Structure : Silicon Monolithic Integrated Circuit

Product name : Multifunction 3 Outputs Video Drivers

Type : **BH7611FV**

Features : BH7611FV is the 12dB 75Ω driver with LPF・BPF,Y/C MIX.
Standby function is built in, and it is suitable for the low consumption design.

○Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Limits	Unit
Supply Voltage	Vcc	7.0	V
Power dissipation	Pd	450 *	mW
Operating temperature	Topr	-30～+85	℃
Storage temperature	Tstg	-55～+125	℃

* Deratings is done at 4.5mW/℃ above Ta=25℃.
(When mounted on a 70mm×70mm×1.6t Glass epoxy board)

○Operating Range (Ta=25℃)

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

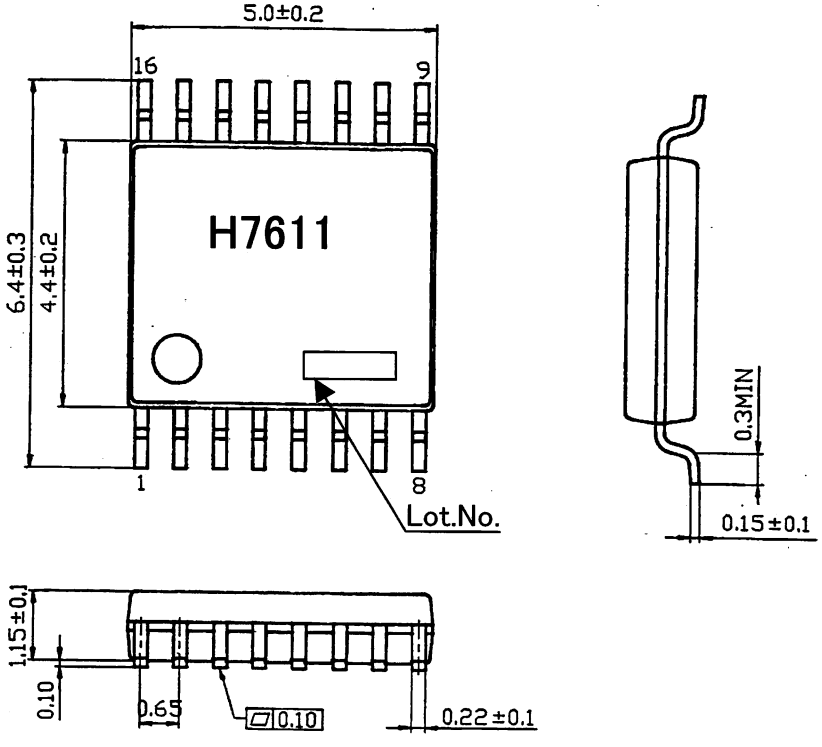
The product described in this specification is designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys). Should you intend to use this product with equipment or devices which require an extremely high level 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(Unless otherwise noted, Ta=25℃、V_{CC}=5.0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
〈Total〉						
Circuit current1	I_{CC1}	-	30	40	mA	No signal
Circuit current2	I_{CC2}	-	0	5	μA	Standby mode
〈Video driver Section〉						
Voltage Gain1 YIN→YOUT	G_{V1}	11.9	12.4	12.9	dB	VIN=0.5Vpp, f=100kHz
Voltage Gain2 YIN→MIXOUT	G_{V2}	11.9	12.4	12.9	dB	VIN=0.5Vpp, f=100kHz
Voltage Gain3 CIN→COUT	G_{V3}	11.9	12.4	12.9	dB	VIN=0.15Vpp, f=4.43MHz
Voltage Gain4 CIN→MIXOUT	G_{V4}	11.9	12.4	12.9	dB	VIN=0.15Vpp, f=4.43MHz
Difference of voltage gain 1 YOUT→MIXOUT	ΔG_{V1Y}	-	0.0	-	dB	$\Delta GV_{1Y}=G_{V1}-G_{V2}$
Difference of voltage gain 2 COUT→MIXOUT	ΔG_{V2C}	-	0.0	-	dB	$\Delta GV_{2C}=G_{V3}-G_{V4}$
Maximum output level 1 YIN→YOUT	V_{OM1}	2.5	2.6	-	Vpp	f=10kHz, THD=1%, VCC=4.5V
Maximum output level 2 YIN→MIXOUT	V_{OM2}	2.5	2.6	-	Vpp	f=10kHz, THD=1%, VCC=4.5V
Maximum output level 3 CIN→COUT	V_{OM3}	-	2.5	-	Vpp	f=4.43MHz,VCC=4.5V, 2nd Harmonic distortion -35dB
Maximum output level 4 CIN→MIXOUT	V_{OM4}	-	2.5	-	Vpp	f=4.43MHz,VCC=4.5V, 2nd Harmonic distortion -35dB
Freq. characteristics 1-1 YIN→YOUT	G_{F11}	-3.0	-0.5	2.0	dB	VIN=0.5Vpp, f=6MHz/100kHz
Freq. characteristics 1-2 YIN→MIXOUT	G_{F12}	-3.0	-0.5	2.0	dB	VIN=0.5Vpp, f=6MHz/100kHz
Freq. characteristics 2-1 YIN→YOUT	G_{F21}	-	-	-30	dB	VIN =0.5Vpp, f=16MHz/100kHz
