

AN5606K

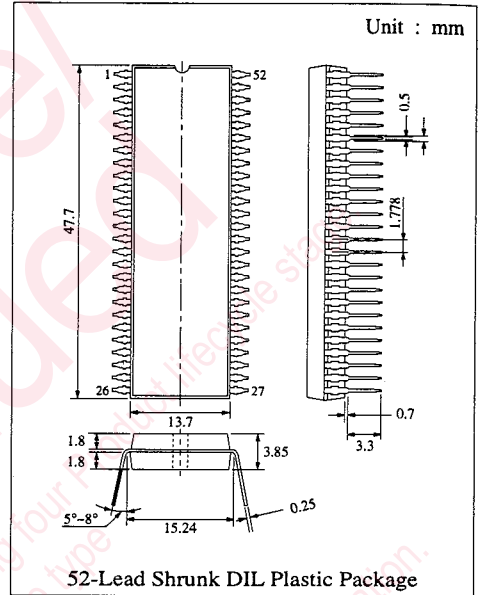
PAL/NTSC Video, Chrominance, and Deflection Signal Processing IC with I²C Bus Interface

■ Description

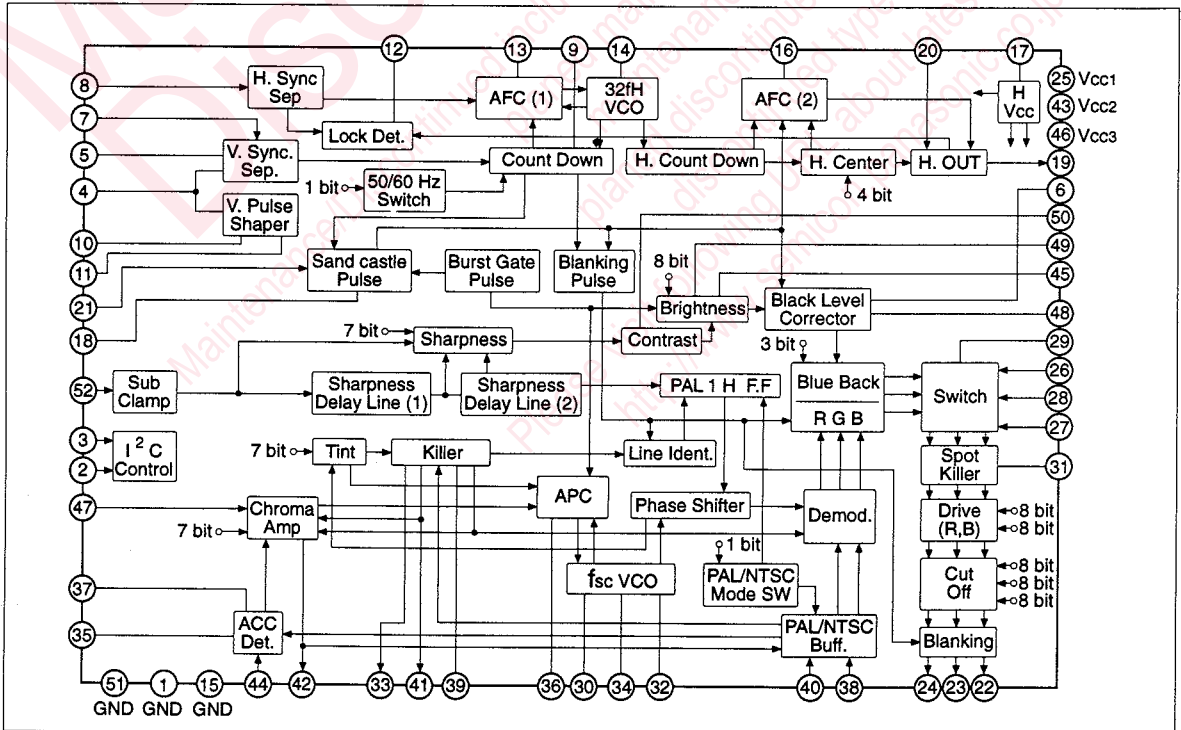
The AN5606K is an integrated circuit consisting of a Video, Chroma, and Synchronous Signal Processing (with I²C Bus) for use in the PAL/NTSC Colour TV

■ Features

- PAL/NTSC Signal Processing
- External R G B Signal Input
- Can be easily combined with SECAM Decoder IC (AN5636K)
- I²C bus control for the following 11 DAC Inputs (including Sub-level Adjusts) :
Colour, Tint (NTSC Only), Brightness, Contrast, Sharpness, H-center, RB-Drives, & RGB Cut-off
- I²C bus control for the following 8 switches : PAL/NTSC Mode Switch, 50/60Hz switch, R-Back ON/OFF, G-Back ON/OFF, B-Back ON/OFF, Blanking Switch, 3.58/4.43MHz VCO Switch
- Built-in Y-Delay (Luminance Delay), Black-Level Expander, X-Ray Protection, ACL, ABL, Colour-Killer & Spot Killer functions



