AN5344FBP

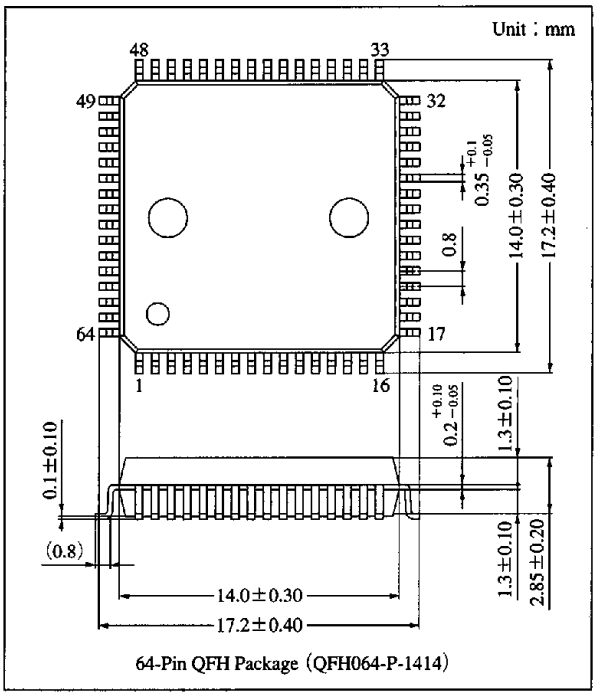
Color-Signal Correcting IC

■ Overview

The AN5344FBP is a chroma signal processor IC incorporated various video-quality improving techniques.

■ Features

- Flesh-tone correction : Automatic tint adjustment with respect to standard flesh tone
- CNR : Reduces color smear noise which occurs often in VCR and Laser Disk.
- CRI : Enhanced color details
- Flesh-tone brightness emhancement : Generating a brighter flesh tone
- Color limiter : Prevents red and blue saturation.



64-Pin QFH Package (QFH064-P-1414)

