ADE-207-068 (Z)

HA11579
P-I-P Analog
Signal Processing LSI (NTSC)

HITACHI

Rev.1
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The HA11579 is a main/sub Picture analog signal processing LSI for NTSC suited PIP systems. The HA11579 has built-in the Band Pass Filter BPF and Low Pass Filter LPF with automatically adjustment function, and can reduce external components. Furthermore, the HA11579 has been designed to also handle Y and C inputs (S input).

A PIP system can be constructed from this IC and two other ICs (the HD49420FS and the HM53461), that is, from a total of 3 ICs.

Functions

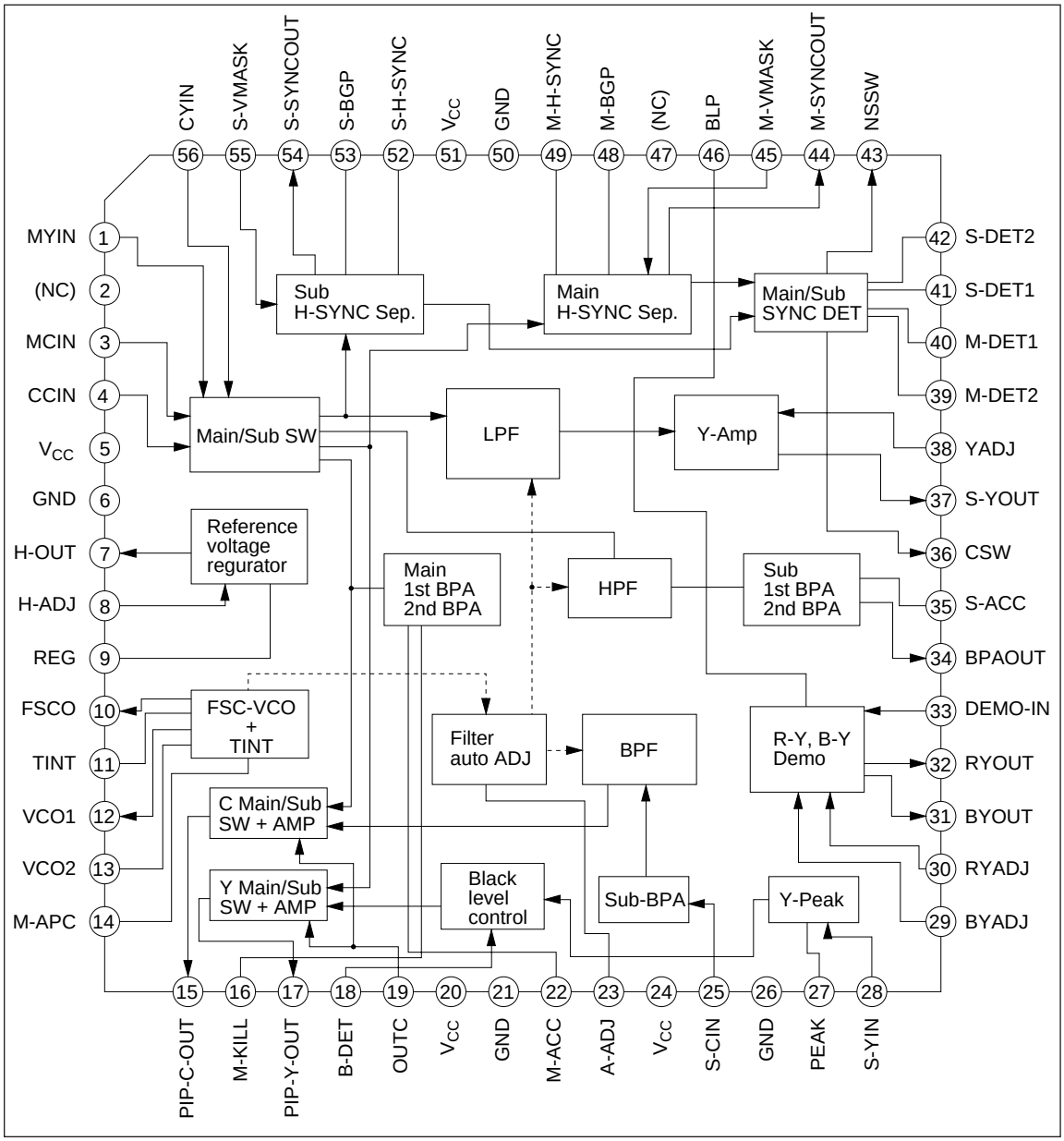
- Main and sub-picture chroma signal processing
- Main and sub-picture sync separation
- Built-in automatically adjustment filter
- Built-in two function video switch

