

Structure : Silicon Monolithic Integrated Circuit

Product name : Broadband Triple Circuits Video Signal Switchers

Type : **BH7659FS**

Features :

- 1) Operates on 5 V single power supply.
- 2) Built-in wide-range RGB signal switches
- 3) Built-in switching circuit for HD signal and VD signal.
- 4) Built-in switch for I²C bus signals (SDA and SCL).
- 5) Built-in power saving function.

○Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	VCC	8.0	V
Power dissipation	Pd	1300 *1	mW
Operating temperature	Topr	-25~+75	°C
Storage temperature	Tstg	-55~+125	°C

*1 Deratings is done at 13.0mW/°C above Ta=25°C.

○Operating range (Ta=25°C)

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage	VCC	4.5	5.0	5.5	V

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

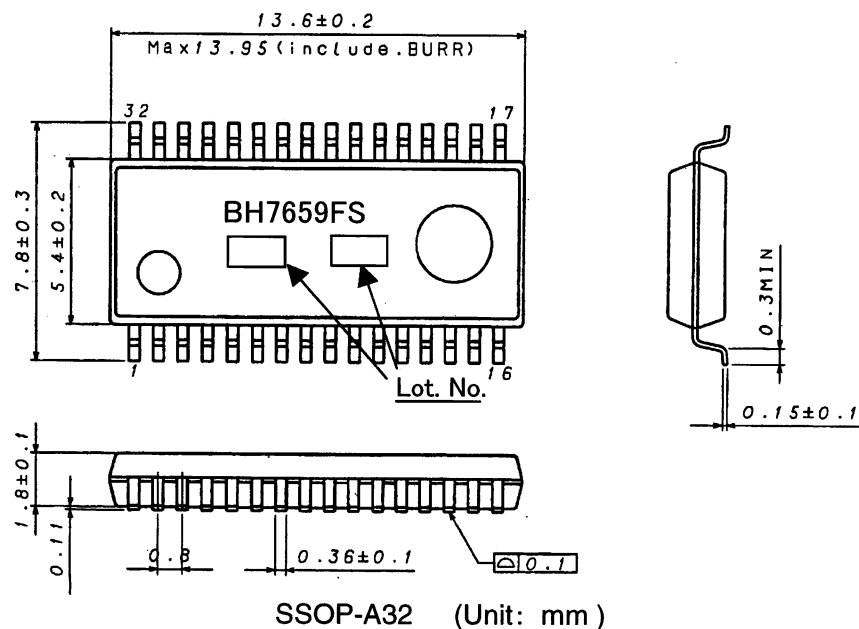
Application example

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 of 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.

