Structure Silicon monolithic integrated circuit

Product name Audio signal switcher IC for DVD recorders

Type **BD3826FS**

Features

[Power Supply]

○ Vcc ±5V (for Signal), +12V (for Function Switch)

[Audio switch]

○ 2-inputs 1-output, 2 circuits built-in, without mute function
○ 3-inputs 1-output, 2 circuits built-in, with mute function
○ 5-inputs 1-output, 2 circuits built-in, with mute function
○ THD 0.002% typ.
○ S/N 90dB typ.
○ Crosstalk −100dB typ.
○ Output resistance 350Ω max.

[Function switch]

○ 2 circuits built-in

○Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Supply voltage 1	Vcc1	+6.0	V
Supply voltage 2	Vcc2	−7.0	V
Supply voltage 3	Vcc3	+13.0	V
Power dissipation	Pd	950 ※1	mW
Input Voltage	Vin	Vcc2～Vcc1+0.2	V
Operating temperature range	Topr	−25 ～ +75	℃
Storage temperature range	Tstg	−55 ～ +125	℃

※1 Deratings is done at 9.5mW/℃ above Ta=25℃.

○Operating Range

Parameter	Symbol	Range	Unit
Supply voltage 1	Vcc1	+4.5～+5.5	V
Supply voltage 2	Vcc2	−6.5～−4.5	V
Supply voltage 3	Vcc3	+11.5～+12.5	V

※ This product is not designed for protection against radioactive rays.

○Electrical characteristics (Unless otherwise noted, Ta=25℃, Vcc1=+5.0V, Vcc2=−5.0V, Vcc3=+12V)

Item	Symbol	Limit			Unit	Conditions
		MIN.	TYP.	MAX.		
<Device total>						
Circuit current 1	I_{ATYP1}	3.0	5.5	8.0	mA	Vcc1=+5V, Vcc2=−5V No signal, Vcc1 circuit current
Circuit current 2	I_{ATYP2}	2.5	7.5	12.5	mA	Vcc3=+12V FS : H
<AUX, L1, AD Lch,Rch OUT>						
Frequency Characteristic	F_{FC}	−0.5	0.0	0.5	dB	Vin=2.2Vrms, f=20kHz/20Hz R_L=47kΩ
Distortion 1	F_{DIS1}	—	0.002	0.1	%	Vin=2.2Vrms, f=1kHz R_L=47kΩ
Distortion 2	F_{DIS2}	—	0.003	1	%	Vin=2.7Vrms, f=1kHz R_L=47kΩ
S/N	F_{SN}	80	90	—	dB	Vin=2.2Vrms, f=1kHz,R_L=47kΩ Without Filter
Output Impedance	Z_O	—	260	350	Ω	Vin=0V
MUTE Attenuation	F_{MUTE}	—	−100	−75	dB	Vin=2.2Vrms, f=1kHz Rg=600Ω, R_L=47kΩ
SW1 Crosstalk within the switch	F_{SWCRS1}	—	−100	−85	dB	Vin=2.2Vrms, f=1kHz, Rg=600Ω, R_L=47kΩ
SW2 Crosstalk within the switch	F_{SWCRS2}	—	−100	−85	dB	Vin=2.2Vrms, f=1kHz, Rg=600Ω, R_L=47kΩ
SW3 Crosstalk within the switch	F_{SWCRS3}	—	−100	−85	dB	Vin=2.2Vrms, f=1kHz, Rg=600Ω, R_L=47kΩ
Crosstalk between channels (AUX_Lch,Rch)	F_{CHCRS1}	—	−100	−85	dB	Vin=2.2Vrms, f=1kHz, Rg=600Ω, R_L=47kΩ
Crosstalk between channels (L1_Lch,Rch)	F_{CHCRS2}	—	−100	−85	dB	Vin=2.2Vrms, f=1kHz, Rg=600Ω, R_L=47kΩ
Crosstalk between channels (AD_Lch,Rch)	F_{CHCRS3}	—	−100	−85	dB	Vin=2.2Vrms, f=1kHz, Rg=600Ω, R_L=47kΩ
FS_AUX,FS_L1 Output Voltage H	V_{FSOH}	10.0	11.0	12.0	V	R_L=10kΩ
FS_AUX,FS_L1 Output Voltage M	V_{FSOM}	5	5.75	6.5	V	R_L=10kΩ
FS_AUX,FS_L1 Output Voltage L	V_{FSOL}	0	0	1.5	V	R_L=10kΩ
ASW Input Voltage H	V_{ASWH}	3.5	—	Vcc1	V	
ASW Input Voltage L	V_{ASWL}	0	—	1.5	V	
FS_AUX, FS_L1 Input Voltage H	V_{FSIH}	3.9	—	Vcc1	V	
FS_AUX, FS_L1 Input Voltage M	V_{FSIM}	1.65	—	3.1	V	
FS_AUX, FS_L1 Input Voltage L	V_{FSIL}	0	—	0.85	V	

