Structure Silicon Monolithic Integrated Circuit

Product Name Video Interface for TV・STB

Type **BH7641FV**

Package SSOP−B40

Features

- Built in 7-inputs Video SW, and 4-inputs Y, C
- Inside changing 0/6 voltage gain
- Built in 4 circuits S1/S2 standard distinction circuit
- 3 output system within 1 video driver
- I^2C-BUS control (become high impedance at VCC OFF)
- External control pin 1 circuit
- S1/S2 standard DC output 1 circuit
- Block standby is possible every output system

○ Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Ratings	Units
Supply Voltage	VCC	7.0	V
Power Dissipation	Pd	900 ※1	mW
Input Voltage Range	VIN	0~VCC	V
Operating Temperature	Topr	−25 ~ +75	℃
Storage Temperature	Tstg	−55 ~ +125	℃

※ Reduce by 9.0mW/℃ over 25℃ (When mounted on a 70mm×70mm×1.6mmt, 1layer)

○ Operation Range

Parameter	Symbol	Limit	Unit
Power supply Voltage Range	VCC	4.75~5.25	V

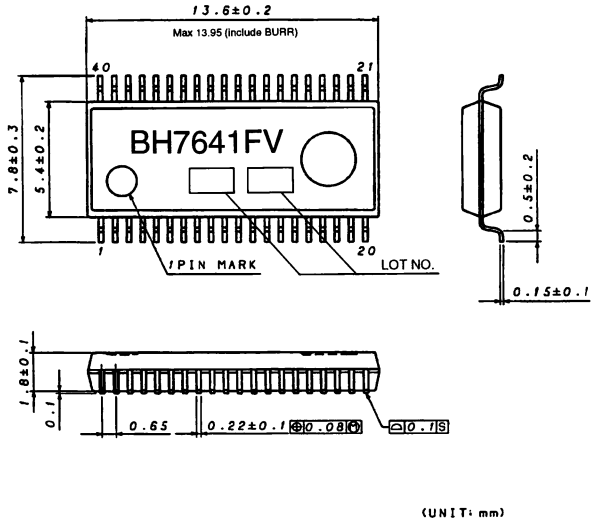
※ This is product is not designed for protection against radio active rays.
※ Wrong action is likely to be triggered when the Enter of this integrated circuit or an output terminal is connected to the signal line of the other power source, the surface connection terminal, and so on in the state that a power source is not supplied by this integrated circuit, Do caution, a countermeasure furry.
※ I^2C-BUS corresponding to Version 2.0 FAST MODE (400kHz).

Status of this document
The Japanese version of this document is the formal specification.
A customer may use this translation version only for a reference to help reading the formal version.
If there are any differences in translation version of this document, formal version takes priority.

