

AN7511

1-W BTL audio power amplifier

■ Overview

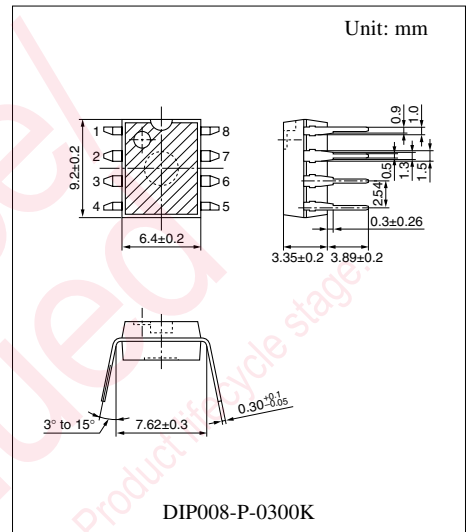
The AN7511 is an audio power amplifier IC with 1-ch output. The BTL (Balanced Transformer-Less) method can provide fewer external parts and more easy design for applications.

■ Features

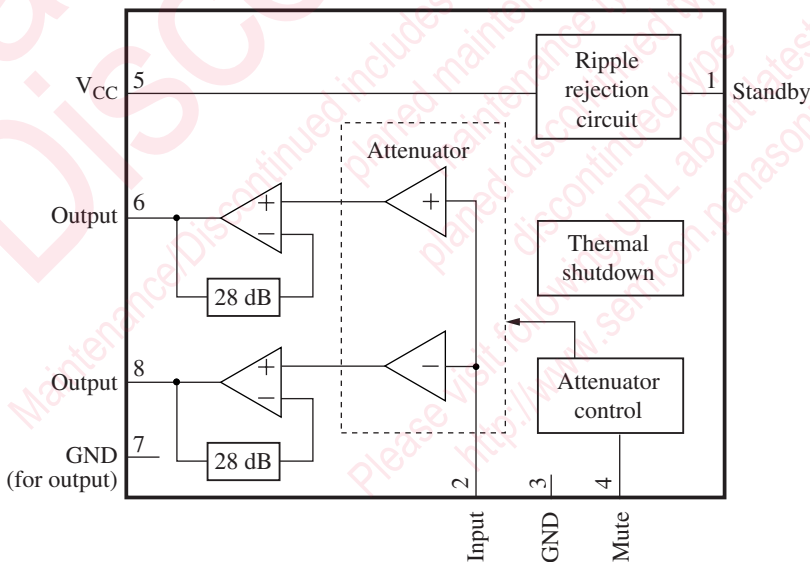
- 1-W output (8 Ω) with supply voltage of 5 V
- On-chip standby function
- On-chip muting function

■ Applications

- Televisions, radios, and personal computers



■ Block Diagram



■ Pin Descriptions

Pin No.	Description
1	Standby (standby state if this pin is open.)
2	Input
3	Ground (for input)
4	Muting (muting on if this pin is open.)
5	Supply voltage
6	+ Output
7	Ground (for output ch.1)
8	- Output

■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage *2	V_{CC}	14	V
Supply current	I_{CC}	1.0	A
Power dissipation *3	P_D	541	mW
Operating ambient temperature *1	T_{opr}	-25 to +70	°C
Storage temperature *1	T_{stg}	-55 to +150	°C

Note) *1: Except for the operating ambient temperature and storage temperature, all ratings are for $T_a = 25^\circ\text{C}$.

*2: At no signal

*3: The power dissipation shown is the value for $T_a = 70^\circ\text{C}$.

■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V_{CC}	3.5 to 13.5	V

■ Electrical Characteristics at $V_{CC} = 5.0\text{ V}$, $R_L = 8\ \Omega$, $f = 1\text{ kHz}$, $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$