■ Absolute Maximum Ratings

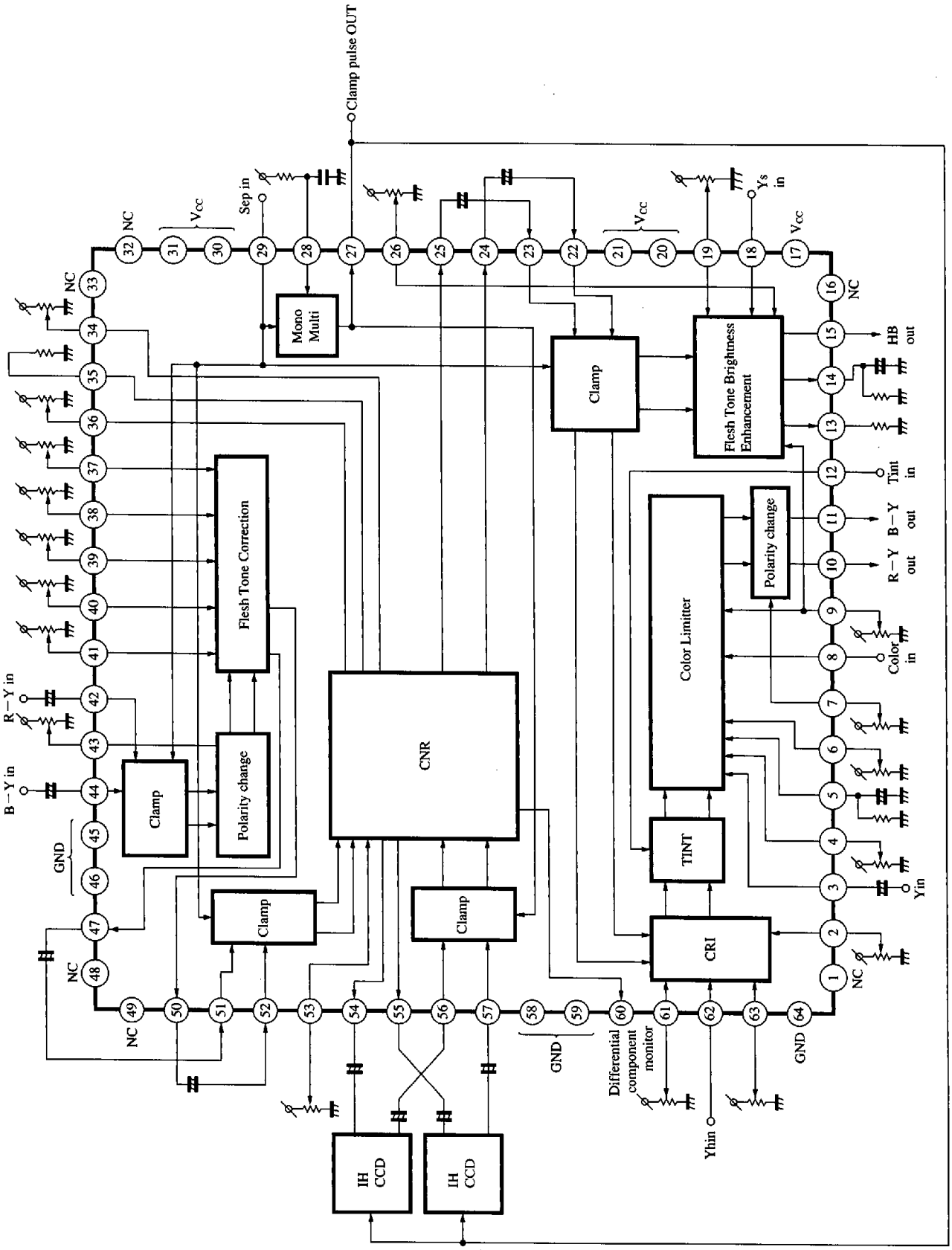
Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	10.5	V
Supply current	I_{CC}	66.5	mA
Power dissipation Note 2)	P_D	1417	mW
Operating ambient temperature Note 1)	T_{opr}	−20 to +70	℃
Storage temperature Note 1)	T_{stg}	−55 to +150	℃

Note 1) Ta=25℃ except operating ambient temperature and storage temperature.
Note 2) Allowable power dissipation of the package at Ta=70℃ and mounted on the printbord.

■ Recommended Operating Range (Ta=25℃)

Parameter	Symbol	Range
Operating supply voltage range	V_{CC}	8.1V to 9.9V

Block Diagram



■ Electrical Characteristics (Ta=25±2℃)

