Structure: Silicon Monolithic Integrated Circuit

Product: Sound Processor for car audio

Type: BD37543FS

Package: SSOP-A32

●Feature

1. Reduce switching noise of input gain control, mute, main volume, fader volume, bass, middle, treble, loudness, by using advanced switch circuit [Possible to control all steps]
2. Built-in ground isolation amplifier inputs, ideal for external stereo input.
3. Built-in differential input selector that can make various combination of single-ended / differential input.
4. Built-in input gain controller reduce switching noise for volume of a portable audio input.
5. Decrease the number of external components by built-in 3-band equalizer filter, LPF for subwoofer, HPF. And, possible to control Q, Gv, fo of 3-band equalizer and fc of LPF and fc of HPF by I^2C BUS control freely.
6. It is possible for the bass, middle, treble to the gain adjustment quantity of ±20dB and 1 dB step gain adjustment.
7. It is equipped with output terminals of Subwoofer. Moreover, the stereo signal of the front and rear also can be output by the I^2C BUS control.
8. Built-in mixing input and mixing attenuation.
9. Bi-CMOS process is suitable for the design of low current and low energy. And it provides more quality for small-scale regulator and heat in a set.
10. Package is SSOP-A32. Putting input-terminals together and output-terminals together can make PCB layout easier and can makes area of PCB smaller.
11. It is possible to control by 3.3V / 5V for I^2C BUS.

●Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Limits	Unit
Power supply Voltage	VCC	10.0	V
Input voltage	VIN	VCC+0.3～GND-0.3	V
Power Dissipation	Pd	950 ※1	mW
Storage Temperature	Tastg	-55～+150	℃

※1 At Ta＝25°C or higher, this value is decreaced to 8.5mW/°C
When Rohm standard board is mounted.
Rohm standard board: Size：70×70×1.6(mm^3)
material：FR4 glass-epoxy substrate (copper foil area: not more than 3%).

●Operating Range

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply Voltage	VCC	7.0	－	9.5	V
Temperature	Topr	-40	－	+85	℃

※Design against radiation-proof isn't made.

●**Function**

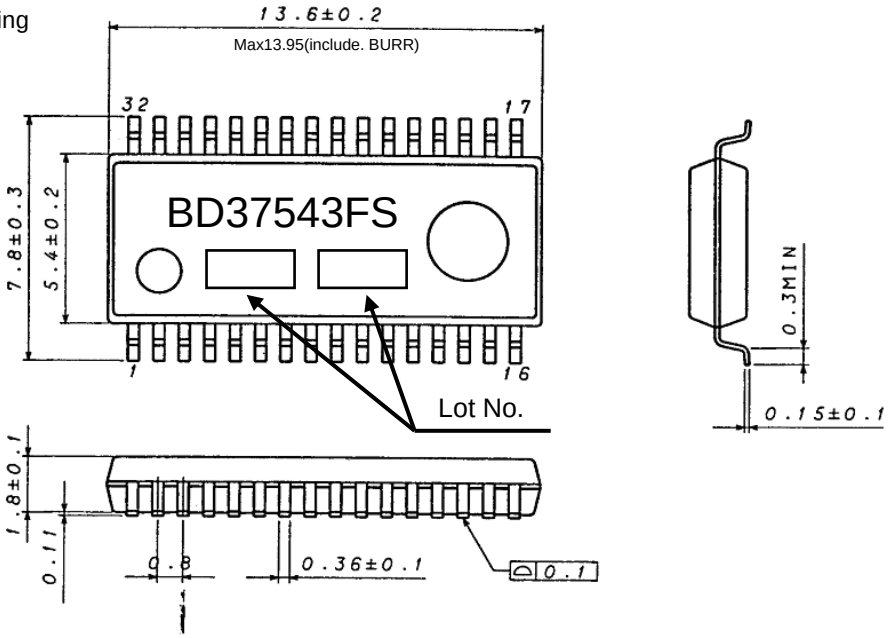
Function	Specifications
Input selector	Stereo 3 single-end input and 2differential input possible to switch single-end input
Input gain	0～20dB (1dB step), Possible to use “Advanced switch” for prevention of switching noise.
Mute	Possible to use “Advanced switch” for prevention of switching noise.
Volume	+15dB～−79dB (1dB step), −∞dB Possible to use “Advanced switch” for prevention of switching noise.
Bass	−20～+20dB (1dB step), Q=0.5, 1, 1.5, 2, fo=60, 80, 100, 120Hz Possible to use advanced switch at changing gain
Middle	−20～+20dB (1dB step), Q=0.75, 1, 1.25, 1.5, fo=500, 1k, 1.5k, 2.5kHz Possible to use advanced switch at changing gain
Treble	−20～+20dB (1dB step), Q=0.75, 1.25, fo=7.5k, 10k, 12.5k, 15kHz Possible to use advanced switch at changing gain
Fader	+15dB～−79dB (1dB step), −∞dB Possible to use “Advanced switch” for prevention of switching noise.
Loudness	0dB～20dB (1dB step) Possible to use “Advanced switch” for prevention of switching noise.
LPF	fc=55/85/120/160Hz, pass Phase shift (0°/180°)
HPF	fc=55/85/120/160Hz, pass
Mixing	Monaural input +7dB～-79dB (1dB step), −∞dB Possible to use “Advanced switch” for prevention of switching noise.
Level meter	I2C BUS control DC Output