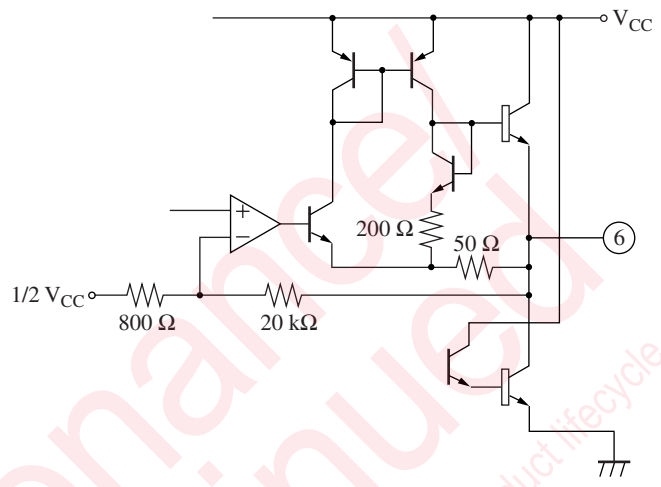

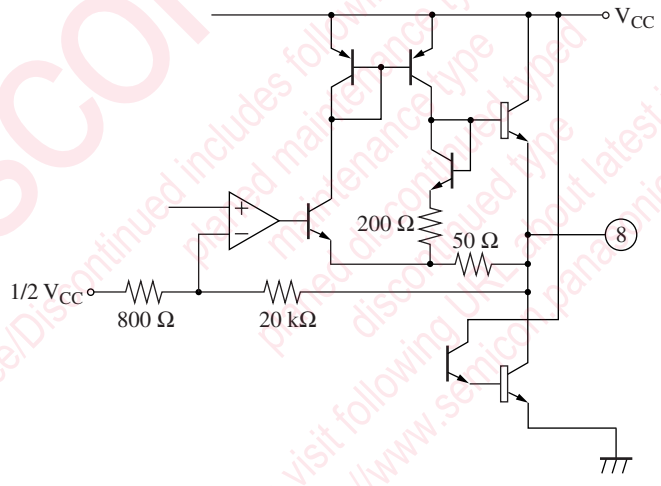
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Quiescent circuit current	I_{CQ}	$V_{IN} = 0\text{ mV}$	—	30	60	mA
Standby current	I_{STB}	$V_{IN} = 0\text{ mV}$	—	1	10	μA
Output noise voltage *	V_{NO}	$R_g = 10\text{ k}\Omega$	—	0.14	0.4	mV[rms]
Voltage gain	G_V	$P_O = 0.25\text{ W}$	32	34	36	dB
Total harmonic distortion	THD	$P_O = 0.25\text{ W}$	—	0.05	0.5	%
Maximum output power	P_{OI}	THD = 10%	0.8	1.1	—	W
Ripple rejection ratio *	RR	$R_g = 10\text{ k}\Omega$, $V_R = 0.5\text{ V[rms]}$, $f_R = 120\text{ Hz}$	30	50	—	dB
Output offset voltage	V_{OFF}	$R_g = 10\text{ k}\Omega$	-300	0	300	mV
Muting effect *	MT	$P_O = 0.25\text{ W}$	70	86	—	dB

Note) *: In measuring, the filter for the range of 15 Hz to 30 kHz (12 dB/OCT) is used.

■ Terminal Equivalent Circuits

Pin No.	Pin name	Equivalent circuit	Voltage
1	Standby pin		5 V
2	Input pin		—
3	GND		0 V
4	Muting pin		—

■ Terminal Equivalent Circuits (continued)

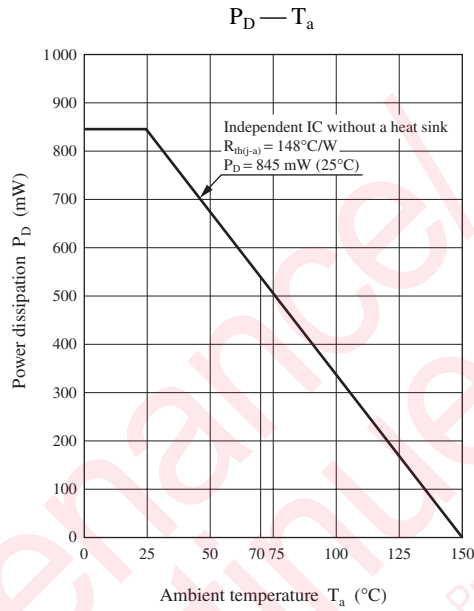
Pin No.	Pin name	Equivalent circuit	Voltage
5	V_{CC}	—	5.0 V
6	+ Output pin		2.15 V
7	GND		0 V
8	- Output pin		2.15 V

