Structure Silicone monolithic integrated circuit

Product name Audio sound processor for TV

Model Name **BD3884FS**

●Features

1. Built-in AGC circuit adjusting the sound difference among input sources
2. I^2C BUS control with the control voltage of 3.3V-5.0V
3. Use the Bi-CMOS process

●Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Applied Voltage	VCC	10.0	V
Input Voltage	VIN	VCC+0.3～GND-0.3	V
Power Dissipation	Pd	1000 *1	mW
Operating Temperature	Topr	-40～+85 *2	°C
Storage Temperature	Tastg	-55～+150	°C

*1 At Ta＝25°C or higher, this value is decreaced to 8.0mW/°C.
When Rohm standard board is mounted. Thermal resistance θja = 125 (°C/W).
Rohm standard board: size: 70×70×1.6 (mm^3)
material: FR4 glass-epoxy substrate (copper foil area: not more than 3%).

*2 As long as voltage stays within operating voltage range, certain circuit operation is guaranteed in the operating temperature range.
Allowable loss conditions are related to temperature, to which care must be taken.
In addition though the standard value of its electrical characteristics cannot be guaranteed under the conditions other than those specified, original functions are maintained.

●Operating Voltage Range

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage *3	VCC	7.0	9.0	9.5	V

Basic operation shall be available at Ta=25°C.

*3 As long as temperature components must be set in accordance with the operating voltage and temperature ranges before using this IC.
In addition, though the standard value of its electrical characteristics cannot be guaranteed under the conditions other than those specified, original functions are maintained.

●Function

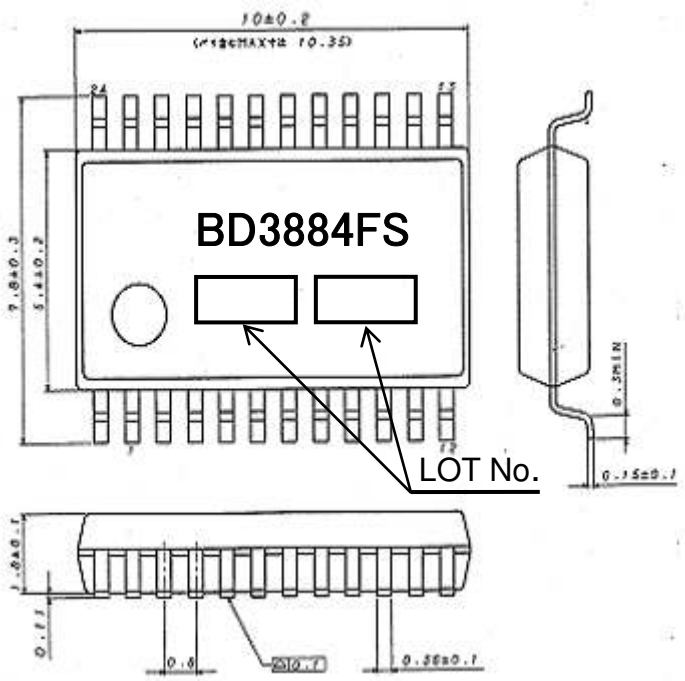
Function	Specifications
AGC	4 step level variable
Front volume	0dB to –87dB (1dB step), -∞dB
Surround	Stereo Surround
Bass	±14dB (2dB step)
Treble	±14dB (2dB step)
Rear volume	0dB ～-20dB (2dB step), -25dB, -30dB, -45dB, -60dB, MUTE （With the independent control）

●Electrical characteristics

Unless specified: Ta=25°C, VCC=9V, f=1kHz, VIN=1Vrms, Rg=600Ω, RL=10kΩ, Front Volume 0dB, Rear Volume =0dB, Bass=0dB, Treble=0dB, AGC=OFF, SURROUND=OFF.