●**Electrical Characteristic**

(Unless specified particularly, Ta=25℃, VCC=8.5V, f=1kHz, Vin=1Vrms, Rg=600Ω, R_L=10kΩ, A input,
Input gain 0dB, Mute OFF, Volume 0dB, Tone control 0dB, Loudness 0dB, Fader 0dB, LPF/HPF OFF, Mixing OFF)

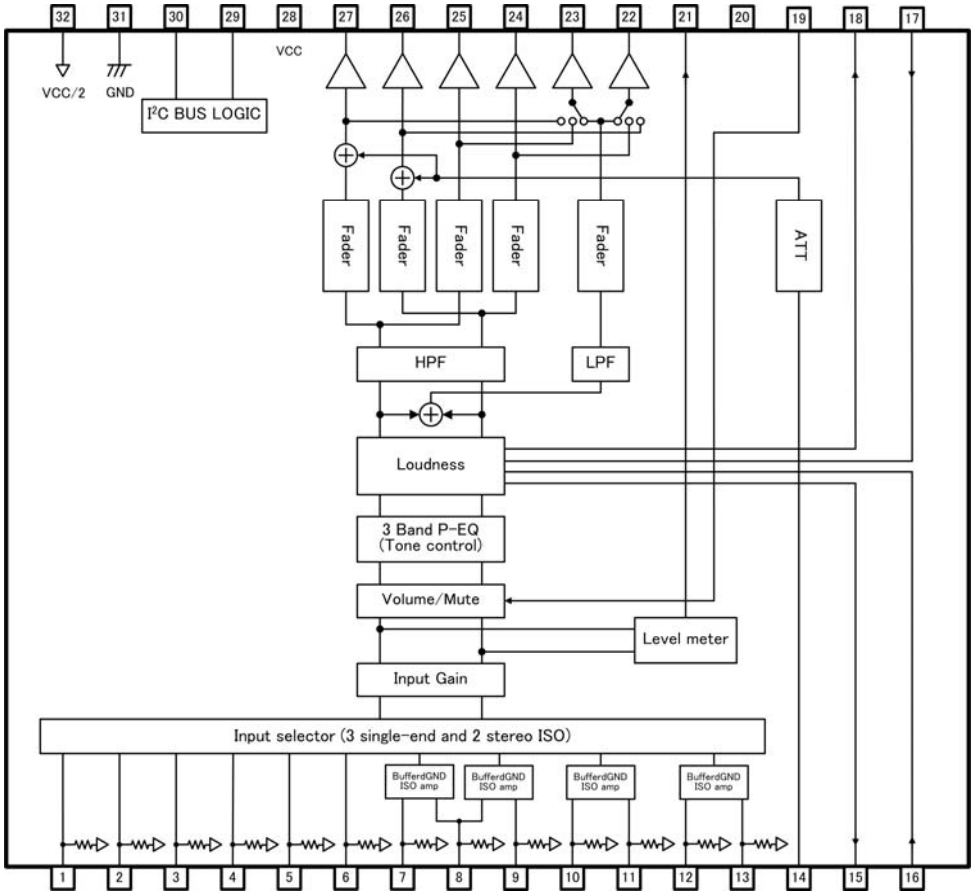
Item	Symbol	Limit			Unit	Condition
		Min.	Typ.	Max.		
Current upon no signal	IQ	−	38	48	mA	No signal
Voltage gain	GV	-1.5	0	1.5	dB	Gv=20log(VOUT/VIN)
Channel balance	CB	-1.5	0	1.5	dB	CB = GV1-GV2
Total harmonic distortion 1 (FRONT,REAR)	THD+N1	−	0.001	0.05	%	VOUT=1Vrms BW=400-30KHz
Total harmonic distortion 2 (SUBWOOFER)	THD+N2	−	0.002	0.05	%	VOUT=1Vrms BW=400-30KHz
Output noise voltage 1 (FRONT,REAR)	VNO1	−	3.8	15	μVrms	Rg = 0Ω BW = IHF-A
Output noise voltage 2 (SUBWOOFER)	VNO2	−	4.8	15	μVrms	Rg = 0Ω BW = IHF-A
Residual output noise voltage	VNOR	−	1.8	10	μVrms	Fader=−∞dB Rg=0Ω BW=IHF-A
Cross-talk between channels	CTC	−	-100	-90	dB	Rg=0Ω CTC=20log(VOUT/VIN) BW=IHF-A
Ripple rejection	RR	−	-70	-40	dB	f=100Hz VRR=100mVrms RR=20log(VOUT/VCCIN)
Common mode rejection ratio (D, E)	CMRR	50	65	−	dB	XP1 and XN input XP2 and XN input CMRR=20log(VIN/VOUT) BW = IHF-A,[※X・・・D,E]
Maximum input voltage	VIM	2.0	2.2	−	Vrms	VIM at THD+N(VOUT)=1% BW=400-30kHz
Maximum gain	GV MAX	13	15	17	dB	Volume = 15dB VIN=100mVrms Gv=20log(VOUT/VIN)
Maximum attenuation	GV MIN	−	-100	-85	dB	Volume=−∞dB Gf=20log(VOUT/VIN) BW=IHF-A
Maximum output voltage	VOM	2.0	2.2	−	Vrms	THD+N=1% BW=400-30kHz