■ Usage Notes

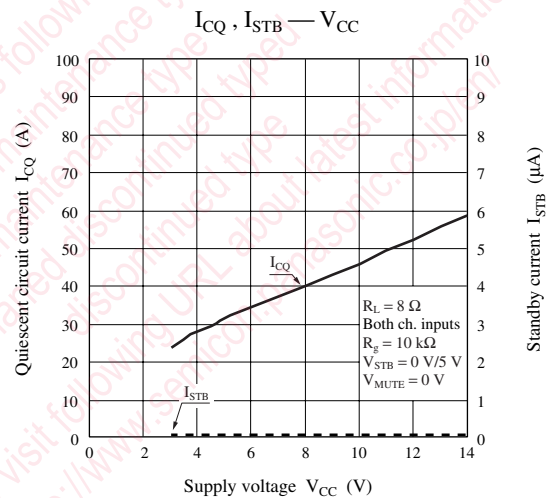
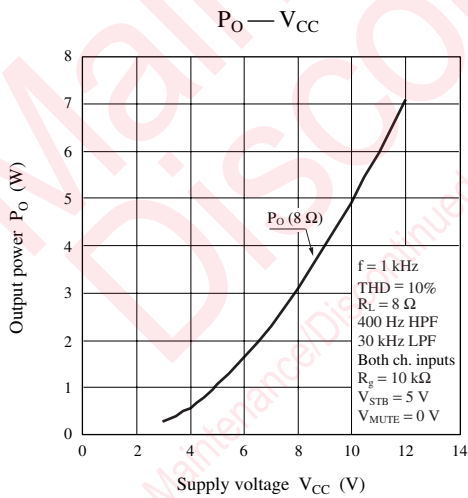
- Please avoid the short circuit to V_{CC} , ground, or load short circuit.
- Please connect the cooling fin with the GND potential.
- The thermal shutdown circuit operates at about $T_j = 150^{\circ}\text{C}$. However, the thermal shutdown circuit is reset automatically if the temperature drops.
- Please carefully design the heat radiation especially when you take out high power at high V_{CC} .
- Please connect only the ground of signal with the signal GND of the amplifier in the previous stage.

■ Technical Data

1. Package power dissipation



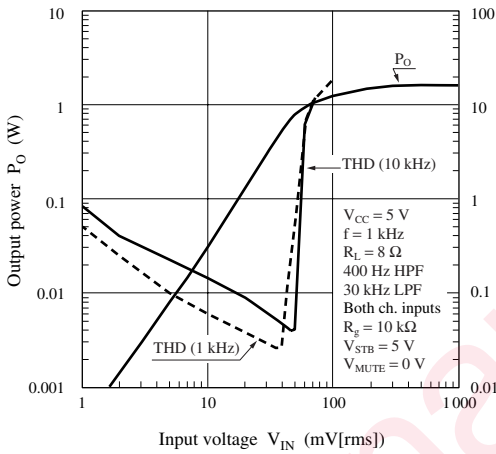
2. Main characteristics



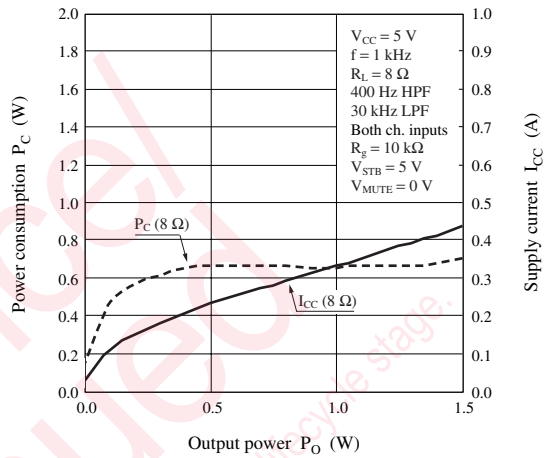
■ Technical Data (continued)