Parameter	Symbol	Condition	min	typ	max	Unit
Supply current (1)	I_{20}		24.1	34.3	44.0	mA
Supply current (2)	I_{21}		8.40	12.0	16.5	mA
Supply current (3)	I_{30}		4.75	6.78	9.00	mA
Supply current (4)	I_{31}		4.68	6.69	9.00	mA
Supply current (5)	I_{17}		10.7	15.2	21.0	mA
Pin voltage	V_2		2.65	3.15	3.65	V
Pin voltage	V_4		3.79	4.29	4.79	V
Pin voltage	V_{12}		2.69	3.19	3.69	V
Pin voltage	V_{19}		2.10	2.60	3.10	V
Pin voltage	V_{26}		3.12	3.62	4.12	V
Pin voltage	V_{36}		2.85	3.35	3.85	V
Pin voltage	V_{37}		2.82	3.32	3.82	V
Pin voltage	V_{38}		3.13	3.63	4.13	V
Pin voltage	V_{39}		3.62	4.12	4.62	V
Pin voltage	V_{40}		2.61	3.11	3.61	V
Pin voltage	V_{41}		2.62	3.12	3.62	V
Pin voltage	V_{62}		2.32	2.82	3.32	V
Input impedance	Ri_4	DC measurement	16.0	20.0	24.0	kΩ
Flesh tone Correction Circuit						
Input amplitude gain control 1 (R−Y)	A_{C1R}	Gain at V_{43}=5V, input $1V_{P-P}$	3.92	4.90	5.88	times
Input amplitude gain control ratio 1	$R_{C1R/B}$	(R−Y), (B−Y) gain ratio at V_{43}=5V, input $1V_{P-P}$	0.88	1	1.12	times
Input amplitude gain control 2 (R−Y)	A_{C2R}	Gain at V_{43}=3.55V	1.55	2.08	2.39	times
Input amplitude gain control 2 (B−Y)	A_{C2B}	Gain at V_{43}=3.55V	1.62	2.17	2.49	times
Input amplitude gain control 3 (R−Y)	A_{C3R}	Gain at V_{43}=1V (Polarity inversion)	−5.88	−4.90	−3.92	times
Input amplitude gain control ratio 3	$R_{C3R/B}$	(R-Y), (B-Y) gain ratio at V_{43}=1V (Polarity inversion)	0.88	1	1.12	times
Input amplitude gain control 4 (R−Y)	A_{C4R}	Gain at V_{43}=2.7V (Polarity inversion)	−1.98	−1.72	−1.29	times
Input amplitude gain control 4 (B−Y)	A_{C4B}	Gain at V_{43}=2.7V (Polarity inversion)	−2.15	−1.87	−1.40	times
Flesh tone correction center axis	θ_{CC}	Center axis at V_{41}=3V	122	134	142	deg
Center axis variable width	$\Delta\theta_{CC}$	Center axis at V_{41}=1 to 5V	41.5	56.5	74.5	deg
Flesh tone correction stop level	V_{CSTOP}	Output level difference between 123° and 143° at V_{38}=3.8V	179	224	269	mV
Flesh tone correction gain control	ΔV_{CC1}	Output level difference between 123° and 143° at V_{37}=3V	−176	−141	−106	mV
Flesh tone correction quantity (R−Y)	ΔV_{CCR}	Output level difference between 123° and 143°	45	115	185	mV
Flesh tone correction quantity (B−Y)	ΔV_{CCB}	Output level difference between 123° and 143°	80	150	220	mV
Flesh tone correction clamp voltage (R−Y)	V_{47}		3.7	4.2	4.7	V
Flesh tone correction clamp voltage (B−Y)	V_{50}		3.7	4.2	4.7	V
Sandcastle pulse slice level 1	V_{SCP1}		3.01	3.51	4.01	V
Flesh tone Brightness Enhancement Circuit						
APL detection voltage	V_{APL}	Pin③ input, $0.714V_{O-P}$	1.47	1.87	2.27	V
APL detection voltage ratio	ΔV_{APL}	Pin③ input, ratio input $0.357V_{O-P}$ to input $0.714V_{O-P}$	0.14	0.34	0.54	times

■ Electrical Characteristics (cont.) (Ta=25±2℃)

