

AN2154FAP

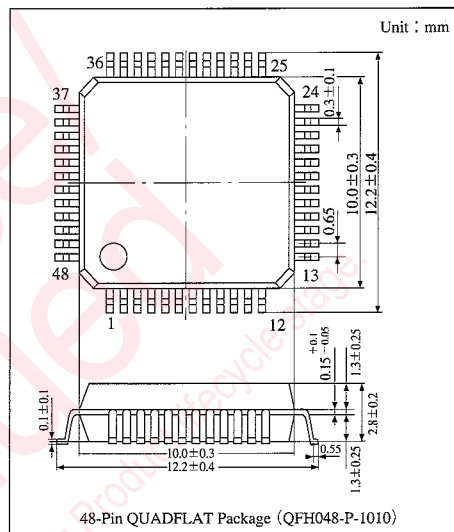
Luminance/Color-Difference Signal Processing IC

Overview

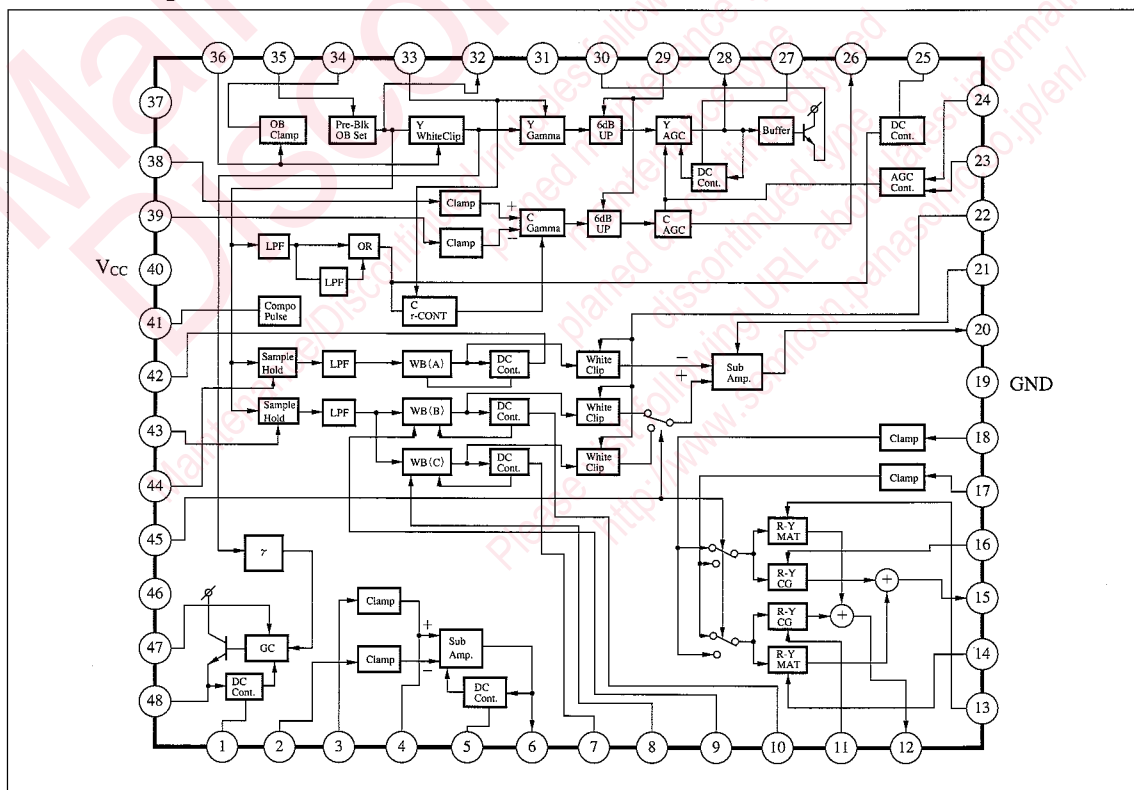
The AN2154FAP is an integrated circuit for outputting luminance, color-difference and vertical aperture signal from output-signal of the CDS processing IC.