2. Main characteristics (continued)

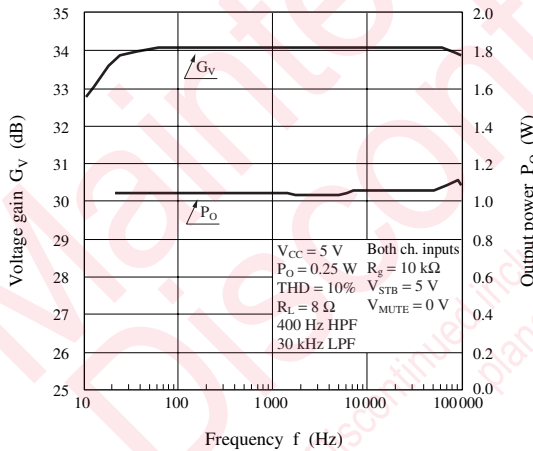
P_O , THD — V_{IN}



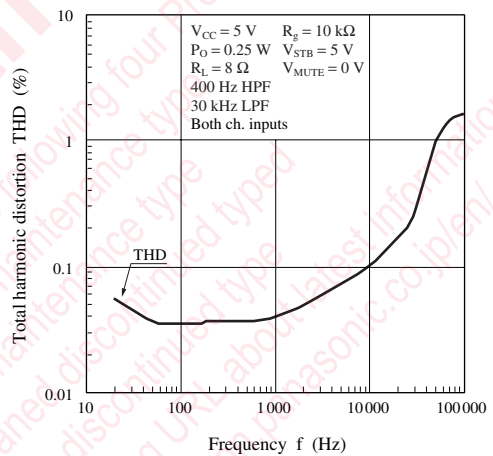
P_C , I_{CC} — P_O



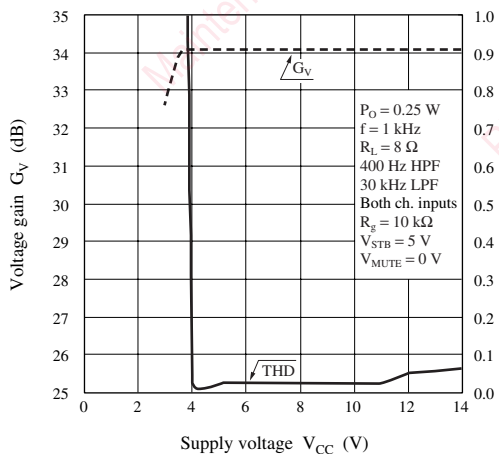
G_V , P_O — f



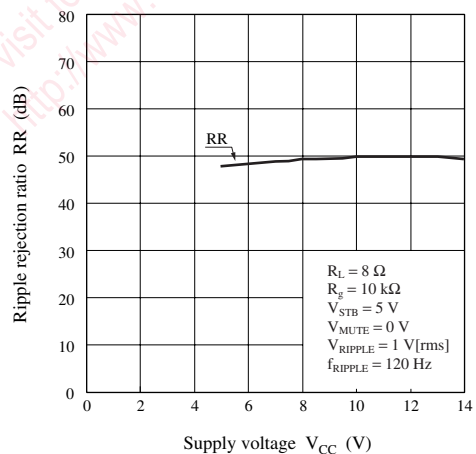
THD — f



G_V , THD — V_{CC}



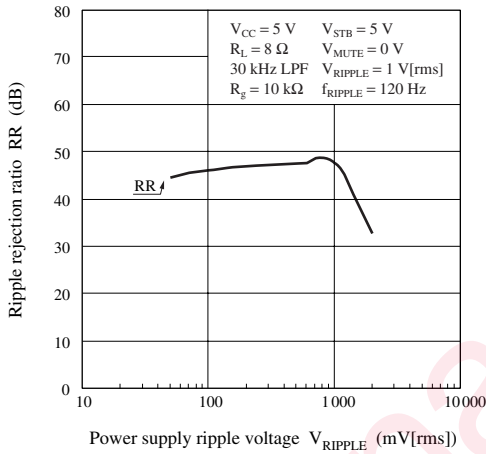
RR — V_{CC}



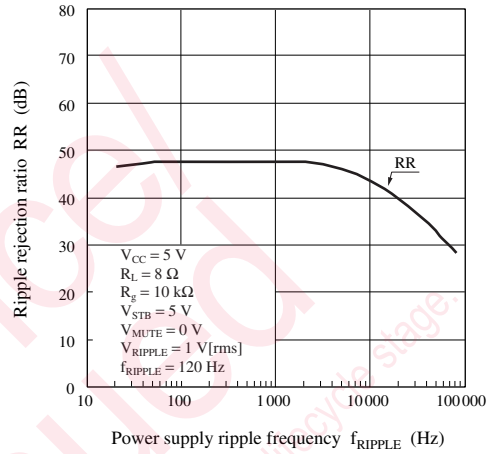
■ Technical Data (continued)

