

Structure : Silicon Monolithic Integrated Circuit
 Product : 6ch Volume with 5ch input selector

Type : **BD3818KS**

Function : •6ch Master volume(0 to -95dB、MUTE、1dB/STEP)
 •Tone(-14dB to +14dB、2dB/STEP)、Input gain、Mixing

○Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Power Supply voltage	VCC,VEE	7.5 ※1 -7.5	V
Input voltage	VIN	VCC+0.3 to VEE-0.3	V
Power dissipation	Pd	1200 ※2	mW
Operating temperature	Topr	-20 to +75	°C
Storage temperature	Tastg	-55 to +125	°C

※1 Please be careful because it is charged with excessive electricity, and the IC is likely to be destroyed when only the VCC is impressed even if it is within the impressed voltage range.

Please impress VEE and VCC at the same time or impress the side of VEE early.

※2 This value decreases 12mW/°C for Ta=25°C

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 7.4	V
Power supply (Negative)	VEE-GND	-5 to -7.4	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.

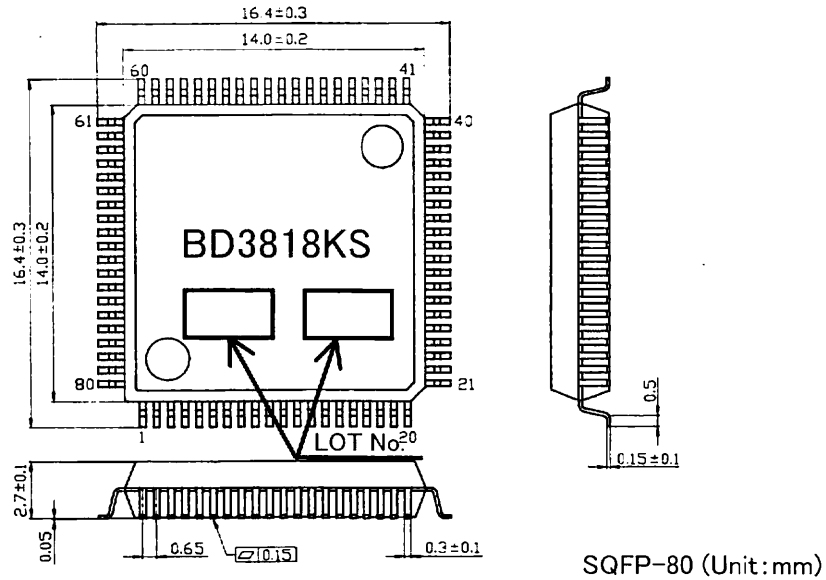
○Electrical Characteristics

Unless specified particularly, $T_a=25^{\circ}\text{C}$, $V_{CC}=7\text{V}$, $V_{EE}=-7\text{V}$, $f=1\text{kHz}$, $V_{IN}=500\text{mV}_{\text{rms}}$, $R_L=10\text{k}\Omega$, $R_g=600\Omega$
 Input gain=0dB (FL,FR), 12.6dB (C,LS,RS), 15.6dB (SUB), Master volume=0dB, Bass and Treble =0dB,
 Gain amp=0dB (C,LS,RS,SUB), C,LS and RS mixing=OFF