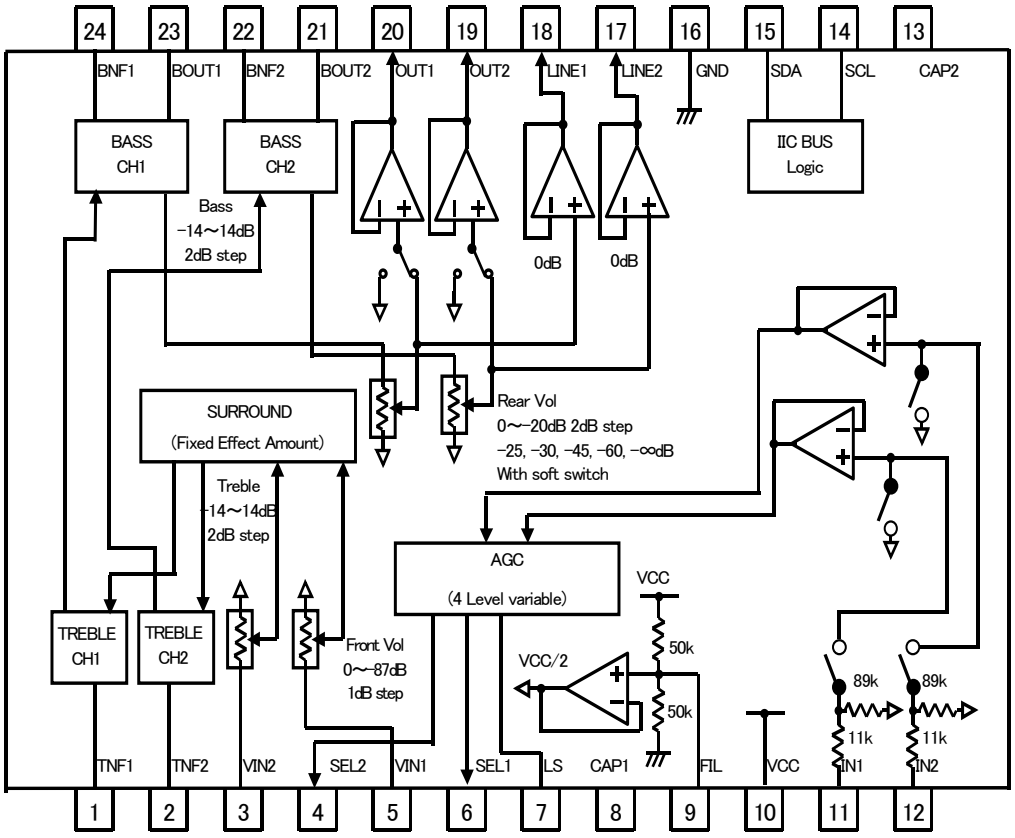
Parameter	Symbol	Limits			Unit	Conditions
		Min.	Typ.	Max.		
Current upon no signal	IQ	—	8	20	mA	Vin=0Vrms
Maximum input voltage	V_{IM1}	2.6	2.8	—	Vrms	Front Volume = -6dB THD(Vout)=1% BPF=400-30KHz
Maximum output voltage	V_{OM1}	2.2	2.5	—	Vrms	THD=1% BPF=400-30KHz
Voltage gain	G_{V1}	-2	0	2	dB	G_V=20log(Vout/Vin)
Channel balance	CB	-1.5	0	1.5	dB	CB = GV1-GV2
Total harmonic distortion	THD1	—	0.008	0.1	%	Vout=500mVrms BPF=400-30KHz
Output noise voltage	V_{NO1}	—	6	18	μVrms	BPF = IHF-A, Rg=0Ω
Residual noise voltage	V_{MNO1}	—	1.5	10	μVrms	Front Volume = -87dB Rear Volume = -∞dB BPF = IHF-A, Rg=0Ω
Cross talk 1ch→2ch	CT_{12}	70	80	—	dB	CT = 20log(Vin/Vout) BPF = IHF-A

●Dimensional outline drawing



SSOP-A24 (Unit : mm)

●Block diagram



●Cautions on use

(1) Numbers and data in entries are representative design values and are not guaranteed values of the items.
(2) Although we are confident in recommending the sample application circuits, carefully check their characteristics further when using them. When modifying externally attached component constants before use, determine them so that they have sufficient margins by taking into account variations in externally attached components and the Rohm LSI, not only for static characteristics but also including transient characteristics.
(3) 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.
(4) 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.
(5) Thermal design
Perform thermal design in which there are adequate margins by taking into account the allowable power dissipation in actual states of use.
(6) 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.
(7) Operation in strong magnetic fields
Adequately evaluate use in a strong magnetic field, since there is a possibility of malfunction.

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