Features

- Low power consumption : 190mW typ.
- Color separating high-speed sample-hold built-in
- γ KNEE point can be set externally.
- The camera signal processing is made up in combination with the AN2254FAP.
- QFP—48pins (0.65mm pitch) package



Block Diagram



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V _{CC}	5.5	V
Supply current	I _{CC}	60	mA
Power dissipation	P _D	280	mW
Operating ambient temperature	T _{opr}	-20 to +75	°C
Storage temperature	T _{stg}	-55 to +125	°C

Recommended Operating Range (Ta=25°C)

Parameter	Symbol	Range
Operating supply voltage range	V _{CC}	4.6V to 5V

Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	min	typ	max	Unit
Supply current	I _{CC}	V _{CC} =4.8V, V _{REF} =1.73V	30	45	60	mA
Pin voltage (1) Pin⑫	V _{I2}	V _{CC} =4.8V, V _{REF} =1.73V	2	2.6	3.2	V
Pin voltage (2) Pin⑮	V _{I5}	V _{CC} =4.8V, V _{REF} =1.73V	2	2.6	3.2	V
Pin voltage (3) Pin⑳	V _{I20}	V _{CC} =4.8V, V _{REF} =1.73V	2	2.6	3.2	V
Pin voltage (4) Pin㉓	V _{I32-31}	V _{CC} =4.8V, V _{REF} =1.73V	-120	0	120	mV
Pin voltage (5) Pin㉗	V _{I47-46}	V _{CC} =4.8V, V _{REF} =1.73V	-120	0	120	mV
Pulse separation level 1 (CPOB)	P _{sep1}	V _{CC} =4.8V, V _{REF} =1.73V Pin㉙ variable	3.3	3.75	4.2	V
Pulse separation level 2 (CP2)	P _{sep2}	V _{CC} =4.8V, V _{REF} =1.73V Pin㉙ variable	3.3	3.75	4.2	V
Pulse separation level 3 (Pre-Blk)	P _{sep3}	V _{CC} =4.8V, V _{REF} =1.73V Pin㉙ variable	1.8	2.25	2.7	V
Pulse separation level 4 (f _H /2)	P _{sep4}	V _{CC} =4.8V, V _{REF} =1.73V Pin㉙ variable	0.6	1	1.4	V
Pulse separation level 5 (SP1)	P _{sep5}	V _{CC} =4.8V, V _{REF} =1.73V Pin㉙ variable	0.8	1.15	1.5	V
Pulse separation level 6 (SP2)	P _{sep6}	V _{CC} =4.8V, V _{REF} =1.73V Pin㉙ variable	0.8	1.15	1.5	V
6dB up SW threshold	V _{TH(6dB)}	V _{CC} =4.8V, V _{REF} =1.73V Pin㉙ variable	3.4	3.75	4.3	V
Y white clip	Y _{WC}	V _{CC} =4.8V, V _{REF} =1.73V 10step 1V _{PP}	35	50	65	mV _{PP}
Y γ characteristics (1)	γ _{Y-1}	V _{CC} =4.8V, V _{REF} =1.73V 10step 300mV _{PP} (1st step)	6	—	17	mV _{PP}
Y γ characteristics (2)	γ _{Y-2}	V _{CC} =4.8V, V _{REF} =1.73V 10step 300mV _{PP} (3rd step)	2.25	2.75	3.1	—
Y γ characteristics (3)	γ _{Y-3}	V _{CC} =4.8V, V _{REF} =1.73V 10step 300mV _{PP} (7th step)	4	4.6	5.5	—
Y AGC MIN GAIN	G _{V1}	V _{CC} =4.8V, V _{REF} =1.73V 10step 30mV _{PP}	80	100	120	mV _{PP}
AGC DET	G _{V2}	V _{CC} =4.8V, V _{REF} =1.73V 10step 30mV _{PP}	0.85	1	1.15	—
Y AGC 6dB	G _{V3}	V _{CC} =4.8V, V _{REF} =1.73V 10step 30mV _{PP}	5	6	7	dB
Y AGC MAX GAIN	G _{V4}	V _{CC} =4.8V, V _{REF} =1.8V 10step 30mV _{PP}	7	—	—	dB
Y AGC characteristics (1)	G _{V5}	V _{CC} =4.8V, V _{REF} =1.8V 10step 30mV _{PP}	75	95	115	mV _{PP}
Y AGC characteristics (2)	G _{V6}	V _{CC} =4.8V, V _{REF} =1.8V 10step 600mV _{PP}	270	300	330	mV _{PP}

