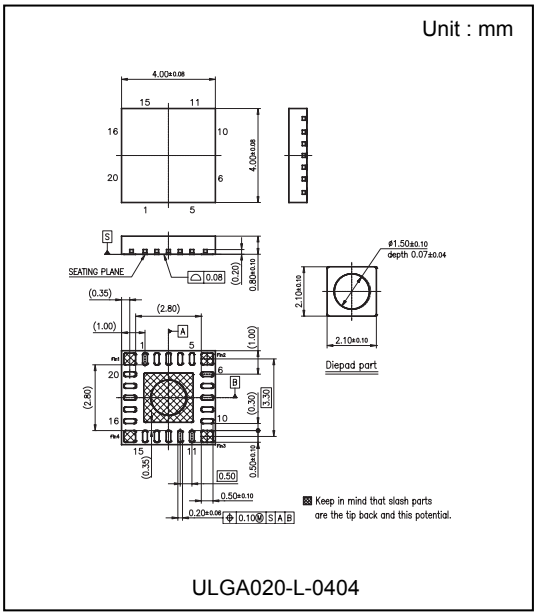
Product News

Ideal for mobile equipment

Monaural Audio Power IC with Built-in AGC
AN12945A

■ Overview

The AN12945A is a monaural BTL amplifier incorporating an automatic gain control (AGC) function that prevents speaker clipping. The AGC On level can be set to a desired threshold through external resistor value adjustment. Signal circuits except for the output stage may be driven at 3V. The small 4mm × 4mm package helps reduce equipment size and weight.



■ Feature

- 2W monaural BTL amplifier
(Vcc = 3.3V, VccSP = 5V, RL = 4Ω, THD = 10%)
- AGC circuitry prevents output clipping
- Standby function
- Speaker power save function
- AGC On/Off function
- AGC On level control function
- Small package: ULGA020-L-0404

■ Applications

Mobile equipment such as cellular phones and PDAs

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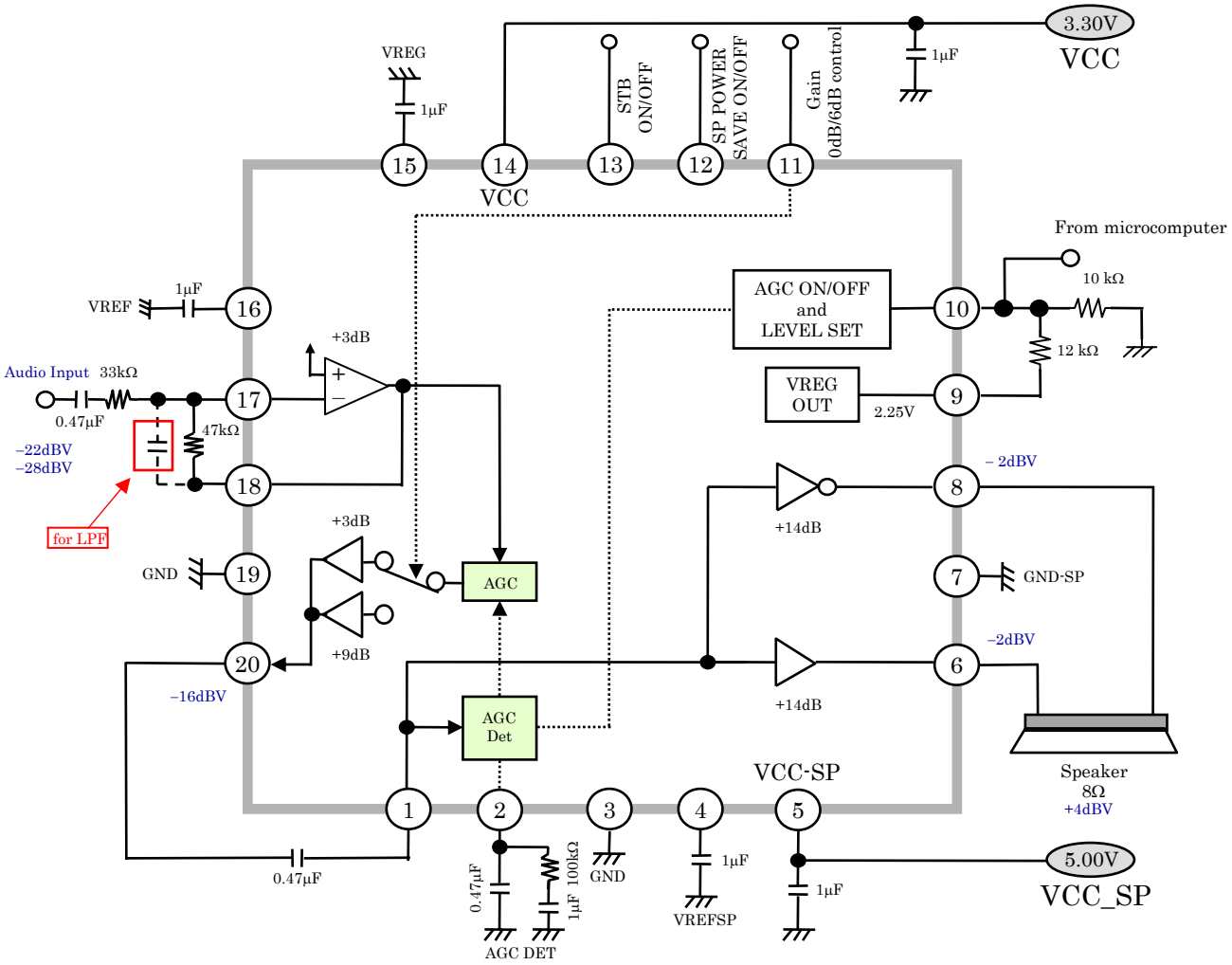
■ Block Diagram