Parameter	Symbol	Condition	min	typ	max	Unit
Y_S threshold voltage	V_{YSTH}	The lowest voltage at which Y_S is ON, when V_{18} is increased from 0V	1.55	2.05	2.25	V
Y_S characteristics	V_{YS}	When V_{18}=5V, V_{19}=4V	3.48	3.98	4.48	V
APL bias	V_{13}	43kΩ between Pin⑬ to GND	7.54	8.04	8.54	V
Flesh tone brightness Enhancement maximum output	$V_{HBmax.}$	When V_{26}=5V, V_{15} output level	0.49	0.68	0.76	V_{O-P}
Flesh tone brightness Enhancement correction ratio	ΔV_{HBCR}	When V_{26}=3V, ratio to V_{26}=5V	−10.67	−7.67	−4.67	dB
Flesh tone brightness Enhancement clamp voltage (R−Y)	V_{23}		3.68	4.18	4.68	V
Flesh tone brightness Enhancement clamp voltage (B−Y)	V_{22}		3.68	4.18	4.68	V
CRI Circuit						
CRI standard output (R−Y)	V_{DER}	Pin⑫ input, 30mV_{P-P}1MHz V_2=3V	0.43	0.61	0.86	V_{P-P}
CRI standard output (B−Y)	V_{DEB}	Pin⑫ input, 30mV_{P-P}1MHz V_2=3V	0.98	1.38	1.95	V_{P-P}
CRI maximum output (R−Y)	$\Delta V_{DERmax.}$	V_2=5V Ratio to standard output	2.73	4.31	5.89	dB
CRI maximum output (B−Y)	$\Delta V_{DEBmax.}$	V_2=5V Ratio to standard output	2.79	4.17	5.75	dB
CRI minimum output (R−Y)	$\Delta V_{DERmin.}$	V_2=1V Ratio to standard output	—	—	−18	dB
CRI minimum output (B−Y)	$\Delta V_{DEBmin.}$	V_2=1V Ratio to standard output	—	—	−18	dB
TINT Circuit						
Tint center	θ_{TC}	Calculate from the output when Pin⑫, ⑬ input is 3V_{P-P}, 10kHz and V_{12} open.	−8	0	8	deg
Tint control max.	$\Delta\theta_{Tmax.}$	Variation quantity from V_{12}=4V tint center	−54	−39	−24	deg
Tint control min.	$\Delta\theta_{Tmin.}$	Variation quantity from V_{12}=2V tint center	62	77	92	deg
Color Limiter Circuit						
Color peak detection 1 (R−Y)	V_{PIR}	Pin⑬ input 1.5V_{O-P} Pin⑤ output DC voltage	4.52	5.02	5.52	V
Color peak detection 1 (B−Y)	V_{PIB}	Pin⑫ input 1.5V_{O-P} Difference voltage from R−Y	−0.4	0	0.4	V
Color peak detection 2 (R−Y)	V_{P2R}	Pin⑬ input 0.5V_{O-P} Difference voltage from color peak detection 1 (R−Y)	−2.29	−1.89	−1.49	V
Color peak detection 2 (B−Y)	V_{P2B}	Pin⑫ input 0.5V_{O-P} Difference voltage from color peak detection 2 (R−Y)	−0.4	0	0.4	V
Color limit level 1	V_{L1}	Pin⑫ input 2V_{O-P} V_{11} where Pin⑥ to GND is 22kΩ	1.75	2.19	2.63	V_{O-P}
Color limit level 2	V_{L2}	Ratio to color limit level 1, when Pin⑥ to GND is 82kΩ	0.55	0.76	0.92	times
Output amplitude gain control 1 (R−Y)	A_{L1R}	Pin⑫, ⑬ input 3V_{P-P} at V_7=5V	0.81	1.08	1.24	times
Output amplitude gain control ratio 1	$R_{L1R/B}$	Pin⑫, ⑬ input 3V_{P-P} (R−Y), (B−Y) gain ratio at V_7=5V	0.88	1.0	1.12	times
Output amplitude gain control 2 (R−Y)	A_{L2R}	At V_7=3.5V	0.28	0.36	0.43	times
Output amplitude gain control 2 (B−Y)	A_{L2B}	At V_7=3.5V	0.28	0.36	0.43	times
Output amplitude gain control 3 (R−Y)	A_{L3R}	At V_7=1V (Polarity inversion)	−1.20	−1.04	−0.78	times
Output amplitude gain control ratio 3	$R_{L3R/B}$	At V_7=1V (Polarity inversion) (R−Y), (B−Y) gain ratio	0.88	1.0	1.12	times
Output amplitude gain control 4 (R−Y)	A_{L2B}	At V_7=2.5V (Polarity inversion)	−0.84	−0.73	−0.55	times

■ Electrical Characteristics (cont.) (Ta=25±2℃)

