Structure : Silicon Monolithic Integrated Circuit

Product : 8ch Volume with 9ch input selector

Type : **BD3452KS**

Function : •8ch Master volume(0 to −99dB、MUTE、1dB/STEP)
•Tone(−14dB to +14dB、2dB/STEP)、Input gain、Output gain

○Absolute Maximum Ratings (Ta=25℃)

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	1300※2	mW
Operating temperature	Topr	−20 to +75	℃
Storage temperature	Tastg	−55 to +125	℃

※1 Please note that, when any voltage is set to the VCC only, the IC may be destroyed due to excessive current even if the voltage is within the set voltage range shown in the table above. Be sure to set the voltage to VEE and VCC at the same time or set the voltage to VEE first.

※2 This value decreases at 13mW/℃ for Ta=25℃ or more.
A standard board, 70×70×1.6mm, shall be mounted.

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

	Symbol	Range	Unit
Power supply	VCC−GND VEE−GND	6.5 to 7.3 −6.5 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

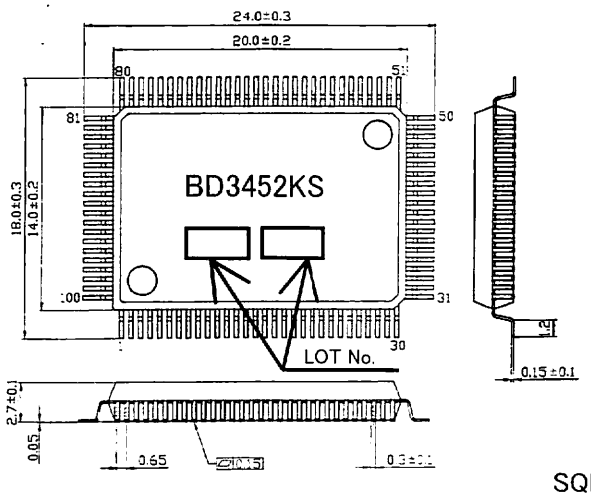
Unless specified particularly, Ta=25°C, VCC=7V, VEE=−7V, f=1kHz, VIN=1Vrms, RL=10kΩ, Rg=600Ω
Input Gain=0dB, Master volume=0dB, Output gain=0dB

Parameter		Symbol	Limit			Unit	Conditions
			Min	Typ	Max		
Circuit current	VCC-GND	IQ	—	20	40	mA	No signal
	VEE-GND		-40	-20	—		
Output voltage gain		Gv	-2	0	2	dB	
Total harmonic distortion ratio		THD	—	0.0006	0.03	%	BW=400 to 30kHz
Maximum output voltage		Vomax	3.6	4.2	—	Vrms	THD=1%
Output noise voltage		Vno	—	1.4	12	μVrms	Rg=0Ω, BW=IHF-A
Residual output noise voltage		Vnor	—	1	8	μVrms	Rg=0Ω, BW=IHF-A, Volume=MUTE
Cross-talk between channels		CTC	—	-95	-80	dB	Rg=0Ω, BW=IHF-A
Cross-talk between selectors		CTS	—	-95	-80	dB	Rg=0Ω, BW=IHF-A
Input Impedance		Rin	32	47	62	kΩ	
Volume Output voltage gain		GVV	-2	0	2	dB	
Volume Total harmonic distortion ratio		THDV	—	0.0006	0.03	%	BW=400 to 30kHz
Volume Residual output noise voltage		VnorV	—	1	8	μVrms	BW=IHF−A, Rg=0Ω Volume=MUTE
Volume set error		VOLE1	-0.5	0	0.5	dB	Volume=0dB, VIN=3Vrms
Maximum attenuation		VOLmin	—	-115	-105	dB	VIN=3Vrms, BW=IHF-A
Input gain control range		GIG	10	12	14	dB	Input Gain=12dB, VIN=0.3Vrms
Output gain control range		GOG	13	15	17	dB	Output Gain=15dB, VIN=0.3Vrms
Output gain set error		GOE	-0.5	0	0.5	dB	Output Gain=0dB, VIN=0.3Vrms
Recout Output impedance		RoutR	—	20	100	Ω	
Recout Voltage gain		GVR	-2	0	2	dB	(*)RL=10kΩ
Recout Total harmonic distortion ratio		THDR	—	0.005	0.09	%	BW=400 to 30kHz, (*)RL=10kΩ
Port H output		PH	4.0	4.9	5.4	V	RL=10kΩ
Port output current		PI	—	—	1.0	mA	