	Main input	Sub input	PIP output
1.	Y/C	Y/C	Y/C
2.	Y/C	Y+C	Y/C

Features

- An NTSC PIP system can be constructed from this and two other (the HD49420FS and the HM53461) ICs.
- As compared with earlier PIP chip sets, a large reduction in the number of external components can be achieved.
- Can handle S inputs
- A black level compensation circuit is built into the sub-picture processing circuit, and such problems as black lifting are eliminated.
- A color signal level compensation circuit is built into the sub-picture color signal level is always stable.

Block Diagram



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Value	Units	Notes
Power supply voltage	$V_{CC\ MAX}$	7	V	1
Power dissipation	P_T	850	mW	
Storage temperature	Tstg	–40 to +150	°C	
Operating temperature	Topr	–10 to +75	°C	

Note: Operating power supply voltage range: 4.75 to 5.25 V

Electrical Characteristics (Ta = 25°C, V_{CC} = 5 V)

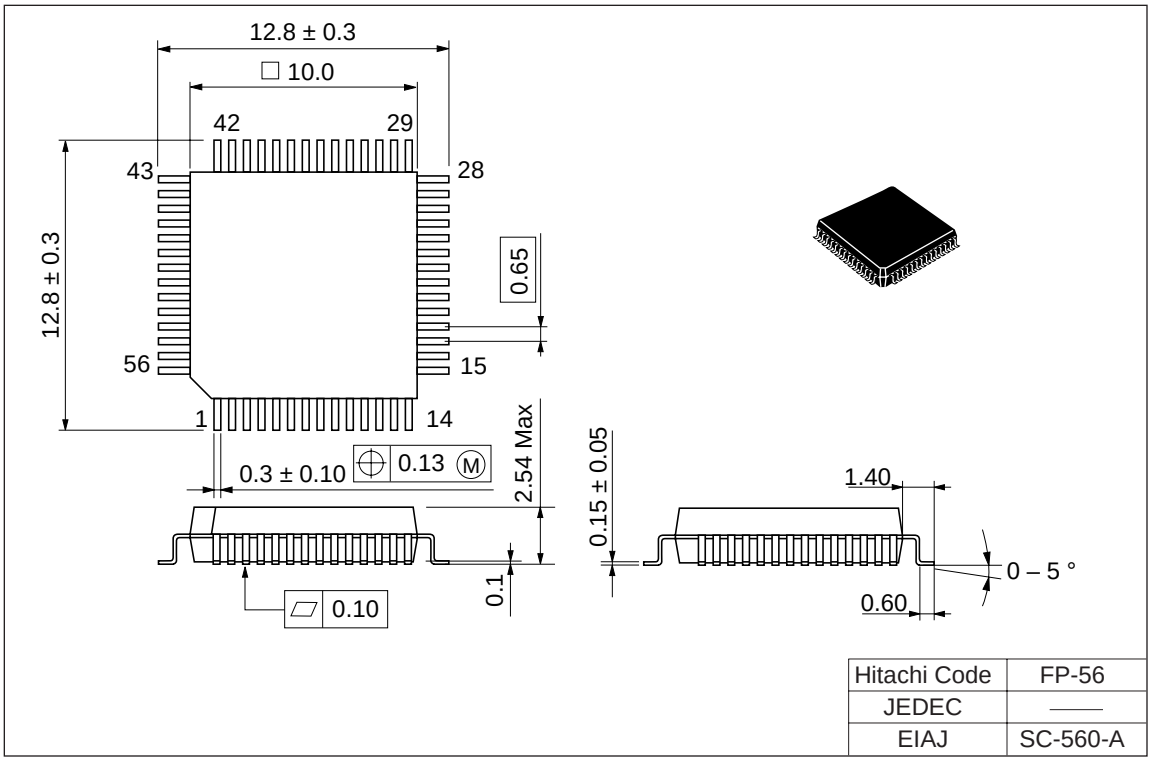
Item		Symbol	Min	Typ	Max	Units	Test Conditions	Application Terminal
Supply current		I_{CC}	100	130	160	mA		5, 20, 24, 51
Input DC level (Y)		E_{IY}	1.63	1.75	1.88	V	Sync peak value	1, 56
Input DC level (C)		E_{IC}	2.35	2.5	2.65	V	Center clamp value	3, 4
Main pass gain (Y)		G_{YM}	4.5	5.0	5.5	dB	DC gain	17
Main pass gain (C)		G_{CM}	4.3	5.0	5.7	dB	at 3.58 MHz	15
Main pass frequency characteristics (Y)		frio(Y)	–1	0	1	dB	at 8 MHz	17
Differentiall gain		DG_M	—	1	3	%		17
Differentiall phase		DP_M	–3	1	3	deg		15
Output DC level (Y)		E_{OY}	0.8	1.0	1.2	V	No signal	17
Output DC level (C)		E_{OC}	1.9	2.2	2.5	V	No signal	15
Main sub change SW threshold level		E_{TH1}	1.5	2.5	3.5	V		19
Post-processing gain	Y	G_{YR}	4.0	5.0	6.0	dB		17
	C	G_{CR}	3.1	4.65	6.2	dB		15
Pre-processing gain	Y	G_{YF}	5.1	5.45	5.8	dB		37
	C	G_{CF}	8.95	10.25	11.55	dB		31, 32
Sub picture pedestal clamp level offset		epof	–25	0	25	mV	As compared with the main picuture's pedestal level	17
Composit mode keep level		E_{TH2}	—	0.7	0.9	V		4
APC Pull in range	+	fp+	350	700	—	Hz	Chroma input frequency –	10
	–	fp–	—	–700	–350	Hz	Chroma input frequency +	10
Chroma VCO oscillation frequency offset		f_{SCO}	–200	0	+200	Hz		10