○Switch truth table

SW1

ASW1	ASW2	AUX_OUT
L	L	TU_IN
L	H	DA_IN
H	L	L1_IN
H	H	MUTE

Lch, Rch common specification

SW2

ASW3	L1_OUT
L	DA_IN
H	AUX_IN

Lch, Rch common specification

SW3

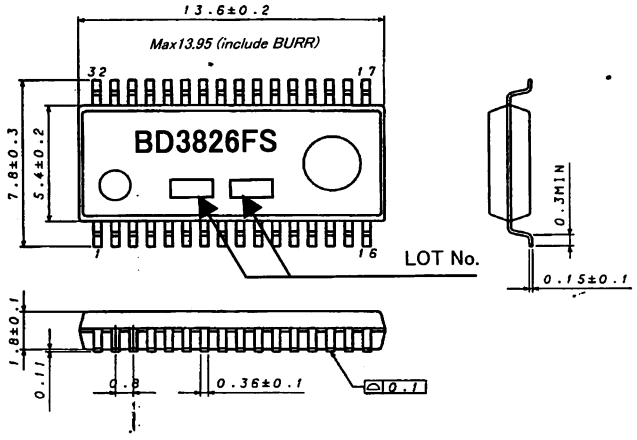
ASW4	ASW5	ASW6	AD_OUT
L	L	L	TU_IN
L	L	H	L1_IN
L	H	L	L2_IN
L	H	H	AUX_IN
H	L	L	L4_IN
H	L	H	MUTE
H	H	L	MUTE
H	H	H	MUTE

Lch, Rch common specification

※ When the ASW pin is open,

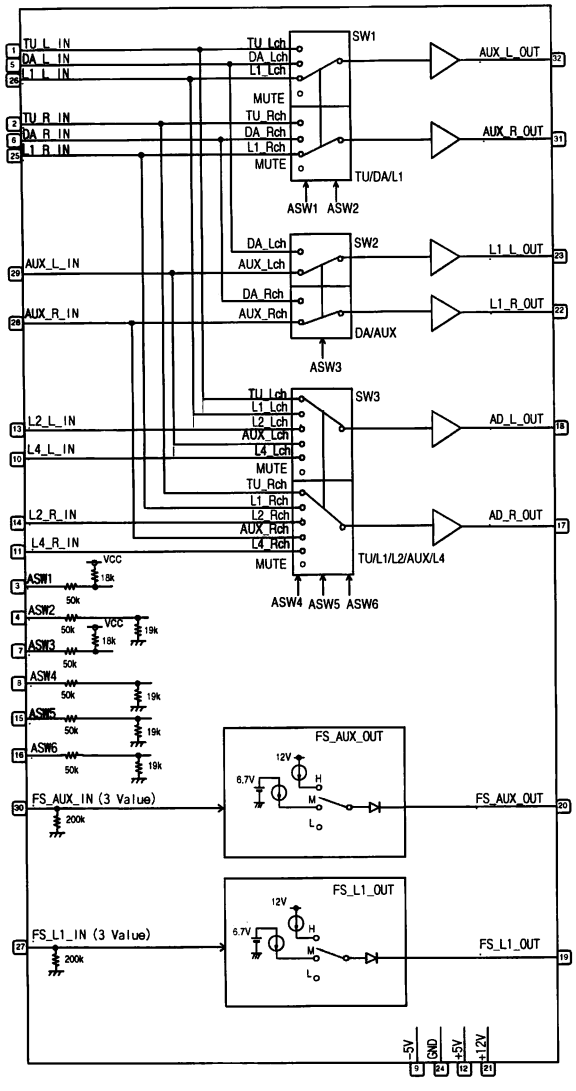
ASW1 = H
ASW2 = L
ASW3 = H
ASW4 = L
ASW5 = L
ASW6 = L.