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

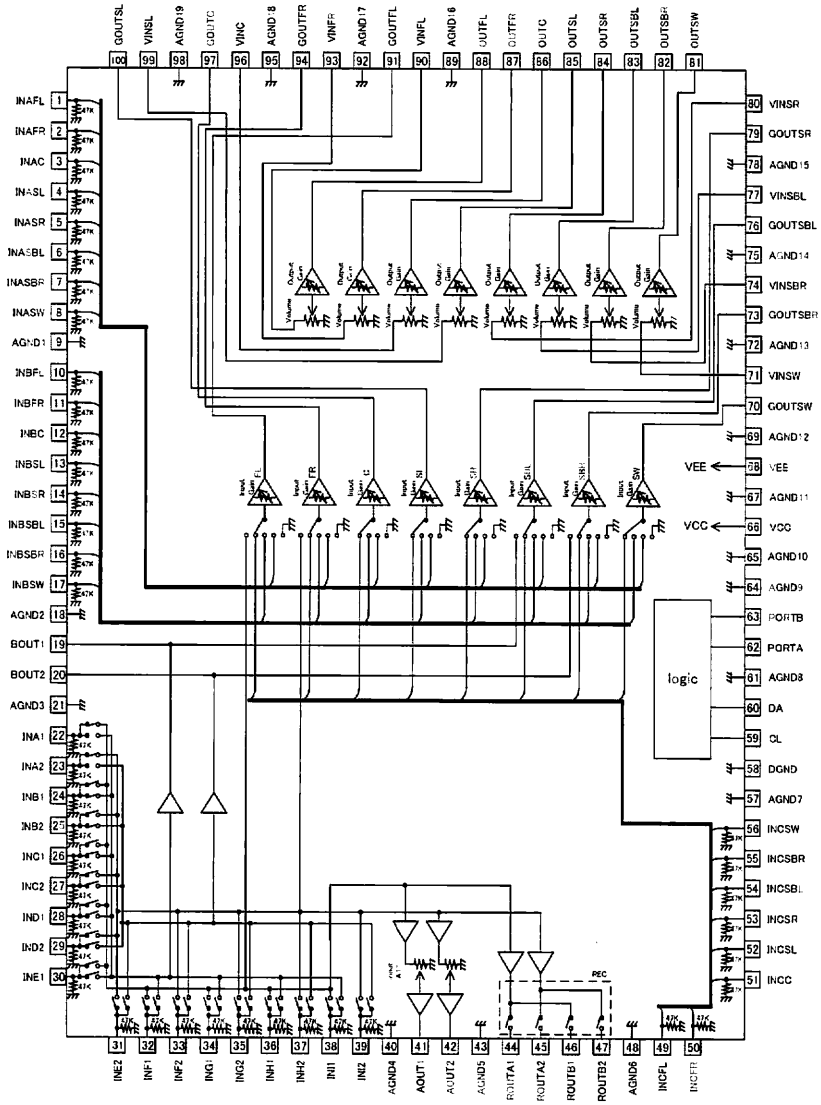
(*) Please set total load resistance (RL) of RECOUT, when two of RECOUT are ON.

○Outline Dimension



SQFP-100 (Unit : mm)

○Block Diagram



○Terminal Number/ Terminal Name

Terminal Number	Terminal Name	Terminal Number	Terminal Name	Terminal Number	Terminal Name	Terminal Number	Terminal Name
1	INAFL	26	INC1	51	INCC	76	GOUTSBL
2	INAFR	27	INC2	52	INCSL	77	VINSBL
3	INAC	28	IND1	53	INCSR	78	AGND15
4	INASL	29	IND2	54	INCSBL	79	GOUTSR
5	INASR	30	INE1	55	INCSBR	80	VINSR
6	INASBL	31	INE2	56	INCSW	81	OUTSW
7	INASBR	31	INF1	57	AGND7	82	OUTSBR
8	INASW	32	INF2	58	DGND	83	OUTSBL
9	AGND1	33	ING1	59	CL	84	OUTSR
10	INBFL	35	ING2	60	DA	85	OUTSL
11	INBFR	36	INH1	61	AGND8	86	OUTC
12	INBC	37	INH2	62	PORTA	87	OUTFR
13	INBSL	38	INI1	63	PORTB	88	OUTFL
14	INBSR	39	INI2	64	AGND9	89	AGND16
15	INBSBL	40	AGND4	65	AGND10	90	VINFL
16	INBSBR	41	AOUT1	66	VCC	91	GOUTFL
17	INBSW	42	AOUT2	67	AGND11	92	AGND17
18	AGND2	43	AGND5	68	VEE	93	VINFR
19	BOUT1	44	ROUTA1	69	AGND12	94	GOUTFR
20	BOUT2	45	ROUTA2	70	GOUTSW	95	AGND18
21	AGND3	46	ROUTB1	71	VINSW	96	VINC
22	INA1	47	ROUTB2	72	AGND13	97	GOUTC
23	INA2	48	AGND6	73	GOUTSBR	98	AGND19
24	INB1	49	INCFL	74	VINSBR	99	VINSL
25	INB2	50	INCFR	75	AGND14	100	GOUTSL

○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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