Electrical Characteristics (T_a = 25°C, V_{CC} = 5 V) (cont)

Item	Symbol	Min	Typ	Max	Units	Test Conditions	Application Terminal
Fsc output level	efsc	400	740	—	mVpp		10
Tint variance range	$\Delta\phi T$	70	80	—	deg		10
SUB 2nd BPA rated output DC level	e_{MBO}	2.1	2.4	2.7	V		34
SUB ACC range MAX	ΔG_{MAX}	–4	–2	+3	dB	Input burst level: –15 dB as compared to the 0 dB	34
SUB ACC range MIN	ΔG_{MIN}	–3	0.5	+3	dB	Input burst level: +6 dB as compared to the 0 dB	34
Demo output DC level (R-Y)	E_{R-Y}	2.8	3.1	3.4	V		32
Demo output DC level (B-Y)	E_{B-Y}	2.8	3.1	3.4	V		31
Demodulation output ratio (R – Y)/(B – Y)	$e\frac{R-Y}{B-Y}$	0.95	1.0	1.05	Tims		31, 32
Demodulation angle	$\angle\frac{R-Y}{B-Y}$	—	90	—	deg		31, 32
Demodulation output bandwidth	BW_{B-Y}	350	500	—	KHz	at –3 dB	31, 32
BLK threshold level	E_{DBTI}	1.2	2.1	2.7	V		46
Main composite SYNC output high level	ECSH (M)	3.8	4.1	—	V		44
Main composite SYNC output low level	ECSL (M)	—	0.9	1.2	V		44
Sub composite SYNC output high level	ECSH (S)	3.8	4.1	—	V		54
Sub composite SYNC output low level	ECSL (S)	—	0.9	1.2	V		54
Main SYNC detector output high level	E_{NOH}	3.8	4.1	—	V		36
Main SYNC detector output low level	E_{NOL}	—	0.9	1.2	V		36
Sub SYNC detector output high level	E_{KOH}	3.8	4.1	—	V		42
Sub SYNC detector output low level	E_{KOL}	—	0.9	1.2	V		42

Package Dimensions

Unit: mm



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