2. Main characteristics (continued)

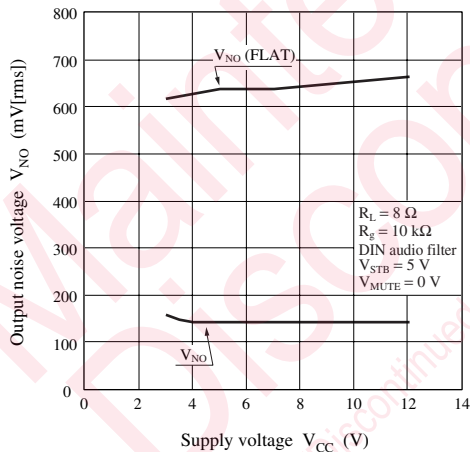
RR — V_{RIPPLE}



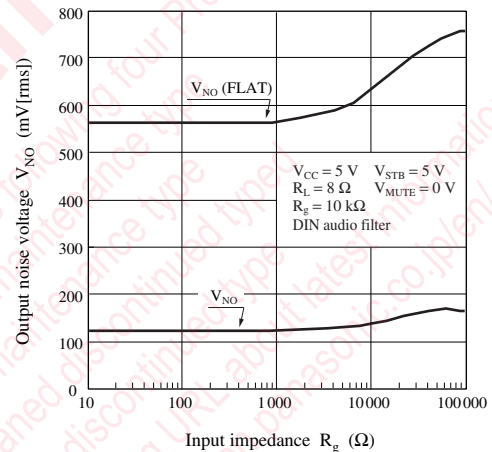
RR — f_{RIPPLE}



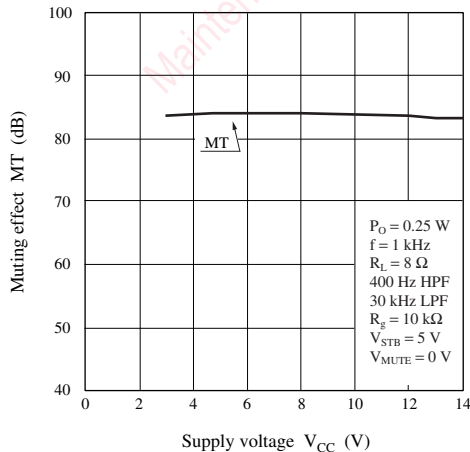
V_{NO} — V_{CC}



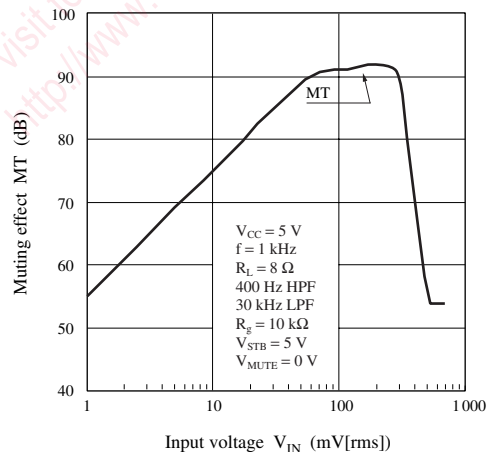
V_{NO} — R_{g}



MT — V_{CC}

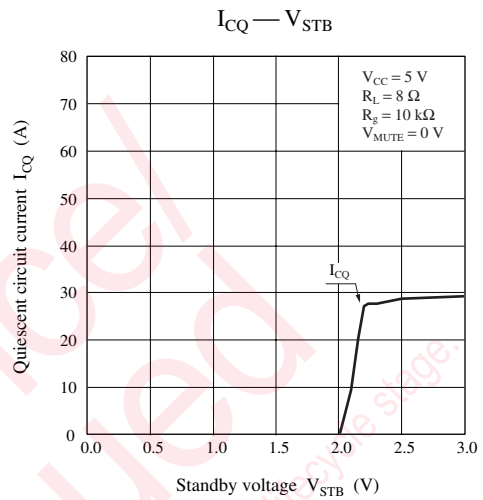
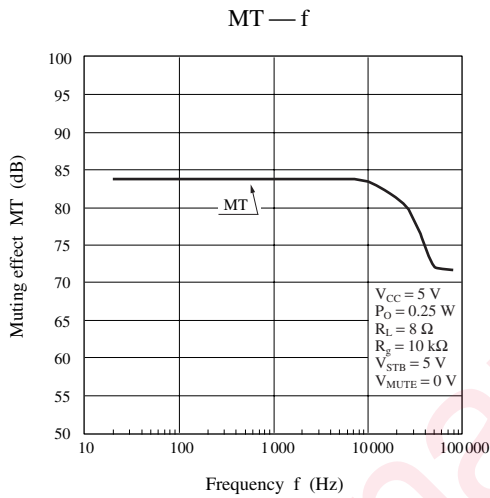


