

Structure : Silicon Monolithic Integrated Circuit

Product : 7ch Volume with 10ch input selector

Type : **BD3817KS**

- Feature :
1. Dynamic range: 132dB (Volume Direct Mode, VOL=MUTE, IHF-A).
  2. Independent 7 channels for Master Volume (0 to -95 dB, MUTE 1dB/Step).
  3. Supporting 2<sup>nd</sup> room entertainment/2<sup>nd</sup> source recording.

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Power Supply Voltage	VCC	7.5 ※1	V
	VEE	-7.5	
Input Signal Voltage	VIN	VCC+0.3~VEE-0.3	V
Power Dissipation	Pd	1300 ※2	mW
Operating Temperature	Topr	-20~+75	°C
Storage Temperature	Tastg	-55~+125	°C

※1 Even in the specified range of Power Supply Voltage, applying voltage only to the VCC side may cause an excessive current to give a permanent damage to the IC. When starting up power supplies, VEE and VCC should be powered on simultaneously or VEE first; then followed by VCC.

※2 Over Ta=25°C, derating at the rate of 13mW/°C (BD3817KS). When installed on the standard board (size: 70x70x1.6mm).

Operating Voltage Range

(It must function normally at Ta=25°C.)

Parameter	Symbol	Limit	Unit
Power Supply (Positive)	VCC-GND	5~7.3	V
Power Supply (Negative)	VEE-GND	-5~-7.3	V

Application example

Note that ROHM cannot provide adequate confirmation of patents.

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 of 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.

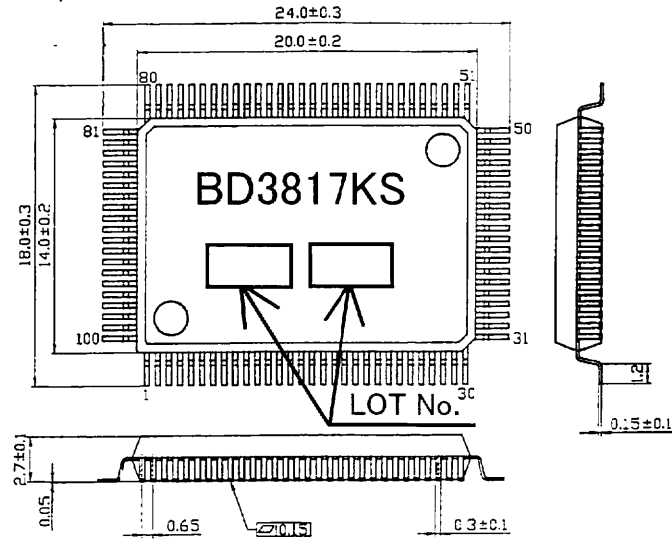
Electrical Characteristics

Ta=25°C, VCC=7V, f=1kHz, Vin=1Vrms, RL=10kΩ, Rg=600Ω, Input Gain=0dB, Volume=0dB, Output Gain=0dB, Bass=0dB, Treble=0dB, Mixing c/sw=OFF, unless otherwise noted.

