

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°C)

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

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

○Operating Range (Ta=25°C)

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

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

Application example

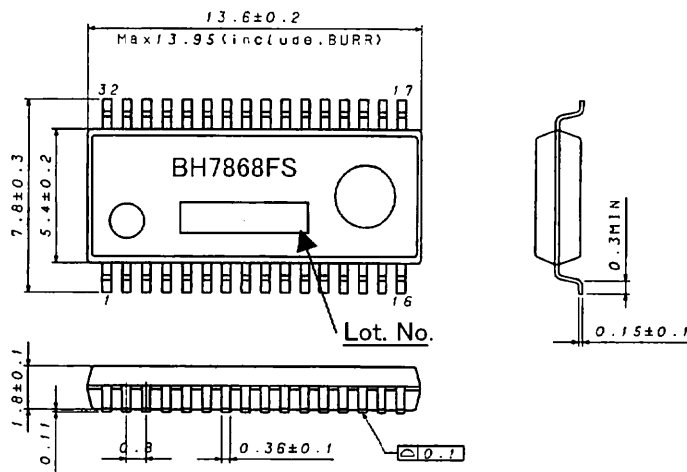
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○Electrical characteristics (1/2) (Unless otherwise noted, Ta= 25°C, Vcc=5.0V)

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	—	V _{pp}	f=10 kHz, THD = 1.0% C, Py/G(BIAS), Pb/B, Pr/R
Maximum output level 2	V _{OM2}	2.6	2.8	—	V _{pp}	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

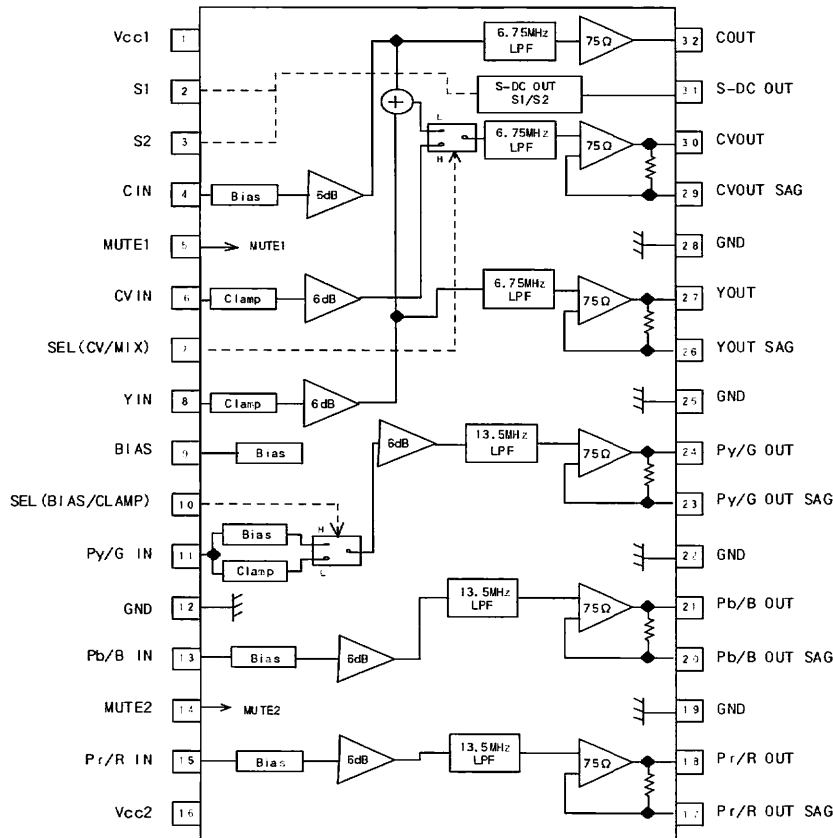
Parameter	Symbol	Specifications			Unit	Conditions	
		Min.	TYP.	Max.			
Group delay time deviation 2 (Py/G IN, Pb/B IN, Pr/R IN)	ΔT_{21}	—	1	10	ns	$f_{in}=2\text{MHz}$	
	ΔT_{22}	—	4	10	ns	$f_{in}=8\text{MHz}$	
	ΔT_{23}	—	10	20	ns	$f_{in}=12\text{MHz}$	
Channel to channel Group delay time deviation 1	$\Delta Tch1$	—	1	10	ns	$C \leftrightarrow Y, f_{in}=3.58\text{MHz}$	
Channel to channel Group delay time deviation 2	$\Delta Tch2$	—	1	10	ns	$Py/G \leftrightarrow Pb/B \leftrightarrow Pr/R, f_{in}=2\text{MHz}$	
S-DC Output voltage	L	V_{SDCL}	—	0.1	0.5	V	$R_L=10\text{k}\Omega+100\text{k}\Omega$ S1=L,S2=L
	M	V_{SDCM}	1.9	2.1	2.3	V	$R_L=10\text{k}\Omega+100\text{k}\Omega$ S1=L,S2=H S1=H,S2=H
	H	V_{SDCH}	4.3	4.6	—	V	$R_L=10\text{k}\Omega+100\text{k}\Omega$ 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	$V_H=4.5\text{V}$	
	I_{IL}	—	—	20	μA	$V_L=0.4\text{V}$	

○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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