Freq. characteristics 2-2 YIN→MIXOUT	G_{F22}	-	-	-30	dB	VIN =0.5Vpp, f=16MHz/100kHz
Freq. characteristics 3-1 CIN→COUT	G_{F31}	-0.85	0	0.85	dB	VIN =0.15Vpp, f=3MHz/4.43MHz
Freq. characteristics 3-2 CIN→MIXOUT	G_{F32}	-0.85	0	0.85	dB	VIN =0.15Vpp, f=3MHz/4.43MHz
Freq. characteristics 4-1 CIN→COUT	G_{F41}	-0.85	0	0.85	dB	VIN =0.15Vpp, f=5MHz/4.43MHz
Freq. characteristics 4-2 CIN→MIXOUT	G_{F42}	-0.85	0	0.85	dB	VIN =0.15Vpp, f=5MHz/4.43MHz
Freq. characteristics 5-1 CIN→COUT	G_{F51}	-	-	-30	dB	VIN =0.15Vpp, f=16MHz/4.43MHz
Freq. characteristics 5-2 CIN→MIXOUT	G_{F52}	-	-	-30	dB	VIN =0.15Vpp, f=16MHz/4.43MHz
Freq. characteristics 6-1 CIN→COUT	G_{F61}	-	-	-10	dB	VIN =0.15Vpp, f=1MHz/4.43MHz
Freq. characteristics 6-2 CIN→MIXOUT	G_{F62}	-	-	-10	dB	VIN =0.15Vpp, f=1MHz/4.43MHz
Freq. characteristics 7-1 YIN→YOUT	G_{F71}	-	-1	-	dB	VIN =0.5Vpp, f=4MHz/100kHz,TRAP ON
Freq. characteristics 7-2 YIN→MIXOUT	G_{F72}	-	-1	-	dB	VIN =0.5Vpp, f=4MHz/100kHz,TRAP ON
Freq. characteristics 8-1 YIN→YOUT	G_{F81}	-	-40	-	dB	VIN =0.5Vpp, f=10MHz/100kHz,TRAP ON
Freq. characteristics 8-2 YIN→MIXOUT	G_{F82}	-	-40	-	dB	VIN =0.5Vpp, f=10MHz/100kHz,TRAP ON
Freq. characteristics 9-1 CIN→COUT	G_{F91}	-	-40	-	dB	VIN =0.15Vpp, f=10MHz/4.43MHz,TRAP ON
Freq. characteristics 9-2 CIN→MIXOUT	G_{F92}	-	-40	-	dB	VIN =0.15Vpp, f=10MHz/4.43MHz,TRAP ON
Group delay characteristics1 YIN→YOUT	G_{D1}	-	120	-	nS	VIN=0.5Vpp, f=1MHz
Group delay characteristics2 YIN→MIXOUT	G_{D2}	-	120	-	nS	VIN=0.5Vpp, f=1MHz
Group delay characteristics3 CIN→COUT	G_{D3}	-	190	-	nS	VIN=0.15Vpp, f=4.43MHz
Group delay characteristics4 CIN→MIXOUT	G_{D4}	-	190	-	nS	VIN=0.15Vpp, f=4.43MHz
S/N 1-1 YIN→YOUT	S_{N11}	-	+60	-	dB	50% white video signal 100kHz～6MHz band
S/N 1-2 YIN→MIXOUT	S_{N12}	-	+60	-	dB	50% white video signal 100kHz～6MHz band
S/N 2-1(AM) CIN→COUT	S_{N21}	-	+60	-	dB	Standard signal for 100% chroma S/N measurement 100Hz～500kHz band
S/N 2-2(AM) CIN→MIXOUT	S_{N22}	-	+60	-	dB	Standard signal for 100% chroma S/N measurement 100Hz～500kHz band
S/N 3-1(PM) CIN→COUT	S_{N31}	-	+60	-	dB	Standard signal for 100% chroma S/N measurement 100Hz～500kHz band
S/N 3-2(PM) CIN→MIXOUT	S_{N32}	-	+60	-	dB	Standard signal for 100% chroma S/N measurement 100Hz～500kHz band