Parameter	Symbol	Condition	min	typ	max	Unit
Output amplitude gain control 4 (B−Y)	A_{L4B}	When V_7=2.5V (Polarity inversion)	−0.86	−0.75	−0.56	times
Color limit level 3	V_{L3}	Pin③ input 0.714V_{O-P} Ratio to limit level 1 when Pin⑥ to GND is 82kΩ	0.95	1.00	1.05	times
Color control 1 (R−Y)	A_{LC1R}	Pin㉒, ㉓ input 3V_{P-P} Output level at V_8=3V	0.35	0.44	0.53	times
Color control 1 (B−Y)	A_{LC1B}	Pin㉒, ㉓ input 3V_{P-P} Output level at V_8=3V	0.35	0.44	0.53	times
Color control 2 (R−Y)	A_{LC2R}	At V_8=1V, Ratio to V_8=3V	—	—	−40	dB
Color control 2 (B−Y)	A_{LC2B}	At V_8=1V, Ratio to V_8=3V	—	—	−40	dB
Pedestal clamp voltage	V_3		3.06	3.56	4.06	V
CNR Circuit						
CNR gain 1 (R−Y)	A_{N1R}	V_{53}=0V, input 3V_{P-P}, Pin㊶ input, Pin㉕ output	−1.5	0	1.5	dB
CNR gain ratio 1	$R_{N1R/B}$	R−Y/B−Y when V_{53}=0V, input 3V_{P-P}	0.88	1	1.12	times
Difference adjustment gain (R−Y)	A_{dR}	V_{36}=3V, input 60mV_{P-P}, Pin㊻ input, Pin㊹ output	−5.74	−3.46	−1.18	dB
Difference adjustment gain ratio	$R_{dR/B}$	V_{36}=3V, input 60mV_{P-P}, Pin㊼ input, Pin㊺ output	0.74	0.95	1.10	times
Difference adjustment maximum gain (R−Y)	$A_{dRmax.}$	V_{36}=5V, input 60mV_{P-P}, Pin㊻ input, Pin㊹ output	1.5	3.8	6.1	dB
Difference adjustment maximum gain (B−Y)	$A_{dBmax.}$	V_{36}=5V, input 60mV_{P-P}, Pin㊼ input, Pin㊺ output	2.3	4.6	6.9	dB
K operation offset (R−Y)	V_{K1R}	V_{35}=9V, input 60mV_{P-P}, Pin㊻ input, Pin㊹ output	—	—	−12	dB
K operation offset (B−Y)	V_{K1B}	V_{35}=9V, input 60mV_{P-P}, Pin㊼ input, Pin㊺ output	—	—	−12	dB
CNR gain 2 (R−Y)	A_{N2R}	V_{53}=0V, input 3V_{P-P}, Pin㊶ input, Pin㊹ output	−11.29	−8.29	−5.29	dB
CNR gain ratio 2	$R_{N2R/B}$	R−Y,B−Y ratio when V_{53}=0V, input 3V_{P-P}	0.88	1	1.12	times
K operation gain 1 (R−Y)	A_{K1R}	V_{34}=9V, input 60mV_{P-P}, Pin㊻ input, Pin㊹ output	—	—	−15	dB
K operation gain 1 (B−Y)	A_{K1B}	V_{34}=9V, input 60mV_{P-P}, Pin㊼ input, Pin㊺ output	—	—	−15	dB
K operation gain 2 (R−Y)	A_{K2R}	V_{34}=3V, input 60mV_{P-P}, Pin㊻ input, Pin㊹ output	−5.5	−3.2	−0.9	dB
K operation gain 2 (B−Y)	A_{K2B}	V_{35}=3V, input 60mV_{P-P}, Pin㊼ input, Pin㊺ output	−5.3	−2.6	0	dB
Sandcastle pulse slice level 2	V_{scp2}		1.8	2.3	2.8	V
Difference monitor amplitude	V_{MR}	Input 3V_{P-P} Pin㊶ input, Pin㊿ output	0.336	0.480	0.624	V_{P-P}
K control 1 (R−Y)	A_{NC1R}	V_{53}=0V, input 60mV_{P-P}, Pin㊻ input, Pin㉕ output	—	—	−30	dB
K control 1 (B−Y)	A_{NC1B}	V_{53}=0V, input 60mV_{P-P}, Pin㊼ input, Pin㉔ output	—	—	−30	dB
K control 2 (R−Y)	A_{NC2R}	V_{53}=2V, input 60mV_{P-P}, Pin㊻ input, Pin㉕ output	−6.1	−3.8	−1.5	dB
K control 2 (B−Y)	A_{NC2B}	V_{53}=2V, input 60mV_{P-P}, Pin㊼ input, Pin㉔ output	−5.3	−3.0	−0.7	dB
K control 3 (R−Y)	A_{NC3R}	V_{53}=6V, input 60mV_{P-P}, Pin㊻ input, Pin㉕ output	0.12	2.42	4.72	dB
K control 3 (B−Y)	A_{NC3B}	V_{53}=6V, input 60mV_{P-P}, Pin㊼ input, Pin㉔ output	1.08	3.38	5.68	dB