■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating			Unit
		VCC1 = 10.0	VCC2 = 5.6	VCC3 = 6.9	
Supply Voltage	VCC	VCC1 = 10.0	VCC2 = 5.6	VCC3 = 6.9	V
Supply Current	ICC	ICC1 = 75.0	ICC2 = 83.0	ICC3 = 17.0	mA
Power Dissipation (Ta = 70°C)	PD	1350			mW
Operating Ambient Temperature	Topr	-20 ~ +70			°C
Storage Temperature	Tstg	-55 ~ +150			°C

■ Recommended Operating Range (Ta=25°C)

Item	Symbol	Range
Operating Supply Voltage Range	VCC1	8.1V ~ 9.9V
Operating Supply Voltage Range	VCC2	4.5V ~ 5.5V
Operating Supply Voltage Range	VCC3	5.58V ~ 6.82V
Operating Supply Current Range	I17	13mA ~ 25mA

■ Electrical Characteristics (Ta=25°C)

Item	Symbol	Test cct	Condition	min.	typ.	max.	Unit
Circuit Current 1	ICC1	1	VCC1=9V VCC2=5V Sync, Input VCC3=6.2V	39.0	49.0	58.0	mA
Circuit Current 2	ICC2	1	VCC1=9V VCC2=5V Sync, Input VCC3=6.2V	56.0	68.0	82.0	mA
Circuit Current 3	ICC3	1	VCC1=9V VCC2=5V Sync, Input VCC3=6.2V	8.0	12.0	16.0	mA
Circuit Voltage	V17	1	I17=12mA	5.8	6.3	6.9	V
Constant Voltage Operating Resistance	R17	1	VCC1=9V, VCC2=5V, I17=12~30mA			30	Ω
Pin 47 Voltage	V47-51	1	VCC1=9V, VCC2=5V, VCC3=6.2V	1.7	2	2.3	V
Pin 52 Voltage	V52-51	1	VCC1=9V, VCC2=5V, VCC3=6.2V	2.7	3.0	3.3	V
Pin 38 Voltage	V38-51(PAL)	1	VCC1=9V VCC2=5V VCC3=6.2V (PAL MODE)	1.9	2.2	2.5	V
Pin 40 Voltage	V40-51(PAL)	1	VCC1=9V VCC2=5V VCC3=6.2V (PAL MODE)	1.9	2.2	2.5	V

I²C • DAC

Acknowledge Suction Current	V _{Ack}	1	I ₃ =2mA			0.5	V
SCL-SDA Signal Input LOW Level	V _{LOW}	1				0.5	V
SCL-SDA Signal Input HIGH Level	V _{HIGH}	1		4.5			V
Input Signal	f _{in}	1				100	k bit/s

Y-Signal Processing

Video Input Pin Voltage	V52	1	VCC1=9V VCC2=5V VCC3=6.2V I17=15mA	2.7	3.0	3.3	V
Pedestal Variation with Drive	Y _{PL-D}	1	No input, Drive : MIN/MAX Cutoff : "18", Bright : TYP	-400	0	400	mV
RGB Output Pedestal Level	Y _{PL}	1	No input, Drive : TYP Cutoff : "18", Bright : TYP	1.5	2.1	2.47	V
Video Voltage Gain	A _V	1	Input 0.4V _{pp} , Contrast : TYP Sharpness : MIN, Brightness : TYP	5.1	6.3	7.5	Times
Video Frequency Characteristics	f _{YC}	1	Attenuation at input f=6MHz to output level at input f=2MHz	-7	-3		dB
Black Level Variable with Aperture Control Change	Y _{PL-S}	1	No Input, Pedestal measurement Sharpness = MAX/MIN	-50		50	mV
Contrast Ratio	e _{MAX} , e _{MIN}	1	Input Sinewave 0.4V _{pp} , f=2MHz, Contrast=MAX/MIN	15	18	21	dB
RGB Output Tracking	e _{OT}	1	Contrast=10→70	7	10	13	dB
Brightness Variable Range	B	1	Input 0.4V _{pp} , Brightness=MIN-MAX, Measure pedestal level	2.3	2.8	3.3	V

■ Electrical Characteristics (Ta=25°C) (Continue)

