Structure : Silicon Monolithic Integrated Circuit

Product name : 6 Outputs Video Driver for DVD Applications

Type : BH7868FS

Features :

1) Built-in LPF with characteristics suited to DVD players and recorders
2) Built-in 6-output video driver for Y signal, C signal, Y/C MIX signal, and Py/G, Pb/B, Pr/R signals
3) Three circuits drivable for Y signal, C signal, and Y/C MIX signal, and two circuits for Py/G, Pb/B, Pr/R signals
4) Built-in sag correction circuit
5) Built-in S1/S2 output function

○Absolute Maximum Ratings（Ta=25℃）

Parameter	Symbol	Limits	Unit
Supply voltage	VccMAX	6.0	V
Power dissipation	Pd	0.95 *1	W
Operating temperature	Topr	-40 ～ +70	℃
Storage temperature	Tstg	-55 ～ +150	℃

*1 Deratings in done at 7.6mW/℃ above Ta=25℃
(When mounted on a 70mm×70mm×1.6mm PCB board).

○Operating Range (Ta=25℃)

Parameter	Symbol	Limits	Unit
Supply voltage	Vcc	+4.5 ～ +5.5	V

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

Application example

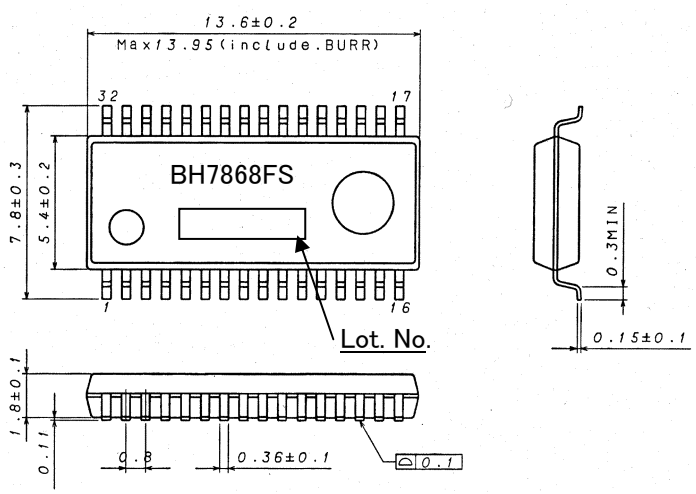
The product described in this specification is designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys). Should you intend to use this product with equipment or devices which require an extremely high level or reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices),please be sure to consult with our sales representative in advance.

○Electrical characteristics (1/2)（Unless otherwise noted, Ta= 25℃, Vcc=5.0V）

Parameter	Symbol	Specifications			Unit	Conditions
		Min.	TYP.	Max.		
Circuit current 1	I_{CC1}	—	90	110	mA	No signal 6ch Active MODE
Circuit current 2	I_{CC2}	—	45	59	mA	No signal Mute1 ON (C,Y,CV channel)
Circuit current 3	I_{CC3}	—	45	59	mA	No signal Mute2 ON
Circuit current 4	I_{CC4}	—	5	7.5	mA	No signal Mute1 & Mute2 ON
Maximum output level 1	V_{OM1}	2.6	3.0	—	Vpp	f=10 kHz, THD = 1.0% C, Py/G(BIAS), Pb/B, Pr/R
Maximum output level 2	V_{OM2}	2.6	2.8	—	Vpp	f=10 kHz, THD = 1.0% CV,Y,MIX, Py,/G(CLAMP)
Voltage gain C	G_{VC}	5.7	6.0	6.3	dB	CIN：f=3.58MHz、1Vpp
MIX (C)	G_{VMIXC}	5.7	6.0	6.3	dB	CIN：f=3.58MHz、1Vpp
MIX (Y)	G_{VMIXY}	5.7	6.0	6.3	dB	YIN：f=1MHz、1Vpp
CV	G_{VCVIN}	5.7	6.0	6.3	dB	YIN：f=1MHz、1Vpp
Y	G_{VY}	5.7	6.0	6.3	dB	YIN：f=1MHz、1Vpp
Py/G (CLAMP/BIAS)	G_{VPY}	5.7	6.0	6.3	dB	Py/G IN ： f=1MHz、1Vpp
Pb/B	G_{VPb}	5.7	6.0	6.3	dB	Pb/B IN ： f=1MHz、1Vpp
Pr/R	G_{VPr}	5.7	6.0	6.3	dB	Pr/R IN ： f=1MHz、1Vpp
Frequency characteristics 1 (CIN、CVIN、YIN)	f11	-1.5	-0.5	0.5	dB	fin=100k/6.75MHz,1Vpp
	f12	—	-33	-27	dB	fin=100k/27MHz、1Vpp
Frequency characteristics 1 (Py/G IN、Pb/B IN、Pr/R IN)	f21	-1.5	-0.5	0.5	dB	fin=100k/13.5MHz、1Vpp
	f22	—	-28	-22	dB	fin=100k/54MHz、1Vpp
Differential Gain	D_G	—	1.0	—	%	1Vpp standard staircase signal
Differential Phase	D_P	—	1.0	—	deg	1Vpp standard staircase signal
S/N	SN	—	-75	—	dB	100% white video signal
Cross talk	CT	—	-60	-50	dB	fin=4.43MHz、1Vpp
MUTE attenuation	MT	—	-60	-50	dB	CIN : f = 4.43MHz ,1Vpp YIN,CVIN, Py/GIN, Pb/BIN, Pr/RIN : f=1MHz , 1Vpp
Group delay time 1	T1	—	40	80	ns	fin=100kHz
Group delay time 2	T2	—	22	50	ns	fin=100kHz
Group delay time deviation 1 (CIN、CVIN、YIN)	ΔT11	—	4	10	ns	fin=3.58MHz
	ΔT12	—	6	10	ns	fin=4.43MHz
	ΔT13	—	12	20	ns	fin=6MHz

