

Structure : Silicon Monolithic Integrated Circuit

Product : 2ch Volume

Type : **BD3812F**

Function : •Master volume (0 to -103dB, MUTE, 1dB/STEP)
 •Output gain (0, 6 to 18dB, 2dB/STEP)

○絶対最大定格 (Ta=25°C)

Item	Symbol	Rating	Unit
Power Supply voltage	VCC-VEE	15	V
Input voltage	VIN	VCC+0.3 to VEE-0.3	V
Power dissipation	Pd	450※	mW
Operating temperature	Topr	-20 to +75	°C
Storage temperature	Tastg	-55 to +125	°C

※This value decreases 4.5mW/°C for Ta=25°C or more.

A standard board, 70 × 70 × 1.6mm, shall be mounted.

○Operating Voltage Range (Basic operation shall be available upon Ta=25°C.)

	Symbol	Range	Unit
Power supply (Positive)	VCC-GND	5 to 7.3	V
Power supply (Negative)	VEE-GND	-5 to -7.3	V

Status of this document

The Japanese version of this document is the formal specification.

A customer may use this translation version only for a reference to help reading the formal version.

If there are any differences in translation version of this document, formal version takes priority.

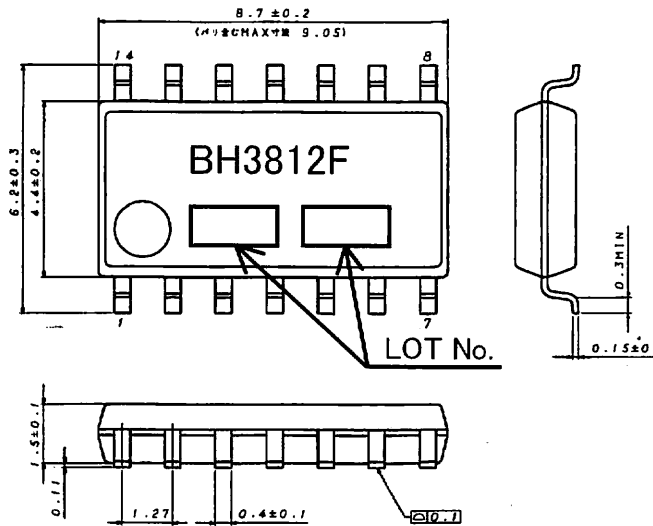
○Electrical Characteristics

Unless specified particularly, $T_a=25^{\circ}\text{C}$, $V_{CC}=7\text{V}$, $V_{EE}=-7\text{V}$, $f=1\text{kHz}$, $V_{IN}=1\text{V}_{\text{rms}}$, $R_L=10\text{k}\Omega$, $R_g=600\Omega$
 Master volume=0dB, Output gain=0dB

Parameter	Symbol	Limit			Unit	Conditions
		Min	Typ	Max		
Circuit current	I_Q	—	2	6	mA	No signal
Output voltage gain	G_v	-2	0	2	dB	
Total harmonic distortion ratio	THD	—	0.005	0.09	%	BW=400 to 30kHz
Maximum output voltage	V_{omax}	3.4	4.2	—	V _{rms}	THD=1%
Output noise voltage	V_{no}	—	1.2	5	μV_{rms}	$R_g=0\Omega$, BW=IHF-A
Input impedance	R_{in}	20	30	40	k Ω	
Cross-talk between channels	CTC	—	-100	-70	dB	$R_g=0\Omega$, BW=IHF-A
Volume control range	GVR	-106	-103	-100	dB	$V_{IN}=3\text{V}_{\text{rms}}$
Volume set error 1	VE1	-2	0	2	dB	0 to -53dB, $V_{IN}=3\text{V}_{\text{rms}}$
Volume set error 2	VE2	-3	0	3	dB	-54 to -103dB, $V_{IN}=3\text{V}_{\text{rms}}$
Maximum attenuation	V_{min}	—	-118	-105	dB	BW=IHF-A, $V_{IN}=3\text{V}_{\text{rms}}$
Output gain control range	GOG	16	18	20	dB	$V_{IN}=0.4\text{V}_{\text{rms}}$
Output gain set error	GOE	-2	0	-2	dB	$V_{IN}=0.4\text{V}_{\text{rms}}$

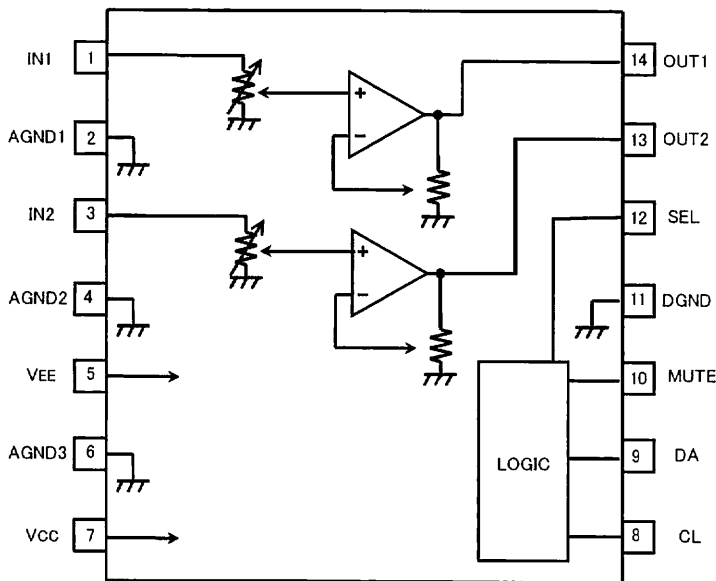
※This product is not of "anti radiation design".

○Outline Dimension



SOP-14 (Unit:mm)

○Block Diagram



○Terminal Number/ Terminal Name

Terminal Number	Terminal Name
1	IN1
2	AGND1
3	IN2
4	AGND2
5	VEE
6	AGND3
7	VCC
8	CL
9	DA
10	MUTE
11	DGND
12	SEL
13	OUT2
14	OUT1

(Note) Input impedance changes between 30kΩ and 36kΩ by setting of volume data. However, resistor is typical value.

○Cautions of 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) VEE potential

Make the VEE pin voltage such that it is the lowest voltage even when operating below it.

(3) Thermal design

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

(4) Operation in strong magnetic fields

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

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