

Structure: Silicon Monolithic Integrated Circuit

Product: High-performance 5.1ch electronic volume

Type: **BD3814FV** 

Function: •6ch Master volume (0 to -95dB, MUTE, 1dB/STEP)

•Tone (-14dB to +14dB, 2dB/STEP)

### OAbsolute Maximum Ratings (Ta=25°C)

<u>Item</u>	Symbol	Rating	Unit
Power Supply voltage	VCC-VEE	15	V
Input voltage	VIN	VCC+0.3 to VEE-0.3	V
Power dissipation	Pd	900※	mW
Operating temperature	Topr	−20 to +75	°C
Storage temperature	Tastg	-55 to +125	°C

<sup>※</sup>This value decreases 9mW/°C for Ta=25°C or more.

A standard board,  $70 \times 70 \times 1.6$ mm, shall be mounted.

## OOperating 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.



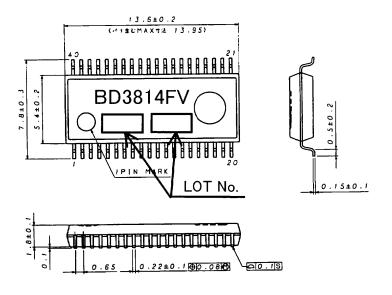
## **OElectrical Characteristics**

Unless specified particularly, Ta=25°C, Vcc=7V, VEE=-7V, f=1kHz, VIN=1Vrms, RL=10k  $\Omega$ , Rg=600  $\Omega$  Master volume=0dB, Bass and Treble=0dB.

Parameter	Symbol	Limit		Unit	Conditions		
	Cymbol	Min	Тур	Max	Oill	Conditions	
Circuit current	IQ	_	7	17	mA	No signal	
L Input current (CL,DA)	IIL		0.5	5	μΑ	CL=DA=0V	
H Input current (CL,DA)	IIH	<u> </u>	0	5	μΑ	CL=DA=5V	
Output voltage gain	Gv	-2	0	2	dB		
Total harmonic distortion ratio	THD	_	0.001	0.03	%	BW=400 to 30kHz	
Maximum output voltage	Vomax	3.6	4.3	_	Vrms	THD=1%	
Output noise voltage	Vno		1.0	6.0	μ Vrms	Tone: By-pass Rg=0Ω, BW=IHF-A	
			1.7	10	μ Vrms	Tone: ON Rg=0Ω, BW=IHF-A	
Cross-talk between channels	CTC	_	-95	-80	dB	Rg=0Ω, BW=IHF-A	
Input impedance	RinV	14	20	26	kΩ		
Volume control range	GVR	-98	-95	-92	dB	VIN=3Vrms	
Volume set error 1	VE1	-1.5	0	1.5	dB	0 to -53dB VIN=3Vrms	
Volume set error 2	VE2	-2.5	0	2.5	dB	-54 to -95dB VIN=3Vrms	
Maximum attenuation	Vmin		-115	-105	dB	VIN=3Vrms, BW=IHF-A	
Residual noise voltage	Vnom	_	1.0	6.0	μ Vrms	Tone:By-Pass Rg=0Ω, BW=IHF-A	
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	f=100Hz, Vi=0.4Vrms	
Bass maximum cut gain	GBC	-16	-14	-12	dB	f=100Hz, VIN=0.4Vrms	

<sup>\*</sup>This product is not of "anti radiation design".

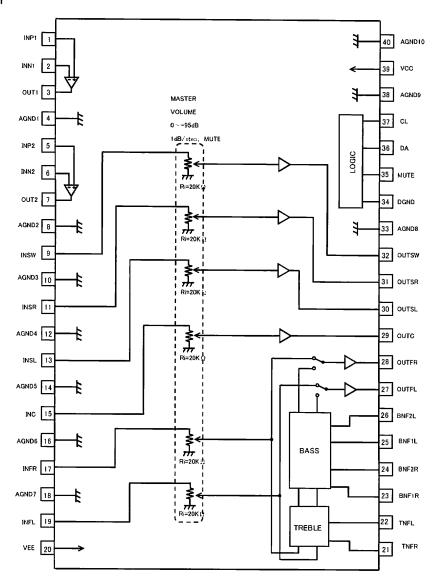
## OOutline Dimension



SSOP-B40 (Unit:mm)

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## **OBlock Diagram**



## OTerminal Number/ Terminal Name

Terminal Number	Terminal Name	Terminal Number	Terminal Name	Terminal Number	Terminal Name	Terminal Number	Terminal Name
1	INP1	11	INSR	21	TNFR	31	OUTSR
2	INN1	12	AGND4	22	TNFL	32	OUTSW
3	OUT1	13	INSL	23	BNF1R	33	AGND8
4	AGND1	14	AGND5	24	BNF2R	34	DGND
5	INP2	15	INC	25	BNF1L	35	MUTE
6	INN2	16	AGND6	26	BNF2L	36	DA
7	OUT2	17	INFR	27	OUTFL	37	CL
8	AGND2	18	AGND7	28	OUTFR	38	AGND9
9	INSW	19	INFL	29	OUTC	39	VCC
10	AGND3	20	VEE	30	OUTSL	40	AGND10



#### OCautions 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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