Structure : Silicon Monolithic Integrated Circuit

Product : Audio Sound Processor for mini compo, micro compo, TV, radio cassette recorder

Type : **BD3491FS**

Package : SSOP – A32

●Feature

1. Low noise (5μVrms(TYP.)) and low distortion(0.002% (TYP.)).
2. Built-in simple surround. Furthermore, it can constitute good surround of sound image normal position with an external part.
3. It can constitute a bass boost or output gain with an external part.
4. When the volume setting exchanging, it can use a volume terminal as a microphone input terminal because there is not an impedance change of a volume terminal.
5. 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.
6. The package of this IC is SSOP-A32. It gathers a sound input terminals, sound output terminals respectively and it arranges them, to be arranging facilitates the laying-out of PCB pattern and reduces PCB area to one-way in the flow of the signal.

●Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Power supply Voltage	VCC	10.0	V
Input Voltage	V_{IN}	VCC+0.3～GND-0.3	V
Power Dissipation	Pd	950 *1	mW
Storage Temperature	Tastg	-55～+150	°C

*1 At Ta=25°C or higher, this value is decreaced to 7.6mW/°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	4.75	-	9.5	V
Temperature	Topr	-40	-	+85	℃

※ Design against radiation-proof isn't made.

Status of this document
The Japanese version of this document is the formal specification. A customer may use this translation 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.

Application example
- ROHM cannot provide adequate confirmation of patents.
- The product described in this specification is designed to be used with ordinary electronic equipment or device (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys.)
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●Function

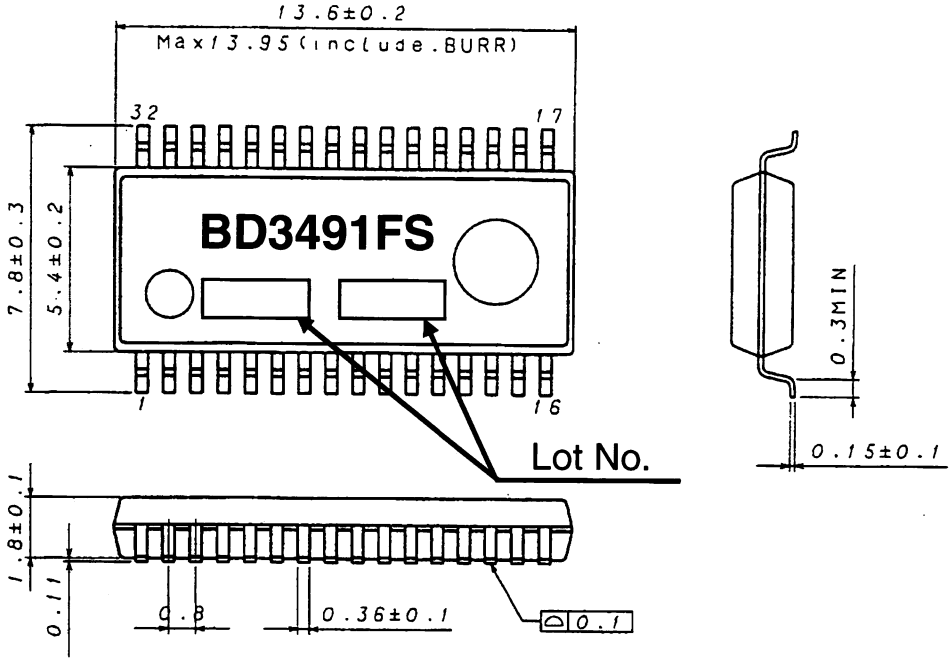
Function	Specifications
Input selector	Stereo 6 input + MUTE + Input short
Input gain	0～8dB (2dB step)、12, 16, 20dB
Volume	0dB～-87dB (1dB step), -∞dB Possible to control independently
Bass	Gain=-14～+14dB (2dB step)
Treble	Gain=-14～+14dB (2dB step)
Surround	Gain=OFF, Low, Middle, High

●Electrical characteristics

(Unless specified particularly, Ta=25℃, VCC=9V, f=1kHz, Vin=1Vrms, Rg=600Ω, RL=10kΩ, A input, Input gain 0dB, Volume 0dB, Bass 0dB, Treble 0dB, Surround=OFF)