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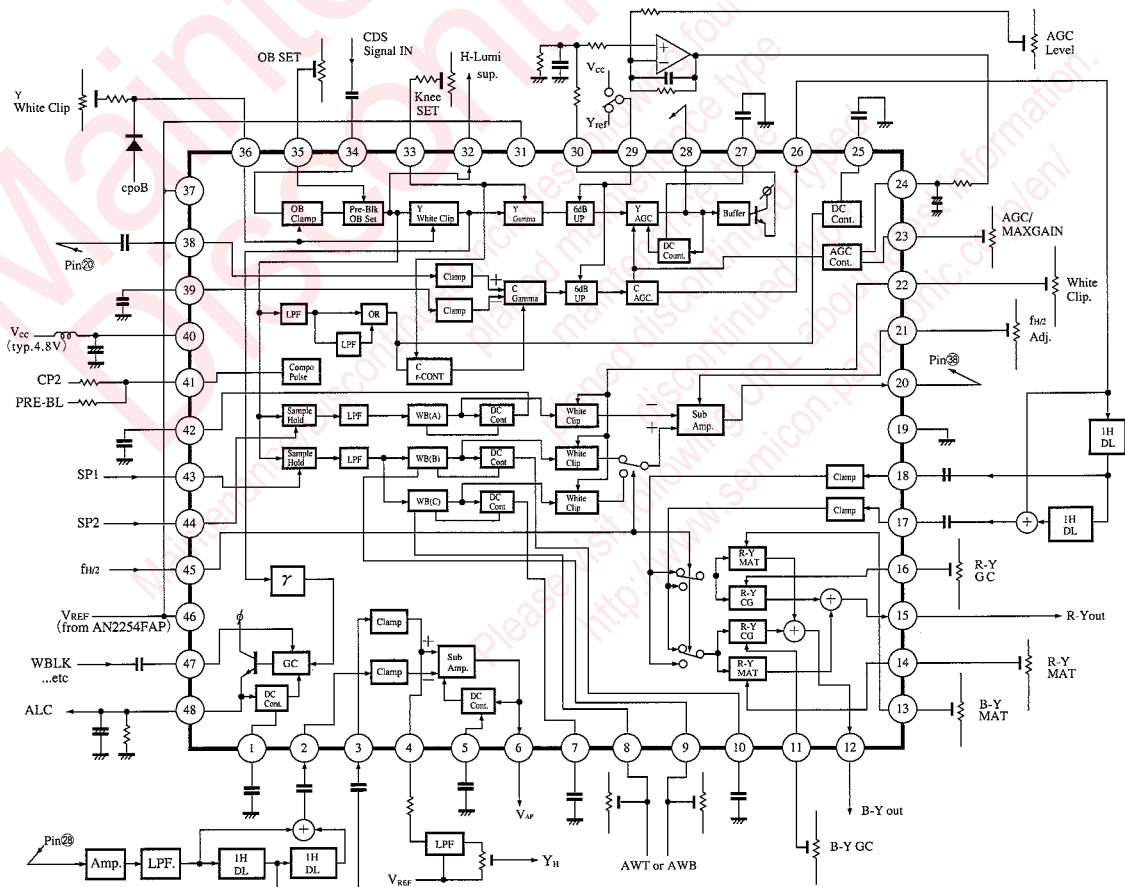
Electrical Characteristics (cont.) (Ta=25°C)