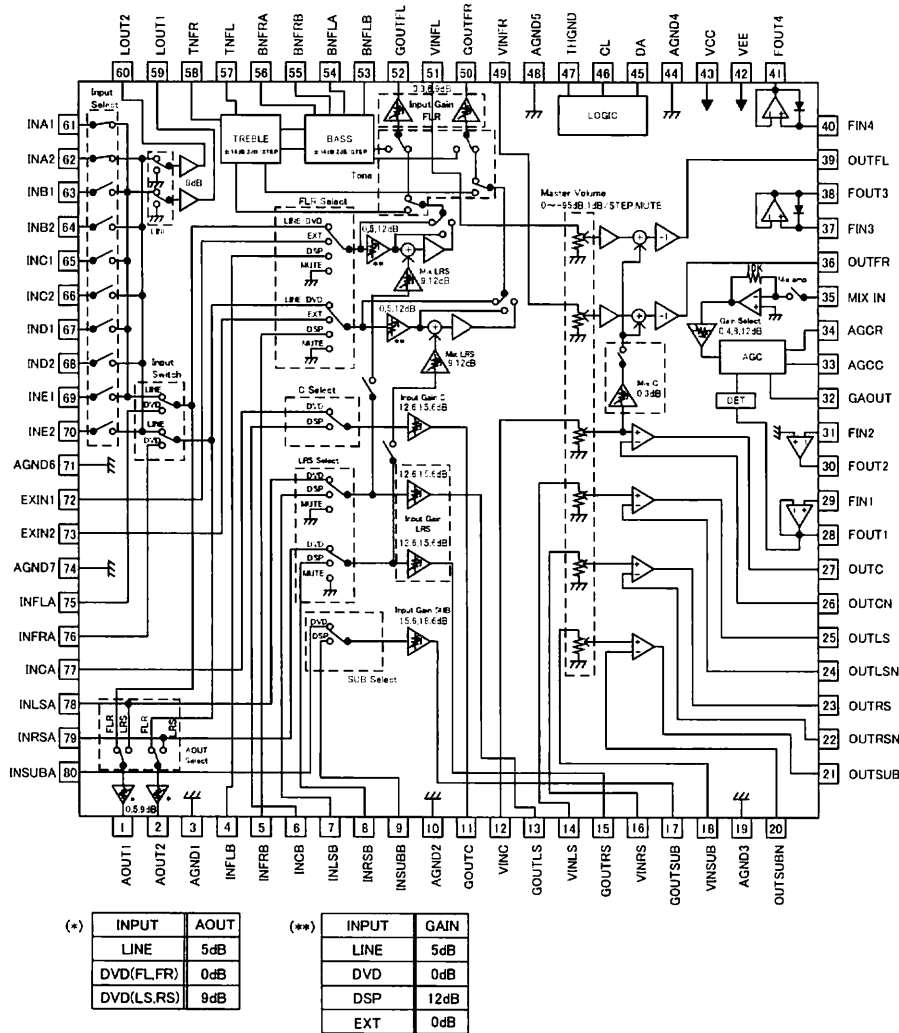
Parameter	Symbol	Limit			Unit	Conditions
		Min	Typ	Max		
Circuit current	IQ	—	28	40	mA	No signal
Output voltage gain 1 Line	GV1	3	5	7	dB	$V_{IN}=0.5\text{V}_{\text{rms}}$, Line Mode
Output voltage gain 1 DVD	GV1DVD	-2	0	2	dB	$V_{IN}=0.5\text{V}_{\text{rms}}$, DVD Mode
Output voltage gain 1 DSP	GV1DSP	10	12	14	dB	$V_{IN}=0.2\text{V}_{\text{rms}}$, DSP Mode
Output voltage gain 1 EXT	GV1EXT	-2	0	2	dB	$V_{IN}=0.5\text{V}_{\text{rms}}$, EXT Mode
Output voltage gain 2	GV2	10.6	12.6	14.6	dB	$V_{IN}=0.2\text{V}_{\text{rms}}$
Output voltage gain 3	GV3	13.6	15.6	17.6	dB	$V_{IN}=0.15\text{V}_{\text{rms}}$
Total harmonic distortion ratio 1	THD1	—	0.002	0.03	%	BW=400 to 30kHz $V_{IN}=0.5\text{V}_{\text{rms}}$, Line Mode
Total harmonic distortion ratio 2	THD2	—	0.003	0.03	%	BW=400 to 30kHz $V_{IN}=0.3\text{V}_{\text{rms}}$
Total harmonic distortion ratio 3	THD3	—	0.003	0.03	%	BW=400 to 30kHz $V_{IN}=0.3\text{V}_{\text{rms}}$
Maximum output voltage	Vomax	3.6	4.3	—	Vrms	THD=1%
Residual output noise voltage 1	V_{NOR1}	—	2.7	9	μV_{rms}	$R_g=0\Omega$, Volume= $-\infty$ BW=IHF-A
Residual output noise voltage 2	V_{NOR2}	—	1.0	6	μV_{rms}	$R_g=0\Omega$, Volume= $-\infty$ BW=IHF-A, Output amp=0dB
Cross-talk between selectors	CTS	—	-90	-75	dB	$R_g=0\Omega$, BW=IHF-A
Cross-talk between channels	CTCLR	—	-90	-75	dB	$R_g=0\Omega$, BW=IHF-A
Volume control range	VOL	-97	-95	-93	dB	$V_{\text{OUT}}=3\text{V}_{\text{rms}}$ (VOL=0dB)
Volume set error 1	VOLE1	-1.5	0	1.5	dB	0 to -53dB, $V_{\text{OUT}}=3\text{V}_{\text{rms}}$ (at VOL=0dB)
Volume set error 2	VOLE2	-2	0	2	dB	-54 to -95dB, $V_{\text{OUT}}=3\text{V}_{\text{rms}}$ (atVOL=0dB)
Maximum attenuation	VOLmin	—	-115	-105	dB	BW=IHF-A $V_{\text{OUT}}=3\text{V}_{\text{rms}}$ (atVOL=0dB)
Treble maximum boost gain	GTB	12	14	16	dB	$f=15\text{kHz}$, $V_{IN}=0.1\text{V}_{\text{rms}}$, Line Mode
Treble maximum cut gain	GTC	-16	-14	-12	dB	$f=15\text{kHz}$, $V_{IN}=0.1\text{V}_{\text{rms}}$, Line Mode
Bass maximum boost gain	GBB	12	14	16	dB	$f=100\text{Hz}$, $V_{IN}=0.1\text{V}_{\text{rms}}$, Line Mode
Bass maximum cut gain	GBC	-16	-14	-12	dB	$f=100\text{Hz}$, $V_{IN}=0.1\text{V}_{\text{rms}}$, Line Mode
Input gain control range 1	GIG1	7	9	11	dB	$V_{IN}=0.1\text{V}_{\text{rms}}$
Input gain control range 2	GIG2	13.6	15.6	17.6	dB	$V_{IN}=0.1\text{V}_{\text{rms}}$
Input gain control range 3	GIG3	16.6	18.6	20.6	dB	$V_{IN}=0.1\text{V}_{\text{rms}}$
Gain amp control range	GAG	10	12	14	dB	$V_{IN}=0.2\text{V}_{\text{rms}}$
Line out voltage gain	GVL1	6	8	10	dB	$V_{IN}=0.3\text{V}_{\text{rms}}$
Line out total harmonic distortion ratio	THDL1	—	0.003	0.03	%	BW=400 to 30kHz $V_{IN}=0.3\text{V}_{\text{rms}}$

