5-channel high-performance video driver IC for DVD

BH7860FP

●Description

BH7860FP is a 5-channel video driver IC developed for DVD players. Special filters adjusted to each band of various video signals are incorporated into a single chip. Extended definition, size reduction, and high cost performance can be achieved in DVD players.

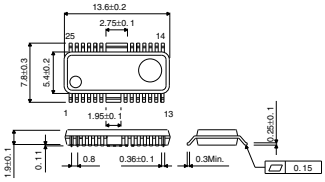
●Features

1) Each high-performance filter, 6dB amplifier, and 75Ω driver for DVD are incorporated into a single chip.
2) Drive 5-channel (Y, C, MIX, Cb, Cr)
3) Group delay difference between chroma signal and luminance signal is a small number of nsec.
4) Drive 2 lines of each signal
5) Operating by 5V single power supply
6) Built-in mute circuit

●Applications

DVD players, DVD recorders

●Dimension (Units : mm)



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●Absolute Maximum Ratings (Ta=25˚C)

Parameter	Symbol	Limits	Unit
Applied voltage	$V_{CC\ max}$	6.0	V
Power dissipation	Pd	1.45	W
Operating temperature range	Topr	−10 ~ +70	˚C
Storage temperature range	Tstg	−55 ~ +150	˚C

∗Derating : −14.5mW/˚C for operation above Ta=25˚C

∗PCB (70mmx70mm, t=1.6mm) glass epoxy mounting.

●Recommended Operating Conditions (Ta=25˚C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	Vcc	4.5	—	5.5	V

●Electrical characteristics (Unless otherwise noted; Ta=25˚C, Vcc=5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Maximum output level	V_{OM}	2.6	3.0	—	Vpp	CIN:f=3.58MHz, YIN,CbIN,CrIN:f=1MHz ∗1
Frequency characteristic1 (C)	G_{FC}	–2.0	0	2.0	dB	CIN:f=1.5/3.58MHz,6/3.58MHz,1Vpp
Frequency characteristic1 (MIX1)	G_{FMIX1}	–2.0	0	2.0	dB	CIN:f=1.5/3.58MHz,6/3.58MHz,1Vpp
Frequency characteristic1 (MIX2)	G_{FMIX2}	–2.0	0	2.0	dB	YIN:f=6/1MHz,1Vpp
Frequency characteristic1 (Y)	G_{FY}	–2.0	0	2.0	dB	YIN:f=6/1MHz,1Vpp
Frequency characteristic1 (Cb)	G_{FCb}	–2.0	0	2.0	dB	CbIN:f=3/1MHz,1Vpp
Frequency characteristic1 (Cr)	G_{FCr}	–2.0	0	2.0	dB	CrIN:f=3/1MHz,1Vpp
Mute attenuation	M_T	—	–50	—	dB	CIN:f=3.58MHz, 1Vpp YIN,CbIN,CrIN:f=1MHz,1Vpp
Input impedance	Z_{IN}	16	20	24	KΩ	CIN,CbIN,CrIN input pin ∗2

●Electrical characteristics (Unless otherwise noted; Ta=25˚C, Vcc=5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Voltage gain (C)	G_{VC}	4.0	5.0	6.0	dB	CIN:f=3.58MHz, 1Vpp
Voltage gain MIX (C)	G_{VMIXC}	4.2	5.2	6.2	dB	CIN:f=3.58MHz, 1Vpp
Voltage gain MIX (Y)	G_{VMIXY}	5.1	6.1	7.1	dB	YIN:f=1MHz,1Vpp
Voltage gain (Y)	G_{VY}	5.3	6.3	7.3	dB	YIN:f=1MHz,1Vpp
Voltage gain (Cb)	G_{VCb}	5.0	6.0	7.0	dB	CbIN:f=1MHz,1Vpp
Voltage gain (Cr)	G_{VCr}	5.0	6.0	7.0	dB	CrIN:f=1MHz,1Vpp
Group delay characteristic Y⇔C	ΔG_{D1}	—	5.0	—	nsec	YIN:f=1MHz, Vin=1Vpp, CIN:f=3.58MHz Vin=1Vpp, Difference between Y,and C of GD
Group delay characteristic Y⇔Cb (Cr)	ΔG_{D2}	—	5.0	—	nsec	YIN:f=1MHz, Vin=1Vpp, CbIN(CrIN):f=1MHz Vin=1Vpp, Difference between Y,and Cb (Cr) of GD
Differential gain	D_G	—	1.0	—	%	1Vpp standard steacase
Differential phase	D_P	—	0.5	—	deg	1Vpp standard steacase

∗1 The input level is adjusted to make the output tertiary distortion –30dB by adding the sine-wave of f=1MHz to the input V_{IN}.
At this input level, Maximum output level of output voltage is V_{OM} (Vpp).

∗2 The input voltage V_{IN50}(V) and the input open voltage V_{IN}(V) is measured when current of 50μA is inputted to each input CIN,CbIN,and CrIN.
At this level, the input impedance Z_{IN} is $Z_{IN}=|V_{IN50}-V_{IN}|/50\mu(K\Omega)$.

●Application circuit