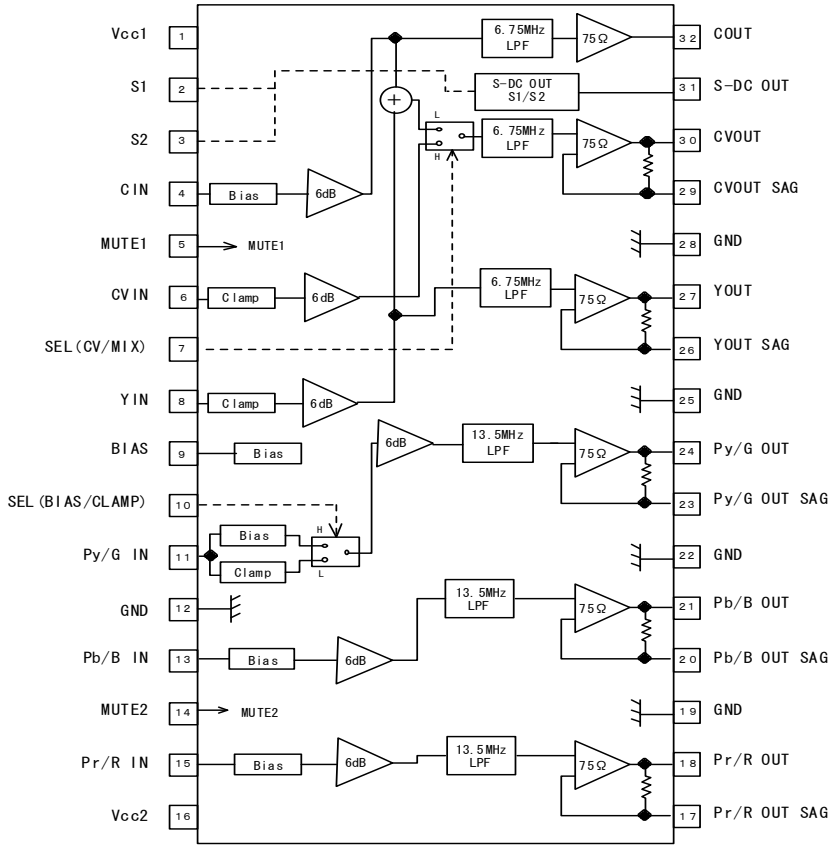
Parameter		Symbol	Specifications			Unit	Conditions
			Min.	TYP.	Max.		
Group delay time deviation 2 (Py/G IN、Pb/B IN、Pr/R IN)		ΔT21	—	1	10	ns	fin=2MHz
		ΔT22	—	4	10	ns	fin=8MHz
		ΔT23	—	10	20	ns	fin=12MHz
Channel to channel Group delay time deviation 1		ΔTch1	—	1	10	ns	C⇔Y、fin=3.58MHz
Channel to channel Group delay time deviation 2		ΔTch2	—	1	10	ns	Py/G⇔Pb/B⇔Pr/R、fin=2MHz
S-DC Output voltage	L	V_{SDCL}	—	0.1	0.5	V	RL=10kΩ+100kΩ S1=L,S2=L
	M	V_{SDCM}	1.9	2.1	2.3	V	RL=10kΩ+100kΩ S1=L,S2=H S1=H,S2=H
	H	V_{SDCH}	4.3	4.6	—	V	RL=10kΩ+100kΩ S1=H,S2=L
S-DC output impedance		Z_{S-DC}	—	200	—	Ω	
MUTE Switching voltage		V_{THH}	2.0	—	VCC	V	MUTE OFF
		V_{THL}	GND	—	0.7	V	MUTE ON
SEL（CV /MIX） Switching voltage		V_{THH}	2.0	—	VCC	V	CV MODE CVIN→CVOUT
		V_{THL}	GND	—	0.7	V	MIX MODE CIN,YIN→CVOUT
SEL (BIAS/CLAMP) Switching voltage		V_{THH}	2.0	—	VCC	V	BIAS MODE Py/G IN→Py/G OUT
		V_{THL}	GND	—	0.7	V	CLAMP MODE Py/G IN→Py/G OUT
S1/S2 Switching voltage		V_{THH}	2.0	—	VCC	V	High
		V_{THL}	GND	—	0.7	V	Low
Control pins input current		I_{IH}	—	—	155	μA	VH= 4.5V
		I_{IL}	—	—	20	μA	VL = 0.4V

○Outer dimensions



SSOP-A32 (Unit: mm)

○Block diagram



○Pin number and pin name

Pin No.	Pin name
1	Vcc1
2	S1
3	S2
4	CIN
5	MUTE1
6	CV IN
7	SEL(CV/MIX)
8	YIN
9	BIAS
10	SEL(BIAS/CLAMP)
11	Py/G IN
12	GND
13	Pb/B IN
14	MUTE2
15	Pr/R IN
16	Vcc2
17	Pr/R OUTSAG
18	Pr/R OUT
19	GND
20	Pb/B OUTSAG
21	Pb/B OUT
22	GND
23	Py/G OUTSAG
24	Py/G OUT
25	GND
26	YOUT SAG
27	YOUT
28	GND
29	CVOUT SAG
30	CVOUT
31	S-DCOUT
32	COUT

○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 miss-installation

When mounting the LSI on a board, pay adequate attention to orientation and placement discrepancies of the LSI. If it is miss-installed 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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