	Symbol	Parameter	Limits			Unit	Condition	
			Min.	Typ.	Max.			
	IQ	Circuit Current	89pin	—	24	40	mA	No signal
			87pin					
Total output (Measure: Pin88,70)	Gv	Output Voltage Gain	-2	0	2	dB		
	THD	Total Harmonic Distortion Ratio	—	0.001	0.03	%	BW=400~30kHz	
	Vomax	Maximum Output Voltage	3.6	4.2	—	Vrms	THD=1%	
	Vno	Output Noise Voltage	—	2.0	12	μ Vrms	*OM= Tone ON(Output gain ON), BW=IHF-A, Rg=0Ω	
			—	1.5	8	μ Vrms	*OM=Output gain ON(ToneOFF) BW=IHF-A, Rg=0Ω	
			—	1.2	8	μ Vrms	OM=Volume Direct, BW=IHF-A, Rg=0Ω	
	CTC	Cross-talk between Channels	—	-95	-80	dB	Rg=0Ω, BW=IHF-A Reference: Pin70(OUTFR),68(OUTFL)=1Vrms	
CTS	Cross-talk between Selectors	—	-95	-80	dB	Rg=0Ω, BW=IHF-A		
Master volume output (Measure: Pin 61,63,64,65,66)	GvV	Volume Output Voltage	-2	0	2	dB		
	THDV	Volume Total Harmonic Distortion Ratio	—	0.001	0.03	%	BW=400~30kHz	
	VnoV	Volume Output Noise Voltage	—	1.2	8	μ Vrms	BW=IHF-A, Rg=0Ω	
	VOL	Volume Control Range	-97.5	-95	-92.5	dB	VIN=3Vrms, OM=Volume Direct	
	VOLE1	Volume Setting Error 1	-1.5	0	1.5	dB	0 to -53dB, VIN=3Vrms OM=Volume Direct	
	VOLE2	Volume Setting Error 2	-2.5	0	2.5	dB	-54 to -95dB, VIN=3Vrms OM=Volume Direct	
	VOLmin	Maximum Attenuation	—	-115	-105	dB	VIN=3Vrms, BW=IHF-A OM=Volume Direct	
Treble	GTB	Treble Maximum Boost Gain	12	14	16	dB	f=15kHz, VIN=0.4Vrms	
	GTC	Treble Maximum Cut Gain	-16	-14	-12	dB	f=15kHz, VIN=0.4Vrms	
	TR	Treble Step Resolution	—	2	—	dB	f=15kHz, VIN=0.4Vrms	
	TE	Treble Gain Setting Error	-2	0	2	dB	f=15kHz, VIN=0.4Vrms	
Bass	GBB	Bass Maximum Boost Gain	12	14	16	dB	f=100Hz, VIN=0.4Vrms	
	GBC	Bass Maximum Cut Gain	-16	-14	-12	dB	f=100Hz, VIN=0.4Vrms	
	BR	Bass Step Resolution	—	2	—	dB	f=100Hz, VIN=0.4Vrms	
	BE	Bass Gain Setting Error	-2	0	2	dB	f=100Hz, VIN=0.4Vrms	
Mixing	GMCG	C Mixing Gain Control Range	-6.5	-4.5	-2.5	dB	VIN=Pin 26,40, *OM=Volume Direct	
	GMCE	C Mixing Gain Setting Error	-2	0	2	dB	VIN=Pin 26,40, OM=Volume Direct	
	GMSWG	SW Mixing Gain Control Range	-6.5	-4.5	-2.5	dB	VIN=Pin 30,44, OM=Volume Direct	
	GMSWE	SW Mixing Gain Setting Error	-2	0	2	dB	VIN=Pin 30,44, OM=Volume Direct	
Input gain	GIG	Input Gain Control Range	5	7	9	dB	VIN=0.4Vrms,OM=Volume Direct	
	GIE	Input Gain Setting Error	-2	0	2	dB	VIN=0.4Vrms,OM=Volume Direct	
Output gain	GOG	Output Gain Control Range	15	17	19	dB	VIN=0.4Vrms, OM=Output gain ON (Tone OFF)	
	GOE	Output Gain Setting Error	-2	0	-2	dB	VIN=0.4Vrms, OM=Output gain ON (Tone OFF)	
REC output (Measure: Pin 91~96)	RoutR	ROUT Output Impedance	—	20	100	Ω		
	GVR	ROUT Voltage Gain	-2	0	2	dB	RL=47kΩ	
	THDR	ROUT Total Harmonic Distortion Ratio	—	0.005	0.09	%	RL=47kΩ, BW=400~30kHz	