※This product is not of “anti radiation design”.

○Outline Dimension



○Block Diagram



○Terminal Number/ Terminal Name

Terminal Number	Terminal Name	Terminal Number	Terminal Name	Terminal Number	Terminal Name	Terminal Number	Terminal Name
1	AOUT1	21	OUTSUB	41	FOUT4	61	INA1
2	AOUT2	22	OUTRSN	42	VEE	62	INA2
3	AGND1	23	OUTRS	43	VCC	63	INB1
4	INFLB	24	OUTLSN	44	AGND4	64	INB2
5	INFRB	25	OUTLS	45	DA	65	INC1
6	INCB	26	OUTCN	46	CL	66	INC2
7	INLSB	27	OUTC	47	THGND	67	IND1
8	INRSB	28	FOUT1	48	AGND5	68	IND2
9	INSUBB	29	FIN1	49	VINFR	69	INE1
10	AGND2	30	FOUT2	50	GOUTFR	70	INE2
11	GOUTC	31	FIN2	51	VINFL	71	AGND6
12	VINC	32	GAOUT	52	GOUTFL	72	EXIN1
13	GOUTLS	33	AGCC	53	BNFLB	73	EXIN2
14	VINLS	34	AGCR	54	BNFLA	74	AGND7
15	GOUTRS	35	MIXIN	55	BNFRB	75	INFLA
16	VINRS	36	OUTFR	56	BNFRA	76	INFRA
17	GOUTSUB	37	FIN3	57	TNFL	77	INCA
18	VINSUB	38	FOUT3	58	TNFR	78	INLSA
19	AGND3	39	OUTFL	59	LOUT1	79	INRSA
20	OUTSUBN	40	FIN4	60	LOUT2	80	INSUBA

○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.

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Japan /
(Internal Sales)

Tokyo	2-1-1, Yaesu, Chuo-ku, Tokyo 104-0082	TEL : +81(3)5203-0321	FAX : +81(3)5203-0300
Yokohama	2-4-8, Shin Yokohama, Kohoku-ku, Yokohama, Kanagawa 222-8575	TEL : +81(45)476-2131	FAX : +81(45)476-2128
Nagoya	Dainagayo Building 9F 3-28-12, Meieki, Nakamura-ku, Nagoya, Aichi 450-0002	TEL : +81(52)581-8521	FAX : +81(52)561-2173
Kyoto	579-32 Higashi Shiokouji-cho, Karasuma Nishi-iru, Shiokoujidori, Shimogyo-ku, Kyoto 600-8216	TEL : +81(75)311-2121	FAX : +81(75)314-6559

(Contact address for overseas customers in Japan)

Yokohama	TEL : +81(45)476-9270	FAX : +81(045)476-9271
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