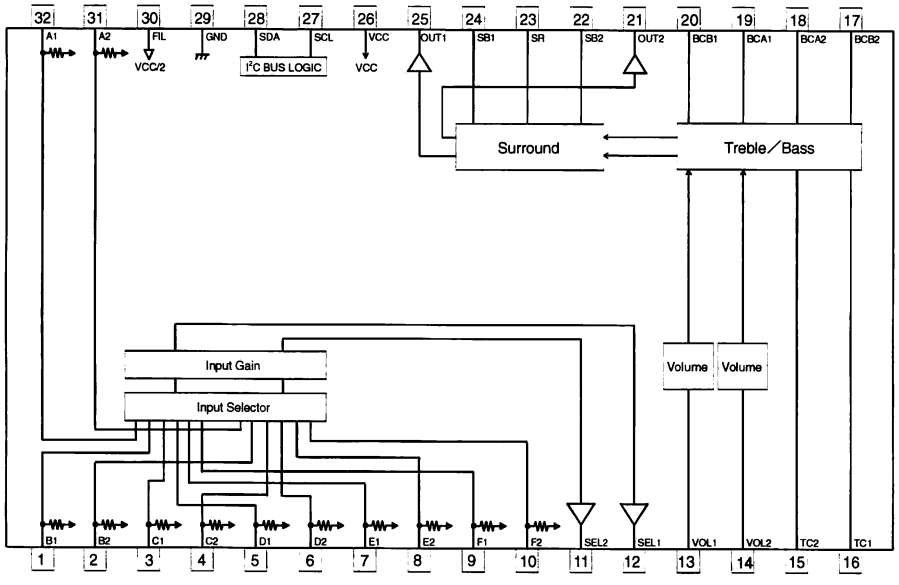
Item	Symbol	Limit			Unit	Condition
		Min.	Typ.	Max.		
Current upon no signal	I_Q	—	7	15	mA	No signal
Voltage gain	G_V	-1.5	0	1.5	dB	Gv=20log(VOUT/VIN)
Channel balance	CB	-1.5	0	1.5	dB	CB=G_{V1}-G_{V2}
Total harmonic distortion	THD+N	—	0.002	0.1	%	VOUT=1Vrms BW=400-30kHz
Output noise voltage	V_{NO}	—	5	20	μVrms	Rg=0Ω BW=IHF-A
Residual output noise voltage	V_{NOR}	—	5	20	μVrms	Fader=-∞dB Rg=0Ω BW=IHF-A
Cross-talk between channels	CTC	—	-100	-80	dB	Rg=0Ω CTC=20log(VOUT/VIN) BW=IHF-A
Input impedance	R_{IN}	35	50	65	kΩ	
Maximum input voltage	V_{IM}	2.1	2.4	—	Vrms	VIM at THD+N(VOUT)=1% BW=400－30KHz
Cross-talk between selectors	CTS	—	－100	－80	dB	Rg=0Ω CTS=20log (VOUT/VOUT) BW=IHF－A
Control range	$G_{V\,MAX}$	－90	－87	－84	dB	VIN=2Vrms Gv=20log (VOUT/VIN)
Maximum attenuation	$G_{V\,MIN}$	—	－100	－80	dB	Volume=－∞dB G_V=20log(VOUT/VIN)
Bass maximum boost gain	$G_{B\,BST}$	11.5	14	16.5	dB	Gain=14dB, f=100Hz VIN=100mVrms GB=20log (VOUT/VIN)
Bass maximum cut gain	$G_{B\,CUT}$	－16.5	－14	－11.5	dB	Gain=－14dB, f=100Hz VIN=2Vrms GB=20log (VOUT/VIN)
Treble maximum boost gain	$G_{T\,BST}$	11.5	14	16.5	dB	Gain=+14dB, f=10KHz VIN=100mVrms GT=20log (VOUT/VIN)
Treble maximum cut gain	$G_{T\,CUT}$	－16.5	－14	－11.5	dB	Gain=－14dB, f=10KHz VIN=2Vrms GT=20log (VOUT/VIN)

●Dimensional outline drawing



SSOP-A32 (UNIT : mm)

●Block diagram



●Terminal No. / Terminal Name

Terminal No.	Terminal Name
1	B1
2	B2
3	C1
4	C2
5	D1
6	D2
7	E1
8	E2
9	F1
10	F2
11	SEL2
12	SEL1
13	VOL1
14	VOL2
15	TC2
16	TC1
17	BCB2
18	BCA2
19	BCA1
20	BCB1
21	OUT2
22	SB2
23	SR
24	SB1
25	OUT1
26	VCC
27	SCL
28	SDA
29	GND
30	FIL
31	A2
32	A1

●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.

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