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

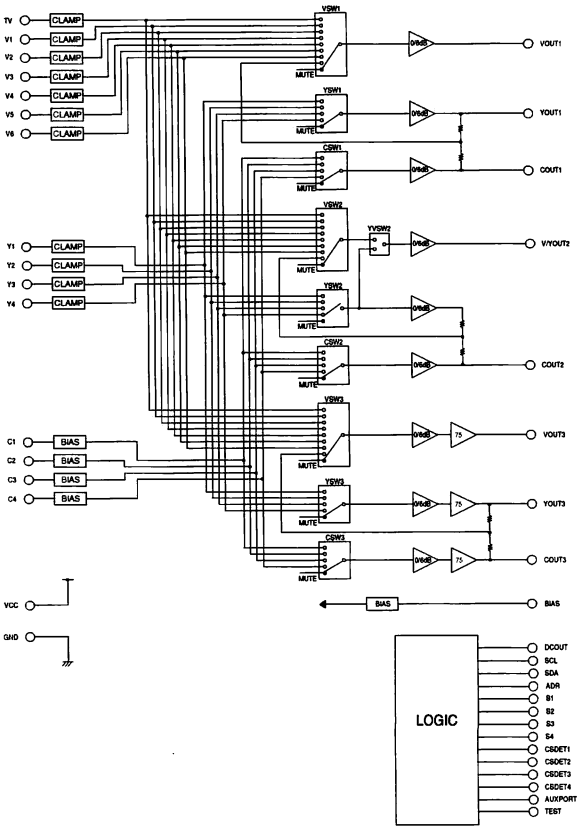
Parameter	Symbol	Limits			Units	Conditions
		MIN.	TYP.	MAX.		
Circuit Current	I_{CC}	42.6	71.0	99.4	mA	No Signal
Circuit Current STBY1	I_{CCST1}	36.6	61.0	85.4	mA	OUT1 Block Standby
Circuit Current STBY2	I_{CCST2}	36.6	61.0	85.4	mA	OUT2 Block Standby
Circuit Current STBY3	I_{CCST3}	27.0	45.0	63.0	mA	OUT3 Block Standby
Voltage Gain (0dB)	G_{V0}	-0.7	-0.2	+0.3	dB	Vin=1Vpp , f=100kHz
Voltage Gain (6dB)	G_{V6}	+5.5	6	+6.5	dB	Vin=1Vpp , f=100kHz
Frequency Characteristics (0dB)	G_{F0}	-2.0	-0.5	+1.0	dB	Vin=1Vpp: f=100k/10MHz
Frequency Characteristics (6dB)	G_{F6}	-2.0	-0.5	+1.0	dB	Vin=1Vpp: f=100k/10MHz
SW Crosstalk	C_{TSW}	-	-60	-50	dB	Vin=1Vpp: f=4.43MHz
Channel Crosstalk	C_{TCH}	-	-60	-50	dB	Vin=1Vpp: f=4.43MHz
MUTE Attenuation	M_T	-	-60	-50	dB	Vin=1Vpp: f=4.43MHz
Maximum Output Level	V_{OM}	2.6	3.0	-	Vpp	f=10kHz: THD=1.0%
C Input Impedance	Z_C	14	20	26	kΩ	
CSDET1～4 Threshold	V_{THCS}	1.5	-	3.5	V	
CSDET1～4 Input Impedance	Z_{ICS}	100	150	200	kΩ	Pull Up
S1～4 Threshold H	V_{THSH}	2.65	-	3.25	V	
S1～4 Threshold L	V_{THSL}	0.75	-	1.25	V	
S1～4 Input Impedance	Z_{IS}	100	150	200	kΩ	Pull Down
DCOUT H	V_{ODCH}	4.0	4.5	VCC	V	R_L Open
DCOUT M	V_{ODCM}	1.7	2.0	2.3	V	R_L Open
DCOUT L	V_{ODCL}	0	0.1	0.5	V	R_LOpen
DCOUT Output Impedance	Z_{ODC}	0	0.9	1.8	kΩ	
SCL, SDA Threhshold	V_{THIIC}	1.0	-	2.0	V	
SCL, SDA Bias Current	I_{IIC}	-10	0	10	uA	
ADR Threshold	V_{THADR}	1.0	-	2.0	V	
ADR Input Impedance	Z_{ADR}	70	100	130	kΩ	Pull Down
AUXPORT Output Voltage 「H」	V_{AUXH}	4.5	VCC-0.1	VCC	V	Pull Up 10kΩ
AUXPORT Output Voltage 「L」	V_{AUXL}	0	0.1	0.7	V	Pull Up 10kΩ

○ Outer dimensions



PKG : SSOP-B40

○ Block diagram



○ Pin number and pin name

PIN NO	PIN NAME	PIN NO	PIN NAME
1	V1	21	V4
2	ADR	22	AUXPORT
3	Y1	23	Y4
4	S1	24	S4
5	C1	25	C4
6	CSDET1	26	CSDET4
7	V2	27	V5
8	BIAS	28	GND
9	Y2	29	V6
10	S2	30	DCOUT
11	C2	31	COUT3
12	CSDET2	32	YOUT3
13	V3	33	VOUT3
14	TEST	34	COUT2
15	Y3	35	Y/VOUT2
16	S3	36	VOUT1
17	C3	37	YOUT1
18	CSDET3	38	COUT1
19	SCL	39	VCC
20	SDA	40	TV

○Caution 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. Proper circuit function is guaranteed when used within operating temperature (-25℃～+75℃). Installation of fan and proper PCB layout should be applied to

(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)Supply voltage of operation

Although proper operation is guaranteed within the range of supply voltage (4.75V～5.25V) provided that each element functions properly and applied parameters are correct.

(6)Place the line short from output amp, pin set near the IC.

(7)Place coupling capacitor near the pins as possible.

(8)VCC for this IC should use the same power source. And impedance should connect as low as possible for each GND pin.

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