Structure : Silicon Monolithic Integrated Circuit

Product : 6ch Volume with 8ch input selector

Type : **BD3811K1**

Function :
- 6ch Master volume(0 to −103dB、MUTE、1dB/STEP)
- Tone(−14dB to +14dB、2dB/STEP)、Bass boost(0 to 12dB、4dB/STEP)

○Absolute Maximum Ratings (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	1200※	mW
Operating temperature	Topr	−20 to +75	°C
Storage temperature	Tastg	−55 to +125	°C

※This value decreases 12mW/°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.

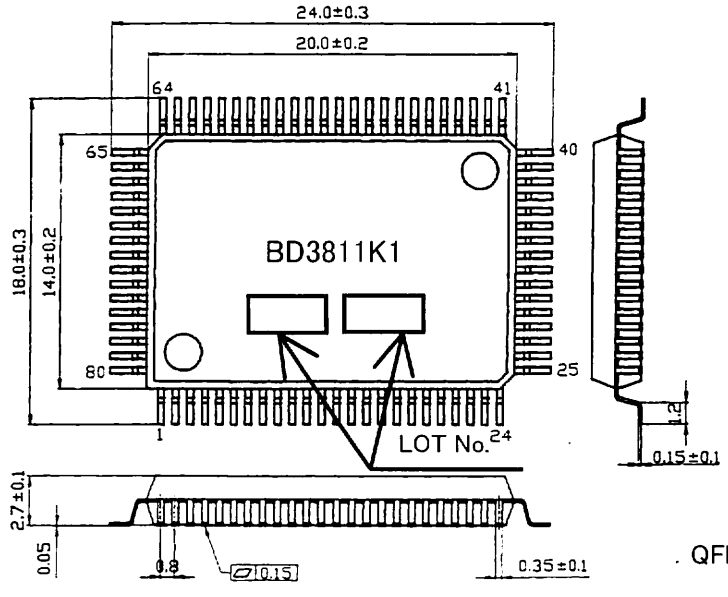
○Electrical Characteristics

Unless specified particularly, Ta=25℃, Vcc=7V, VEE=−7V, f=1kHz, VIN=1Vrms, RL=10kΩ, Rg=600Ω
Input ATT=0dB, Input gain=0dB, Master volume=0dB, Output gain=0dB, Bass, Treble and bass boost=0dB.

Parameter	Symbol	Limit			Unit	Conditions
		Min	Typ	Max		
Circuit current	IQ	—	15	30	mA	No signal
Output voltage gain	Gv	−2	0	2	dB	
Total harmonic distortion ratio	THD	—	0.005	0.09	%	BW=400 to 30kHz
Maximum output voltage	Vomax	3.4	4.2	—	Vrms	THD=1%
Output noise voltage	Vno	—	2.5	12	μVrms	Rg=0Ω, Tone: ON BW=IHF-A
		—	2.0	9.0	μVrms	Rg=0Ω, By Pass mode BW=IHF-A
Input impedance	Rin	28	47	70	kΩ	
Cross-talk between channels	CTC	—	−100	−70	dB	Rg=0Ω, BW=IHF-A
Cross-talk between selectors	CTS	—	−100	−70	dB	Rg=0Ω, BW=IHF-A
RECOUT Voltage gain	GVR	−2	0	2	dB	RL=47kΩ, VIN=0.4Vrms
Volume control range	VOL	−106	−103	−100	dB	VIN=3Vrms
Maximum attenuation	Vmin	—	−118	−105	dB	BW=IHF-A, VIN=3Vrms
Input ATT control range	GIA	−20	−18	−16	dB	
Input gain control range	GIG	4	6	8	dB	VIN=0.4Vrms
Treble maximum boost gain	GTB	12	14	16	dB	f=15kHz, VIN=0.4Vrms
Treble maximum cut gain	GTC	−16	−14	−12	dB	f=15kHz, VIN=0.4Vrms
Bass maximum boost gain	GBB	12	14	16	dB	fo=100Hz, VIN=0.4Vrms
Bass maximum cut gain	GBC	−16	−14	−12	dB	fo=100Hz, VIN=0.4Vrms
Bass boost maximum gain	GBBB	10	12	14	dB	fo=70Hz, VIN=0.4Vrms
Output gain control range	GOG	16	18	20	dB	VIN=0.4Vrms