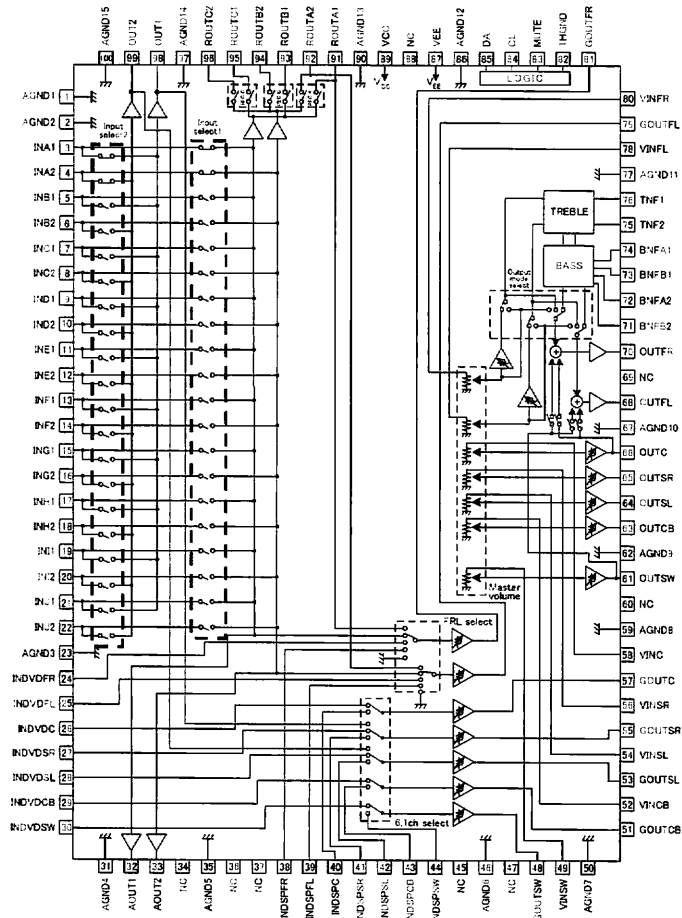
※OM=Output mode

Outline dimension • Marking dimension



SQFP100(Unit:mm)

Block diagram



Pin number\*Pin name

Pin number	Pin name	Pin number	Pin name	Pin number	Pin name	Pin number	Pin name
1	AGND1	26	INDVDC	51	GOUTCB	76	TNF1
2	AGND2	27	INDVDSR	52	VINCB	77	AGND11
3	INA1	28	INDVDSL	53	GOUTSL	78	VINFL
4	INA2	29	INDVDCB	54	VINSL	79	GOUTFL
5	INB1	30	INDVDSW	55	GOUTSR	80	VINFR
6	INB2	31	AGND4	56	VINSR	81	GOUTFR
7	INC1	32	AOUT1	57	GOUTC	82	THGND
8	INC2	33	AOUT2	58	VINC	83	MUTE
9	IND1	34	NC	59	AGND8	84	CL
10	IND2	35	AGND5	60	NC	85	DA
11	INE1	36	NC	61	OUTSW	86	AGND12
12	INE2	37	NC	62	AGND9	87	VEE
13	INF1	38	INDSPFR	63	OUTCB	88	NC
14	INF2	39	INDSPFL	64	OUTSL	89	VCC
15	ING1	40	INDSPC	65	OUTSR	90	AGND13
16	ING2	41	INDSPSR	66	OUTC	91	ROUTA1
17	INH1	42	INDSPSL	67	AGND10	92	ROUTA2
18	INH2	43	INDSPCB	68	OUTFL	93	ROUTB1
19	INI1	44	INDSPSW	69	NC	94	ROUTB2
20	INI2	45	NC	70	OUTFR	95	ROUTC1
21	INJ1	46	AGND6	71	BNFB2	96	ROUTC2
22	INJ2	47	NC	72	BNFA2	97	OUT1
23	AGND3	48	GOUTSW	73	BNFB1	98	OUT2
24	INDVDFR	49	VINSW	74	BNFA1	99	AGND14
25	INDVDFL	50	AGND7	75	TNF2	100	AGND15

**Cautions on use**

1. About operating voltage range and operating temperature range  
 The circuit functional operations are guaranteed within the Operating Voltage Range and Operating Temperature Range. The standard values of electrical characteristics, however, are guaranteed under the specific conditions. Accordingly, careful consideration of the IC characteristic variations is required to design a set of circuit.
2. About power ON/OFF  
 (1) At power ON/OFF, a shock sound will be generated and, therefore, MUTE shall be applied on the set.  
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 (2) When turning on power supplies, VEE and VCC should be powered on simultaneously or VEE first; then followed by VCC. If the VCC side is started up first, an excessive current may pass VCC through VEE.
3. About serial control  
 For the CL and DA terminals, the patterned and other wirings should be routed not to cause interference with the analog-signal-related lines.
4. About function switching  
 For the functions except Master Volume, Treble, and Bass Gain Settings, MUTE shall be applied on the set.

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