Parameter	Symbol	Condition	min	typ	max	Unit
Y AGC output offset	V _{O28}	V _{CC} =4.8V, V _{REF} =1.8V 10step 600mV _{PP}	-50	—	50	mV
Y AGC f-characteristics	G _{V7}	V _{CC} =4.8V, V _{REF} =1.8V 10MHz Sine wave 300mV _{PP}	210	—	—	mV _{PP}
C AGC characteristics (1)	G _{V7}	V _{CC} =4.8V, V _{REF} =1.8V 10step 30mV _{PP}	35	50	65	mV _{PP}
C AGC characteristics (2)	G _{V8}	V _{CC} =4.8V, V _{REF} =1.8V 10step 300mV _{PP}	130	150	170	mV _{PP}
C AGC output offset	V _{O26}	V _{CC} =4.8V, V _{REF} =1.8V 10step 300mV _{PP}	-500	—	500	mV
C γ leak	G _{V9}	V _{CC} =4.8V, V _{REF} =1.8V 10step 300mV _{PP}	-15	—	15	mV
AGC DET voltage	V ₃₀	V _{CC} =4.8V, V _{REF} =1.8V No-signal input	-100	—	400	mV
White balance (1)	G _{V10}	V _{CC} =4.8V, V _{REF} =1.8V 10step 200mV _{PP}	200	250	300	mV _{PP}
White balance (2)	G _{V11}	V _{CC} =4.8V, V _{REF} =1.8V 10step 200mV _{PP}	0.85	1	1.15	—
White balance (3)	G _{V12}	V _{CC} =4.8V, V _{REF} =1.8V 10step 200mV _{PP}	200	250	300	mV _{PP}
White balance (4)	G _{V13}	V _{CC} =4.8V, V _{REF} =1.8V 10step 200mV _{PP}	0.85	1	1.15	—
LPF characteristics (1)	G _{V14}	V _{CC} =4.8V, V _{REF} =1.8V 2.5MHz Sine wave, 200mV _{PP}	—	—	-16	dB
LPF characteristics (2)	G _{V15}	V _{CC} =4.8V, V _{REF} =1.8V 2.5MHz Sine wave, 200mV _{PP}	—	—	-16	dB
C S/H characteristics (1)	G _{V16}	V _{CC} =4.8V, V _{REF} =1.8V 500kHz pulse, 200mV _{PP}	200	250	—	mV _{PP}
C S/H characteristics (2)	G _{V17}	V _{CC} =4.8V, V _{REF} =1.8V 500kHz pulse, 200mV _{PP}	0.85	1	1.15	—
C clip level (1)	G _{V18}	V _{CC} =4.8V, V _{REF} =1.8V 10step 500mV _{PP}	-10	—	20	mV
C clip level (2)	G _{V19}	V _{CC} =4.8V, V _{REF} =1.8V 10step 500mV _{PP}	-15	—	15	mV
C γ characteristics (1)	γ_{C-1}	V _{CC} =4.8V, V _{REF} =1.73V 10step 300mV _{PP} (1st step)	4	—	10	mV _{PP}
C γ characteristics (2)	γ_{C-2}	V _{CC} =4.8V, V _{REF} =1.73V 10step 300mV _{PP} (3rd step)	2	2.5	3	—
C γ characteristics (3)	γ_{C-3}	V _{CC} =4.8V, V _{REF} =1.73V 10step 300mV _{PP} (10th step)	4.8	5.4	6	—
ALC characteristics (1)	G _{V20}	V _{CC} =4.8V, V _{REF} =1.73V 10step 30mV _{PP}	25	30	35	mV _{PP}
ALC characteristics (2)	G _{V21}	V _{CC} =4.8V, V _{REF} =1.73V 10step 600mV _{PP}	280	320	350	mV _{PP}
ALC gate level difference	G _{V22}	V _{CC} =4.8V, V _{REF} =1.73V No-signal input	-50	—	50	mV
ALC output DC voltage	V _{O48}	V _{CC} =4.8V, V _{REF} =1.73V No-signal input	-100	—	100	mV
R-Y amp (1)	G _{V23}	V _{CC} =4.8V, V _{REF} =1.73V 500kHz Sine wave, 200mV _{PP}	900	—	—	mV _{PP}
R-Y amp (2)	G _{V24}	V _{CC} =4.8V, V _{REF} =1.73V 500kHz Sine wave, 200mV _{PP}	—	—	120	mV _{PP}
B-Y amp (1)	G _{V25}	V _{CC} =4.8V, V _{REF} =1.73V 500kHz Sine wave, 200mV _{PP}	900	—	—	mV _{PP}
B-Y amp (2)	G _{V26}	V _{CC} =4.8V, V _{REF} =1.73V 500kHz Sine wave, 200mV _{PP}	—	—	120	mV _{PP}
R-Y matrix	G _{V27}	V _{CC} =4.8V, V _{REF} =1.73V 10step 200mV _{PP}	-200	—	-100	mV

Electrical Characteristics (cont.) ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Condition	min	typ	max	Unit
B-Y matrix	G_{V28}	$V_{CC} = 4.8\text{V}$, $V_{REF} = 1.73\text{V}$ 10step 200mV _{PP}	100	—	200	mV
Synchronizing offset (1)	G_{V29}	$V_{CC} = 4.8\text{V}$, $V_{REF} = 1.73\text{V}$ No-signal input	-15	—	15	mV
Synchronizing offset (2)	G_{V30}	$V_{CC} = 4.8\text{V}$, $V_{REF} = 1.73\text{V}$ No-signal input	-15	—	15	mV
Y_H output	G_{V31}	$V_{CC} = 4.8\text{V}$, $V_{REF} = 1.73\text{V}$ 1MHz Sine wave, 300mV _{PP}	280	300	320	mV _{PP}
Y_H input offset	V_{O4}	$V_{CC} = 4.8\text{V}$, $V_{REF} = 1.73\text{V}$ 1MHz Sine wave, 300mV _{PP}	-50	—	50	mV
VAP output	G_{V32}	$V_{CC} = 4.8\text{V}$, $V_{REF} = 1.73\text{V}$ 1MHz Sine wave, 300mV _{PP}	500	600	650	mV _{PP}
VAP output offset	V_{O6}	$V_{CC} = 4.8\text{V}$, $V_{REF} = 1.73\text{V}$ 1MHz Sine wave, 300mV _{PP}	-50	—	50	mV
VAP CMRR	C_{MR}	$V_{CC} = 4.8\text{V}$, $V_{REF} = 1.73\text{V}$ 1MHz Sine wave, 300mV _{PP}	—	—	-26	dB
Y.Buff output	G_{V33}	$V_{CC} = 4.8\text{V}$, $V_{REF} = 1.73\text{V}$ 10step 300mV _{PP}	275	300	320	mV _{PP}

Application Circuit



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