Structure : Silicon Monolithic Integrated Circuit

Product name : Pre-amplifier built-in ALC

Type : **BA3308,BA3308F,BA3308FV**

Features :
1) Built-in ALC rectification diode
2) Wide operating power supply voltage range (V_{CC}=4.5~14 V)
3) Very little current consumption (I_Q=3.5mA)
4) High gain (G_{VO}=80dB)
5) Low distortion (THD=0.1%)
6) Low noise (V_{NIN}=1μV_{rms})
7) Input coupling capacitor not needed
8) Good ALC channel balance
9) Built-in power supply mute circuit
10) Dynamic range of ALC can be changed by attaching input resistance.

○Absolute Maximum Ratings (Ta=25℃)

Parameter		Symbol	Limits	Unit
Supply voltage		V_{CC}	16	V
Power dissipation	BA3308	Pd	550 *1	mW
	BA3308F		450 *2	
	BA3308FV		350 *3	
Operating temperature		Topr	−25～+75	℃
Storage temperature		Tstg	−55～+125	℃

*1 Deratings is done at 5.5mW/℃ above Ta=25℃
*2 Deratings is done at 4.5mW/℃ above Ta=25℃.
(When mounted on a 70mm × 70mm × 1.6mm PCB board)
*3 Deratings is done at 3.5mW/℃ above Ta=25℃

○Operating Range (Ta=25℃)

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage	V_{CC}	4.5	−	14	V

※This product is not designed for protection against radioactive rays.

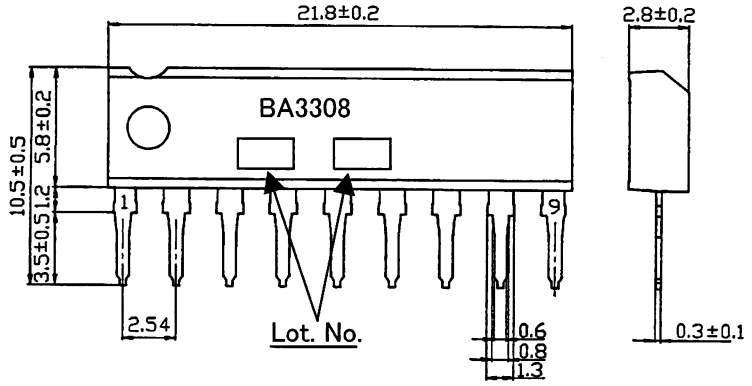
Application example

The product described in this specification is designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys). Should you intend to use this product with equipment or devices which require an extremely high level or reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices),please be sure to consult with our sales representative in advance.

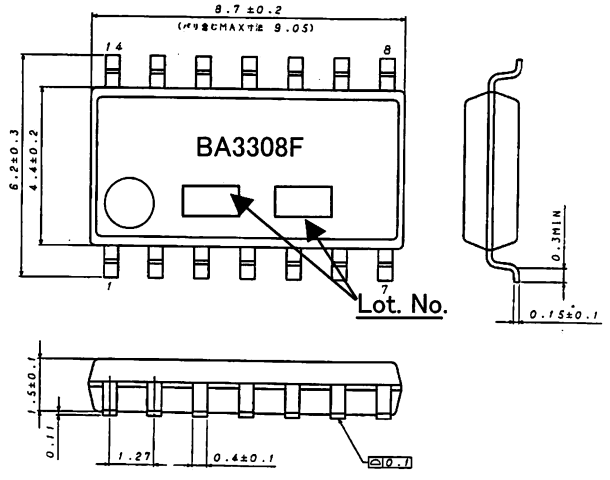
○Electrical characteristics (Unless otherwise noted, Ta=25°C, Vcc=7.0V, f=1kHz, BPF20～20kHz)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Quiescent current	I_Q	1.5	3.5	4.5	mA	V_{IN}=0V_{rms}
Open loop voltage gain	G_{VO}	70	80	—	dB	V_{OUT}=−10dBV
Total harmonic distortion	THD	—	0.1	0.3	%	NAB34dB、V_{OUT}=40mV_{rms}
Input resistance	R_{IN}	15	25	45	kΩ	f=1kHz
Maximum output voltage	V_{OM}	0.6	1.2	—	V_{rms}	THD=1%
Input conversion noise voltage	V_{NIN}	—	1	2	μV_{rms}	Rg=2.2kΩ, Referenced to NAB 34dB at 1kHz
ALC range	ALC	40	45	—	dB	Rg=3.9 kΩ、V_{IN}=-70dBV reference , THD=3%
ALC channel balance	ΔALC	—	0	2.5	dB	V_{IN}=−60dBV,−30dBV
Channel separation	CS	60	75	—	dB	f=1kHz、V_O=0dBV,NAB 34dB