Note) This circuit and these circuit constants show an example and do not guarantee the design an a mass-production set.

■ Pin Descriptions

Pin No.	Description	Pin No.	Description
1	SP amp. input	11	Gain change 0dB/6dB
2	Detection terminal for AGC	12	SP power save On/Off
3	GND	13	Standby On/Off control
4	VREF for SP amp. system	14	VCC
5	VCC for SP amp. system	15	Ripple removal condenser terminal for the regulator
6	SP amp. Output (+)	16	VREF
7	GND for SP amp. system	17	Input terminal (negative return terminal)
8	SP amp. Output (–)	18	First rank amplifier output
9	Regulator voltage output	19	GND
10	AGC-ON level setup and AGC On/Off	20	AGC output

■ Absolute maximum Ratings

Parameter	Symbol	Rating	Unit	Note
Supply voltage	V_{CC}	5.75	V	*1
	$V_{CC\ SP}$	5.75		
Supply current	I_{CC}	–	A	–
Power dissipation	P_D	208	mW	*2
Storage temperature	T_{opr}	–20 to +75	°C	*3
Operating ambient temperature	T_{stg}	–55 to +150	°C	*3

Note1) The values the condition not exceeding the above absolute maximum ratings and the power dissipation.
Note2) The power dissipation shown is the value at Ta=25 °C for the independent (unmounted) IC package without a heat sink.
Note3) Except for the power dissipation, operation ambient temperature and storage temperature, all ratings are for Ta=25 °C.

■ Operating Supply Voltage Range

Parameter	Symbol	Rating	Unit	Note
Supply voltage range	V_{CC}	3.0 to 5.5	V	—
	V_{CCSP}	3.0 to 5.5	V	*

Note) * : The values the condition not exceeding the above absolute maximum ratings and the power dissipation.

■Electrical Characteristics

(unless otherwise specified, ambient temperature is 25°C± 2°C,V_{CC}=3.3V,V_{CC}-SP=5.0V)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Circuit current						
Circuit current 1A at non-signal	I_{VCC1A}	V_{CC} = 3.3 V, Non-signal STB = Off, AGC= On, SP = On	2.2	4.5	6.8	mA
Circuit current 2A at non-signal	I_{VCC2A}	V_{CC} _SP= 5.0V, Non-signal, STB = Off, AGC=On, SP = On	1.5	3.0	4.5	mA
Circuit current 1B at non-signal （SP power save= On）	I_{VCC1B}	V_{CC} = 3.3 V, Non-signal STB = Off, AGC= On, SP = Off	2.0	4.0	6.0	mA
Circuit current 2B at non-signal （SP power save= On）	I_{VCC2B}	V_{CC} _SP= 5.0V, Non-signal STB = Off, AGC=On, SP = Off	150	300	450	mA
Circuit current 1C at non-signal （Standby = On）	I_{VCC1C}	V_{CC} = 3.3 V, Non-signal STB = On, AGC= On, SP = Off	—	10	50	μA
Circuit current 2C at non-signal （Standby = On）	I_{VCC2C}	V_{CC} _SP= 5.0V, Non-signal STB = On, AGC=On, SP = Off	—	10	50	μA
Speaker amplifier（Input : 17Pin to Output : 6,8PIN）						
Audio output level	VOSP	Vin=-28.0dBV,f=1kHz RL=8Ω	2.0	4.0	6.0	dBV
Audio output distortion	THSP	Vin=-28.0dBV,f=1kHz THD 5 th, RL=8Ω	—	0.05	0.50	%
Audio output noise	VNSP	Non-signal A curve filter, RL=8Ω	—	-68.0	-62.0	dBV
Maximum output electric power 1	VM8SP	f=1kHz,at THD=10% RL=8 Ω, AGC=OFF	0.7	1.0	—	W
Maximum output electric power 2	VM4SP	f=1kHz,at THD=10% RL=4 Ω, AGC=OFF	1.4	2.0	—	W
AGC output level	VAGSP	Vin=-12.0dBV,f=1kHz RL=8 Ω, V10=1.0V	5.5	7.0	8.5	dBV
Maximum input level	VINMA	f = 1 kHz, V10=1.0V , THD = 1%,THD 5 th	-10	—	—	dBV

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