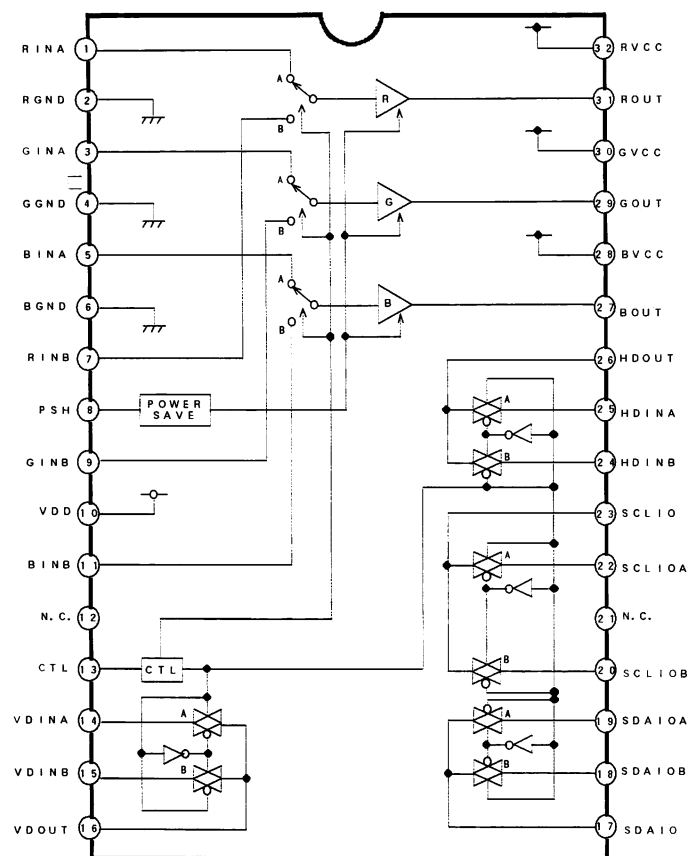
○Electrical characteristics (Unless otherwise noted, Ta= 25°C, Vcc=5.0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
〈Entire device〉						
Circuit current	ICC	15	25	35	mA	—
Circuit current during power save	IPSV	7	14	22	mA	PS="H"
〈R,G,B video SW〉						
Voltage gain	GV	-1.0	-0.5	0	dB	f=10MHz
Interchannel relative gain	Δ GVC	-0.5	0	0.5	dB	f=10MHz
Interblock relative gain	Δ GVB	-0.5	0	0.5	dB	f=10MHz
Output dynamic range	VOM	2.6	—	—	V _{P-P}	f=1kHz
〈C-MOS analog SW〉						
On-resistance	RON	—	200	400	Ω	VIN=2.5V
Interchannel ON resistance differential	Δ RON	—	20	40	Ω	VIN=2.5V
Interchannel cross talk	CT	—	-70	-55	dB	f=150kHz
Transmission delay time	tD	—	20	50	ns	RL=10k Ω , CL=50pF
〈Control block〉						
"H" level voltage	VH	3.5	—	—	V	—
"L" level voltage	VL	—	—	1.5	V	—
〈R/G/B video SW〉						
Frequency characteristics 1	f1	-3.0	0	+1.0	dB	f=50MHz
Frequency characteristics 2	f2	-6.0	-3	+1.0	dB	f=250MHz
Interchannel relative frequency characteristics	Δ f _C	-0.5	0	0.5	dB	f=50MHz
Interblock relative frequency characteristics	Δ f _B	-0.5	0	0.5	dB	f=50MHz
Interchannel cross talk 1	CT _{C1}	—	-50	-35	dB	f=50MHz
Interchannel cross talk 2	CT _{C2}	—	-30	-15	dB	f=250MHz
Interblock cross talk 1	CT _{B1}	—	-40	-30	dB	f=50MHz
Interblock cross talk 2	CT _{B2}	—	-20	-10	dB	f=250MHz

○Outer dimensions



Block diagram



Pin number and pin name

Pin No.	Pin name	Pin No.	Pin name
1	RINA	17	SDAIO
2	RGND	18	SDAIOB
3	GINA	19	SDAIOA
4	GGND	20	SCLIOB
5	BINA	21	N.C.
6	BGND	22	SCLIOA
7	RINB	23	SCLIO
8	PSH	24	HDINB
9	GINB	25	HDINA
10	VDD	26	HDOUT
11	BINB	27	BOUT
12	N.C.	28	BVCC
13	CTL	29	GOUT
14	VDINA	30	GVCC
15	VDINB	31	ROUT
16	VDOUT	32	RVCC

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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U.S.A / San Diego	TEL : +1(858)625-3630	FAX : +1(858)625-3670
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Dallas	TEL : +1(972)312-8818	FAX : +1(972)312-0330
Germany / Dusseldorf	TEL : +49(2154)9210	FAX : +49(2154)921400
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Beijing	TEL : +86(10)8525-2483	FAX : +86(10)8525-2489
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Philippines / Manila	TEL : +63(2)807-6872	FAX : +63(2)809-1422
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Japan /
(Internal Sales)

Tokyo	2-1-1, Yaesu, Chuo-ku, Tokyo 104-0082	
	TEL : +81(3)5203-0321	FAX : +81(3)5203-0300
Yokohama	2-4-8, Shin Yokohama, Kohoku-ku, Yokohama, Kanagawa 222-8575	
	TEL : +81(45)476-2131	FAX : +81(45)476-2128
Nagoya	Dainagayo Building 9F 3-28-12, Meieki, Nakamura-ku, Nagoya, Aichi 450-0002	
	TEL : +81(52)581-8521	FAX : +81(52)561-2173
Kyoto	579-32 Higashi Shiokouji-cho, Karasuma Nishi-iru, Shiokoujidori, Shimogyo-ku, Kyoto 600-8216	
	TEL : +81(75)311-2121	FAX : +81(75)314-6559
(Contact address for overseas customers in Japan)		
Yokohama	TEL : +81(45)476-9270	FAX : +81(045)476-9271