■ Electrical Characteristics (cont.) (Ta=25±2℃)

Parameter	Symbol	Condition	min	typ	max	Unit
K control 4 (R−Y)	A_{NC4R}	V_{53}=0V, input 60mV_{P-P}, Pin⑯ input, Pin⑭ output	—	—	−30	dB
K control 4 (B−Y)	A_{NC4B}	V_{53}=0V, input 60mV_{P-P}, Pin⑰ input, Pin⑮ output	—	—	−30	dB
K control 5 (R−Y)	A_{NC5R}	V_{53}=2V, input 60mV_{P-P}, Pin⑯ input, Pin⑭ output	—	—	−30	dB
K control 5 (B−Y)	A_{NC5B}	V_{53}=2V, input 60mV_{P-P}, Pin⑰ input, Pin⑮ output	—	—	−30	dB
CNR clamp voltage (R−Y)	V_{51}		3.60	4.10	4.60	V
CNR clamp voltage (B−Y)	V_{52}		3.60	4.10	4.60	V
CCD clamp voltage (R−Y)	V_{56}		6.34	6.84	7.34	V
CCD clamp voltage (B−Y)	V_{57}		6.30	6.80	7.30	V
CNR switch threshold voltage	V_{CNRTH}	The lowest voltage at which CNR is ON, when V_{53} is increased from 0V	0.2	0.6	1.0	V

■ Electrical Characteristics [Reference Value] (Ta=25±2℃)