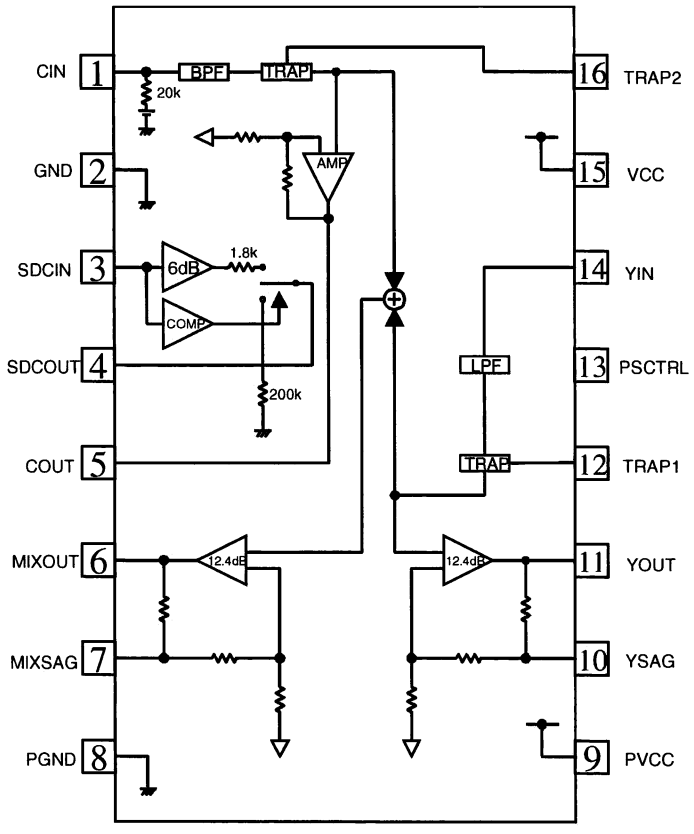
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Differential Gain1 YIN→YOUT	D_{G1}	-	0.5	-	%	VIN =0.5Vpp, Standard staircase signal
Differential Gain 2 YIN→MIXOUT	D_{G2}	-	0.5	-	%	VIN =0.5Vpp, Standard staircase signal
Differential Phase1 YIN→YOUT	D_{P1}	-	0.5	-	deg	VIN =0.5Vpp, Standard staircase signal
Differential Phase2 YIN→MIXOUT	D_{P2}	-	0.5	-	deg	VIN =0.5Vpp, Standard staircase signal
Crosstalk1 YIN→COUT	C_{T1}	-	-55	-	dB	VIN=0.5Vpp, f=4.43MHz
Crosstalk1 CIN→YOUT	C_{T2}	-	-55	-	dB	VIN=0.15Vpp, f=4.43MHz
Secondary distortion1 YIN→YOUT	H_{Y1}	-	-50	-	dB	VIN=0.5Vpp, f=1MHz
Secondary distortion2 YIN→MIXOUT	H_{Y2}	-	-50	-	dB	VIN=0.5Vpp, f=1MHz
Secondary distortion3 CIN→COUT	H_{C3}	-	-50	-	dB	VIN=0.15Vpp, f=4.43MHz
Secondary distortion4 CIN→MIXOUT	H_{C4}	-	-50	-	dB	VIN=0.15Vpp, f=4.43MHz
<<SDC>>						
Output voltage1	V_{OS1}	0	-	0.5	V	INPUT=0V～1V, RL=8.2kΩ, 100kΩ, VCC=4.5V
Output voltage 2	V_{OS2}	3.6	4.0	4.4	V	INPUT=2.5V～VCC, RL=8.2kΩ, 100kΩ, VCC=4.5V
Output impedance1	Z_{S1}	140	200	260	kΩ	INPUT=0V～1V, RL=8.2kΩ
Output impedance2	Z_{S2}	7.5	10	12.5	kΩ	INPUT=2.5V～VCC, RL=8.2kΩ
<<PSCTRL>>						
CTL switching voltage H	V_{THH}	2.0	-	Vcc+0.2	V	OPERATING MODE
CTL switching voltage L	V_{THL}	-0.2	-	0.5	V	STANDBY MODE

○Outer dimensions



SSOP-B16 (Unit: mm)

○Block diagram



○Pin number and pin name

Pin No.	Pin name
1	CIN
2	GND
3	SDCIN
4	SDCOUT
5	COUT
6	MIXOUT
7	MIXSAG
8	PGND
9	PVCC
10	YSAG
11	YOUT
12	TRAP1
13	PSCTRL
14	YIN
15	VCC
16	TRAP2

○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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