○Outer dimensions



(SSOP-A32) (UNIT:mm)

○Block diagram



○Pin Number・Pin name

Pin No.	Pin name
1	TU_L_IN
2	TU_R_IN
3	ASW1
4	ASW2
5	DA_L_IN
6	DA_R_IN
7	ASW3
8	ASW4
9	-5V
10	L4_L_IN
11	L4_R_IN
12	+5V
13	L2_L_IN
14	L2_R_IN
15	ASW5
16	ASW6
17	AD_R_OUT
18	AD_L_OUT
19	FS_L1_OUT
20	FS_AUX_OUT
21	+12V
22	L1_R_OUT
23	L1_L_OUT
24	GND
25	L1_R_IN
26	L1_L_IN
27	FS_L1_IN
28	AUX_R_IN
29	AUX_L_IN
30	FS_AUX_IN
31	AUX_R_OUT
32	AUX_L_OUT

○Cautions on use

(1) Absolute maximum ratings

This LSI may be damaged if the absolute maximum ratings for the applied voltage, temperature range, or other parameters are exceeded. Therefore, avoid using a voltage or temperature that exceeds the absolute maximum ratings.
If it is possible that absolute maximum ratings will be exceeded, use fuses or other physical safety measures and determine ways to avoid exceeding the LSI's absolute maximum ratings.

(2) −5V pin's potential

Try to set the minimum voltage for −5V pin's potential, regardless of the operation mode.
Check that the voltage of each pin does not go below −5V pin's voltage, including transient phenomena.

(3) Thermal design

Ensure sufficient margins in the thermal design by taking in to account the allowable power dissipation during actual use modes.

(4) Shorting between pins and mounting errors

When mounting the LSI chip on a board, be very careful to set the chip's orientation and position precisely.
When the power is turned on, the LSI may be damaged if it is not mounted correctly. The LSI may also be damaged if a short occurs (due to a foreign object, etc.) between two pins, between a pin and the power supply, or between a pin and the GND.

(5) Operation in strong magnetic fields

Note with caution that operation faults may occur when this LSI operates in a strong magnetic field.

(6) Reverse audio output

If an excessive signal (approximately 2.9 Vrms) is input to an audio channel, output will be reversed.
(When VCC1,2 = ±5 V, and Ta = 25°C). Caution is required when using a signal exceeding 2.7 Vrms.

(7) Power−on sequence

An output shunting switch is included as a countermeasure against pops that may occur when the power supply is turned on. To ensure reliable operation of this shunt switch, whenever a negative power supply is applied to the audio system, be sure to subsequently apply a positive power supply for audio along with the power supply for video.

(8) Audio input terminator

The audio input block's input bias current is output from the IC as 4 to 8 nA (Typ.).
Since there is no built−in input termination resistance, when using a coupling input connect an external input termination resistance and confirm that there is a flow path for the input bias current.

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