Parameter	Symbol	Condition	min	typ	max	Unit
Flesh tone Correction Circuit						
+side control range	θ_{C+}	Phase at V_{40}=3V	114	148	172	deg
+side control variable width	$\Delta\theta_{C+}$	Control range variation quantity at V_{40}=2 to 5V	36	47	58	deg
−side control range	θ_{C-}	Phase at V_{39}=3V	80	91	102	deg
−side control variable width	$\Delta\theta_{C-}$	Control range variation quantity at V_{39}=2 to 5V	0	9	24	deg
Flesh tone correction quantity (R−Y) ambient temperature dependency	$\frac{\Delta V_{CCR}}{\Delta T}$	Color correction quantity (R−Y) variation rate, at Ta=−20 to +70℃ change	—	1.0	—	mV/℃
Flesh tone correction quantity (B−Y) ambient temperature dependency	$\frac{\Delta V_{CCB}}{\Delta T}$	Color correction quantity (B−Y) variation rate, at Ta=−20 to +70℃ change	—	2.0	—	mV/℃
Flesh tone correction quantity (R−Y) supply voltage dependency	$\frac{\Delta V_{CCR}}{\Delta V}$	Color correction quantity (R−Y) variation rate, at T_{CC}=9V −10% to +10% change	—	10	—	mV/V
Flesh tone correction quantity (B−Y) supply voltage dependency	$\frac{\Delta V_{CCB}}{\Delta V}$	Color correction quantity (B−Y) variation rate, at T_{CC}=9V −10% to +10% change	—	−3.0	—	mV/V
Flesh tone Brightness Enhancement Circuit						
Flesh tone brightness enhancement maximum output ambient temperature dependency	$\frac{\Delta V_{HBmax.}}{\Delta T}$	Flesh-color brightness maximum output variation rate at Ta=−20 to +70℃ change	—	−0.10	—	$\frac{mV_{O-P}}{℃}$
Flesh tone brightness enhancement maximum output supply voltage dependency	$\frac{\Delta V_{HBmax.}}{\Delta V}$	Flesh color bright maximum output variation rate at V_{CC}=9V−10% to +10% change	—	90	—	$\frac{mV_{O-P}}{V}$
CRI Circuit						
Coring quantity 1	V_{CORE1}	Between Pin⑥① to GND, 510kΩ. Ratio to CRI standard output (B−Y)	0.50	0.81	1	times
Coring quantity 2	V_{CORE2}	Between Pin⑥① to GND, 200kΩ. Ratio to CRI standard output (B−Y)	0.34	0.55	0.85	times
Slice level 1 (R−Y)	V_{S1R}	Between Pin⑥③ to GND, 150kΩ. Ratio to CRI standard output (R−Y)	0.40	0.62	0.95	times
Slice level 1 (B−Y)	V_{S1B}	Between Pin⑥③ to GND, 150kΩ. Ratio to CRI standard output (B−Y)	0.41	0.63	0.96	times
Slice level 2 (R−Y)	V_{S2R}	Between Pin⑥③ to GND, 100kΩ. Ratio to CRI standard output (R−Y)	0.12	0.26	0.45	times
Slice level 2 (B−Y)	V_{S2B}	Between Pin⑥③ to GND, 100kΩ. Ratio to CRI standard output (B−Y)	0.12	0.26	0.45	times

Note) The characteristics value in parentheses is not a guaranteed value. but reference one on design.

■ Electrical Characteristics [Reference Value] (cont.) (Ta=25±2℃)

Parameter	Symbol	Condition	min	typ	max	Unit
CRI standard output (R−Y) ambient temperature dependency	$\frac{\Delta V_{DER}}{\Delta T}$	CRI standard output (R−Y) variation factor, at Ta=−20 to +70℃ change	—	−0.5	—	$\frac{mV_{P-P}}{℃}$
CRI standard output (B−Y) ambient temperature dependency	$\frac{\Delta V_{DEB}}{\Delta T}$	CRI standard output (B−Y) variation factor, at Ta=−20 to +70℃ change	—	−3.0	—	$\frac{mV_{P-P}}{℃}$
CRI standard output (R−Y) supply voltage dependency	$\frac{\Delta V_{DER}}{\Delta V}$	CRI standard output (R−Y) variation factor, at V_{CC}=9V −10% to +10% change	—	25	—	$\frac{mV_{P-P}}{V}$
CRI standard output (B−Y) supply voltage dependency	$\frac{\Delta V_{DEB}}{\Delta V}$	CRI standard output (B−Y) variation factor, at V_{CC}=9V −10% to +10% change	—	60	—	$\frac{mV_{P-P}}{V}$
TINT Circuit						
TINT center ambient temperature dependency	$\frac{\Delta \theta_{CC}}{\Delta T}$	At Ta=−20 to +70℃ change	—	0	—	deg/℃
TINT center supply voltage dependency	$\frac{\Delta \theta_{CC}}{\Delta V}$	At V_{CC}=9V−10% to +10% change	—	−0.5	—	deg/V
Color Limiter Circuit						
Color limit level (R−Y) ambient temperature dependency	$\frac{V_{1,2R}}{\Delta T}$	Color limit level (R−Y) variation factor, at Ta=−20 to +70℃ change	—	0.5	—	$\frac{mV_{P-P}}{℃}$
Color limit level (B−Y) ambient temperature dependency	$\frac{V_{1,2B}}{\Delta T}$	Color limit level (B−Y) variation factor, at Ta=−20 to +70℃ change	—	0.5	—	$\frac{mV_{P-P}}{℃}$
Color limit level (R−Y) supply voltage dependency	$\frac{V_{1,2R}}{\Delta V}$	Color limit level (R−Y) variation factor, at V_{CC}=−10% to +10% change	—	100	—	$\frac{mV_{P-P}}{V}$
Color limit level (B−Y) supply voltage dependency	$\frac{V_{1,2B}}{\Delta V}$	Color limit level (B−Y) variation factor, at V_{CC}=−10% to +10% change	—	100	—	$\frac{mV_{P-P}}{V}$
CNR Circuit						
Group delay time (R−Y)	G_{DR}	K operation delay time (R−Y) in CNRON	40.8	68.0	95.0	ns
Group delay time (B−Y)	G_{DB}	K operation delay time (B−Y) in CNRON	39.8	66.4	93.0	ns
DG_N (R−Y)	DG_{NR}	DG of Pin㊶ → Pin㊹	−1	0	1	%
DG_N (B−Y)	DG_{NB}	DG of Pin㊷ → Pin㊺	−1	0	1	%
Clamp pulse width	T_{CLP}	Pulse width of Pin㉗	0.65	0.93	1.21	μs
K control 2 (R−Y) ambient temperature dependency	$\frac{\Delta A_{NC2R}}{\Delta T}$	K control 2 (R−Y) variation factor, at Ta=−20 to +70℃ change	—	−0.015	—	dB/℃
K control 2 (B−Y) ambient temperature dependency	$\frac{\Delta A_{NC2B}}{\Delta T}$	K control 2 (B−Y) variation factor, at Ta=−20 to +70℃ change	—	−0.015	—	dB/℃
K control 2 (R−Y) supply voltage dependency	$\frac{\Delta A_{NC2R}}{\Delta V}$	K control 2 (R−Y) variation factor, at V_{CC}=9V −10% to +10% change	—	0.35	—	dB/V
K control 2 (B−Y) supply voltage dependency	$\frac{\Delta A_{NC2B}}{\Delta V}$	K control 2 (B−Y) variation factor, at V_{CC}=9V −10% to +10% change	—	0.35	—	dB/V