MT — V_{IN}

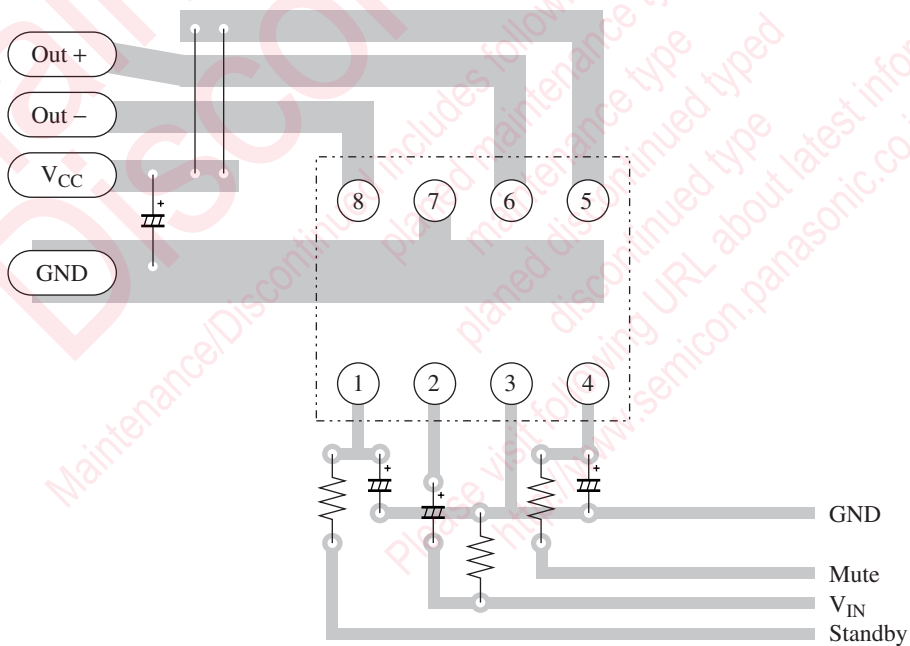


■ Technical Data (continued)

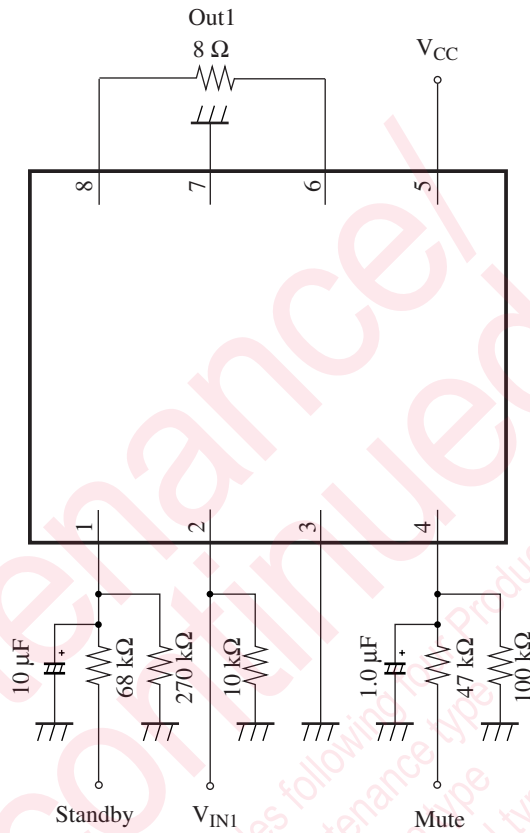
2. Main characteristics (continued)



3. Example of PCB pattern



■ Application Circuit Example



Maintenance/Discontinued includes following type product lifecycle stage.
 planned maintenance type
 maintenance type
 planned discontinued type
 discontinued type
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standard applications or general electronic equipment (such as office
and household appliances).

ng applications:

biles, traffic control equipment, combustion equipment, life support
reliability are required, or if the failure or malfunction of the prod-

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bsolute maximum rating and the guaranteed operating conditions
(.). Especially, please be careful not to exceed the range of absolute
er-off and mode-switching. Otherwise, we will not be liable for any


take into the consideration of incidence of break down and failure
n the systems such as redundant design, arresting the spread of fire
al injury, fire, social damages, for example, by using the products.

own and characteristics change due to external factors (ESD, EOS,
mounting or at customer's process. When using products for which
shelf life and the elapsed time since first opening the packages.

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