●Dimensional outline drawing



SSOP-A32 (UNIT：mm)

●Block Diagram



●Descriptions of terminal

Terminal No.	Terminal Name
1	A1
2	A2
3	B1
4	B2
5	C1
6	C2
7	DP1
8	DN
9	DP2
10	EP1
11	EN1
12	EN2
13	EP2
14	MIN
15	LDA1
16	LDB1
17	LDB2
18	LDA2
19	MUTE
20	N.C.
21	LOUT
22	OUTS2
23	OUTS1
24	OUTR2
25	OUTR1
26	OUTF2
27	OUTF1
28	VCC
29	SCL
30	SDA
31	GND
32	FIL

●Cautions on 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) GND potential
Make the GND pin voltage such that it is the lowest voltage even when operating below it. Actually confirm that the voltage of each pin does not become a lower voltage than the GND pin, including transient phenomena.
(3) Thermal design
Perform thermal design in which there are adequate margins by taking into account the allowable power dissipation in actual states of use.
(4) Shorts between pins and misinstallation
When mounting the LSI on a board, pay adequate attention to orientation and placement discrepancies of the LSI. If it is misinstalled and the power is turned on, the LSI may be damaged. It also may be damaged if it is shorted by a foreign substance coming between pins of the LSI or between a pin and a power supply or a pin and a GND.
(5) Operation in strong magnetic fields
Adequately evaluate use in a strong magnetic field, since there is a possibility of malfunction.

Notes

No copying or reproduction of this document, in part or in whole, is permitted without the consent of ROHM Co.,Ltd.

The content specified herein is subject to change for improvement without notice.

The content specified herein is for the purpose of introducing ROHM's products (hereinafter "Products"). If you wish to use any such Product, please be sure to refer to the specifications, which can be obtained from ROHM upon request.

Examples of application circuits, circuit constants and any other information contained herein illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

Great care was taken in ensuring the accuracy of the information specified in this document. However, should you incur any damage arising from any inaccuracy or misprint of such information, ROHM shall bear no responsibility for such damage.

The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM and other parties. ROHM shall bear no responsibility whatsoever for any dispute arising from the use of such technical information.

The Products specified in this document are intended to be used with general-use electronic equipment or devices (such as audio visual equipment, office-automation equipment, communication devices, electronic appliances and amusement devices).

The Products specified in this document are not designed to be radiation tolerant.

While ROHM always makes efforts to enhance the quality and reliability of its Products, a Product may fail or malfunction for a variety of reasons.

Please be sure to implement in your equipment using the Products safety measures to guard against the possibility of physical injury, fire or any other damage caused in the event of the failure of any Product, such as derating, redundancy, fire control and fail-safe designs. ROHM shall bear no responsibility whatsoever for your use of any Product outside of the prescribed scope or not in accordance with the instruction manual.

The Products are not designed or manufactured to be used with any equipment, device or system which requires an extremely high level of reliability the failure or malfunction of which may result in a direct threat to human life or create a risk of human injury (such as a medical instrument, transportation equipment, aerospace machinery, nuclear-reactor controller, fuel-controller or other safety device). ROHM shall bear no responsibility in any way for use of any of the Products for the above special purposes. If a Product is intended to be used for any such special purpose, please contact a ROHM sales representative before purchasing.

If you intend to export or ship overseas any Product or technology specified herein that may be controlled under the Foreign Exchange and the Foreign Trade Law, you will be required to obtain a license or permit under the Law.

ROHM SEMICONDUCTOR

Thank you for your accessing to ROHM product informations.
More detail product informations and catalogs are available, please contact us.

ROHM Customer Support System

http://www.rohm.com/contact/

© 2010 ROHM Co., Ltd. All rights reserved.

LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

Тел: +7 (812) 336 43 04 (многоканальный)
Email: org@lifeelectronics.ru

www.lifeelectronics.ru