Note) The characteristics value in parentheses is not a guaranteed value, but reference one on design.

Pin Descriptions

Pin No.	Pin name	Pin No.	Pin name
1	NC	33	NC
2	CRI correction amount	34	K operation gain control
3	Y input	35	Offset control
4	Limit slice level	36	Difference control
5	Color peak detection	37	Flesh tone correction gain control
6	Color limit level	38	Flesh tone correction stop control
7	Output polarity gain control	39	−side compensation control
8	Color control voltage	40	+side compensation control
9	APL inter lock limiter switch	41	Central axis control
10	R−Y output	42	R−Y input
11	B−Y output	43	Input polarity gain control
12	Tint control voltage	44	B−Y input
13	APL shift adj.	45	GND3 (B−Y system)
14	APL detection	46	GND4 (R−Y system)
15	Flesh tone brightness enhancement output	47	Flesh tone correction R−Y output
16	NC	48	NC
17	V_{CC5} (for CNR)	49	NC
18	YS input	50	Flesh tone correction B−Y output
19	External DC input	51	CNR R−Y input
20	V_{CC1} (Main)	52	CNR B−Y input
21	V_{CC2} (clamp system)	53	K control
22	Flesh tone brightness enhancement B−Y input	54	CCD R−Y input
23	Flesh tone brightness enhancement R−Y input	55	CCD B−Y input
24	CNR B−Y output	56	CCD R−Y output
25	CNR R−Y output	57	CCD B−Y output
26	Flesh tone brightness correction amount	58	GND1 (main)
27	Clamp pulse output	59	GND2 (clamp system)
28	Mono-multi CR	60	Difference monitor
29	SCP input	61	CRI coring level
30	V_{CC3} (B−Y system)	62	Y-high pass input
31	V_{CC4} (R−Y system)	63	CRI slice level
32	NC	64	GND5 (for CNR)

Reference

Power Dissipation of Package
P_D − Ta