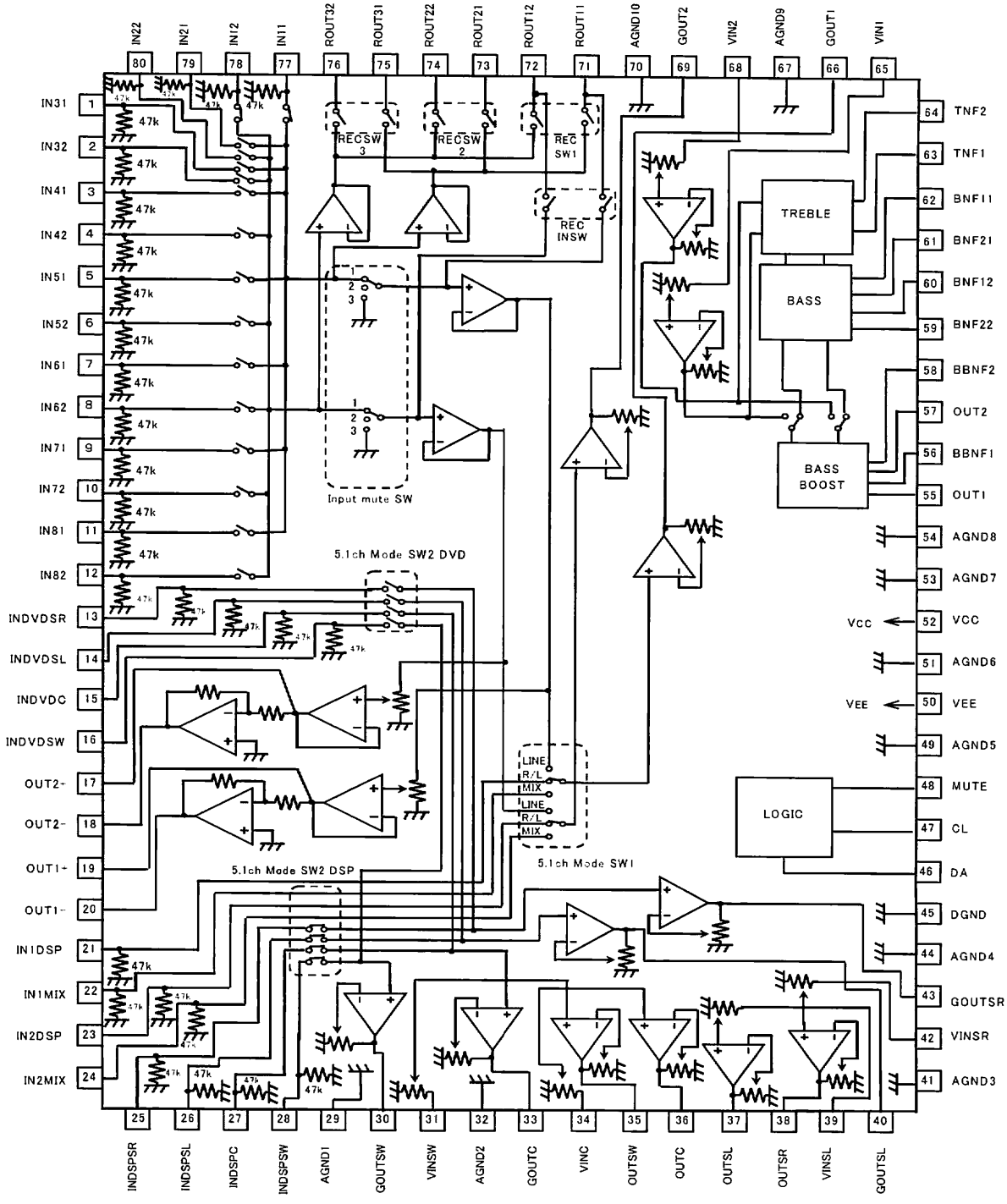
※This product is not of "anti radiation design".

○Outline Dimension



. QFP-80 (Unit:mm)

OBlock Diagram



○Terminal Number/ Terminal Name

Terminal Number	Terminal Name	Terminal Number	Terminal Name	Terminal Number	Terminal Name	Terminal Number	Terminal Name
1	IN31	21	IN1DSP	41	AGND3	61	BNF21
2	IN32	22	IN1MIX	42	VINSR	62	BNF11
3	IN41	23	IN2DSP	43	GOUTSR	63	TNF1
4	IN42	24	IN2MIX	44	AGND4	64	TNF2
5	IN51	25	INDSPSR	45	DGND	65	VIN1
6	IN52	26	INDSPSL	46	DA	66	GOUT1
7	IN61	27	INDSPC	47	CL	67	AGND9
8	IN62	28	INDSPSW	48	MUTE	68	VIN2
9	IN71	29	AGND1	49	AGND5	69	GOUT2
10	IN72	30	GOUTSW	50	VEE	70	AGND10
11	IN81	31	VINSW	51	AGND6	71	ROUT11
12	IN82	32	AGND2	52	VCC	72	ROUT12
13	INDVDSR	33	GOUTC	53	AGND7	73	ROUT21
14	INDVDSL	34	VINC	54	AGND8	74	ROUT22
15	INDVDC	35	OUTSW	55	OUT1	75	ROUT31
16	INDVDSW	36	OUTC	56	BBNF1	76	ROUT32
17	OUT2(+)	37	OUTSL	57	OUT2	77	IN11
18	OUT2(−)	38	OUTSR	58	BBNF2	78	IN12
19	OUT1(+)	39	VINSL	59	BNF22	79	IN21
20	OUT1(−)	40	GOUTSL	60	BNF12	80	IN22

○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 (Pd) 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.

Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document are 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 these products with equipment or devices which require an extremely high level of reliability and the malfunction of with 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.

About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.
In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.