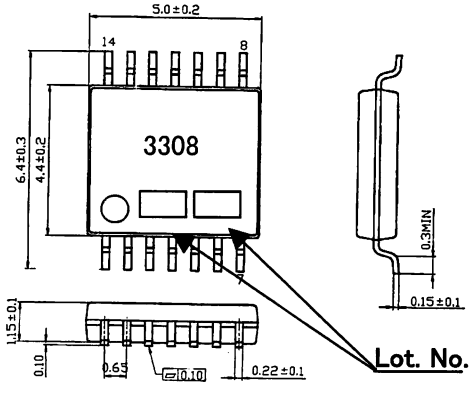
○Outer dimensions



BA3308: SIP9 (Unit: mm)



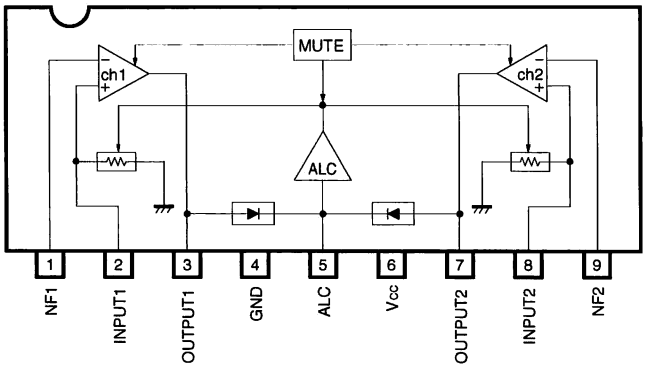
BA3308F: SOP14 (Unit: mm)



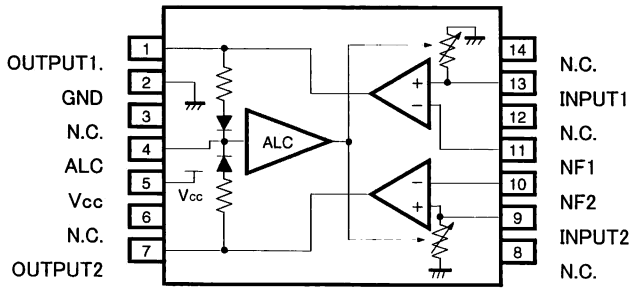
BA3308FV: SSOP-B14 (Unit: mm)

○Block diagram

BA3308



BA3308F, BA3308FV



○Pin number and pin name

BA3308

Pin No.	Pin name
1	NF1
2	INPUT1
3	OUTPUT1
4	GND
5	ALC
6	Vcc
7	OUTPUT2
8	INPUT2
9	NF2

BA3308F, BA3308FV

Pin No.	Pin name
1	OUTPUT1
2	GND
3	N.C.
4	ALC
5	Vcc
6	N.C.
7	OUTPUT2
8	N.C.
9	INPUT2
10	NF2
11	NF1
12	N.C.
13	INPUT1
14	N.C.

○Cautions on use

1) Absolute maximum ratings
If applied voltage, operating temperature range, or other absolute maximum ratings are exceeded, the LSI may be damaged. Do not apply voltages or temperatures that exceed the absolute maximum ratings. If you think of a case in which absolute maximum ratings are exceeded, enforce fuses or other physical safety measures and investigate how not to apply the conditions under which absolute maximum ratings are exceeded to the LSI.

2) GND potential
Make the GND pin voltage such that it is the lowest voltage even when operating below it. Actually confirm that the voltage of each pin does not become a lower voltage than the GND pin, including transient phenomena.

3) Thermal design
Perform thermal design in which there are adequate margins by taking into account the allowable power dissipation in actual states of use.

4) Shorts between pins and miss-installation
When mounting the LSI on a board, pay adequate attention to orientation and placement discrepancies of the LSI. If it is miss-installed and the power is turned on, the LSI may be damaged. It also may be damaged if it is shorted by a foreign substance coming between pins of the LSI or between a pin and a power supply or a pin and a GND.

5) Operation in strong magnetic fields
Adequately evaluate use in a strong magnetic field, since there is a possibility of malfunction.

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