Item	Symbol	Test cct	Condition	min.	typ.	max.	Unit
Brightness Control Sensitivity	B _G	1	Brightness = 5F → 9F	0.55	0.85	1.15	V
DC Restoration Rate	T _{DC}	1	Input 0.4Vpp, Contrast=MAX, Sharpness:MIN, APL 10 ~ 90%	91	95	105	%
RGB Output BLK Level	Y _{BL}	1	Vcc1=9V, Vcc2=5V, H, VBLK level when Vcc3=6.2V, I17=15mA	0.5	1.0	1.5	V
Black Level Correction							
Correction Quantity (Amplitude Var.)	V _{BL} (a)-(b)	1	Input Signal : All Black (a) Pin 48 : External RC (b) Pin 48 : 9V	100	100	100	mV
Y-signal Delay Time	τ _D	1	Input Stair step 0.4Vpp	120	180	240	nsec
ACL Characteristic	ACL	1	Input Stair step Pin 50 = 3.0~4.3V	6.5	8.5	10.5	dB/V
ABL Characteristic	ABL	1	Pedestal level variation with Pin 49 = 3.0~3.4V	0.9	1.4	1.9	V/V
ON Screen Circuit							
Ys Threshold	e _{STH}	1	Switch level of Pin 26	0.55	0.7	0.85	V
External RGB Freq. Characteristic	e _{fRGB}	1	Input Sinewave 0.2Vpp, Ys=1V, f=2MHz ~ 10MHz	-2	0	2	dB
External RGB Output DC Voltage	E _{OEEXT}	1	Input/No input Ys=1V Cutoff="18", Measure B	1.2	1.9	2.7	V
Int./Ext. Pedestal Difference Voltage	E _{OYS}	1	Measure pedestal level difference at Ys=0.4(OFF)/1.2V(ON)	0	200	350	mV
External RGB Output Signal Level	E _{EEXT}	1	Input Sinewave 0.2Vpp f=2MHz, Contrast=MAX, Measure B	4.6	6.6	8.6	dB
Internal/External Crosstalk	E _{CT}	1	Input Sinewave Ys=0.4Vpp, f=10MHz (1Vpp), External/Internal crosstalk			-50	dB
External RGB Output Blanking Voltage	Y _{BLK} (RGB)	1	No input when Vcc1=9V, Vcc2=5V Vcc3=6.2V, I17=15mA	0.5	1.0	1.5	V
External RGB Contrast Control Characteristic	E _{EEXT-C}	1	Input 2Vpp, Output ratio when Contrast=MAX/MIN	8.4	11.4	14.4	dB
Colour Signal Processing Circuit							
PAL Colour Difference Output (B-Y)	e _O	1	Colour Bar signal, Burst 150mVpp Contrast=Colour=TYP	2.08	2.60	3.12	Vpp
PAL ACC Characteristic	ACC	1	Colour Bar Signal, Burst 300mVpp (+6dB)	0.8	1.0	1.2	Times
PAL Demodulation Output Ratio (1)	R/B	1	Colour Bar Signal, Burst 150mVpp Contrast=Colour=TYP	0.72	0.83	0.90	Times
PAL Demodulation Output Ratio (2)	G/B	1	Colour Bar Signal, Burst 150mVpp Contrast=Colour=TYP	0.31	0.37	0.42	Times
PAL Demodulation Angle R	∠R	1	Colour Bar Signal, Burst 150mVpp Contrast=Colour=TYP	84	90	96	deg
PAL Demodulation Angle G	∠G	1	Colour Bar Signal, Burst 150mVpp Contrast=Colour=TYP	229	237	244	deg
PAL Demodulation Output Residual Carrier	e _{car}	1	No signal input, 4.43MHz component of each output pin			90	mVpp
Colour Difference Output Contrast Ratio	Δe _{OC}	1	Colour Bar Signal, Burst 150mVpp, Contrast = MIN→MAX, Colour = TYP	15	18	21	dB
NTSC Tint Center	T _C	1	Colour Bar Signal, Burst 150mVpp, Measure phase displacement at Tint data 37	-7	0	+7	deg
NTSC Tint Variable Range	Δθ _T	1	Colour Bar Signal, Burst 150mVpp, Measure phase displacement at Tint = MIN ~ MAX	70	90	120	deg
PAL Colour Variable Range	Δe _{O-COL}	1	Colour Bar Signal, Burst 150mVpp, Contrast=TYP, Colour=Variation at 10→7F	17	19	23	dB
PAL APC Pull-in Range	f _{PCP}	1	Burst frequency is variable	±450	±500		Hz
NTSC APC Pull-in Range	f _{PCN}	1	Burst frequency is variable	±450	±500		Hz
PAL VCO Free-run Frequency	f _{COP}	1	No Signal Acc = OFF	-150	0	+150	Hz
NTSC VCO Free-run Frequency	f _{CON}	1	No Signal Acc = OFF	-150	0	+150	Hz
PAL VCO Output Level	e _{CW-P}	1	Pin 30 output level when Vcc1=9V, Vcc2=5V, Vcc3=6.2V, I17=15mA	0.3	0.4	0.5	Vpp
NTSC VCO Output Level	e _{CW-N}	1	Pin 30 output level when Vcc1=9V, Vcc2=5V, Vcc3=6.2V, I17=15mA	0.3	0.4	0.5	Vpp

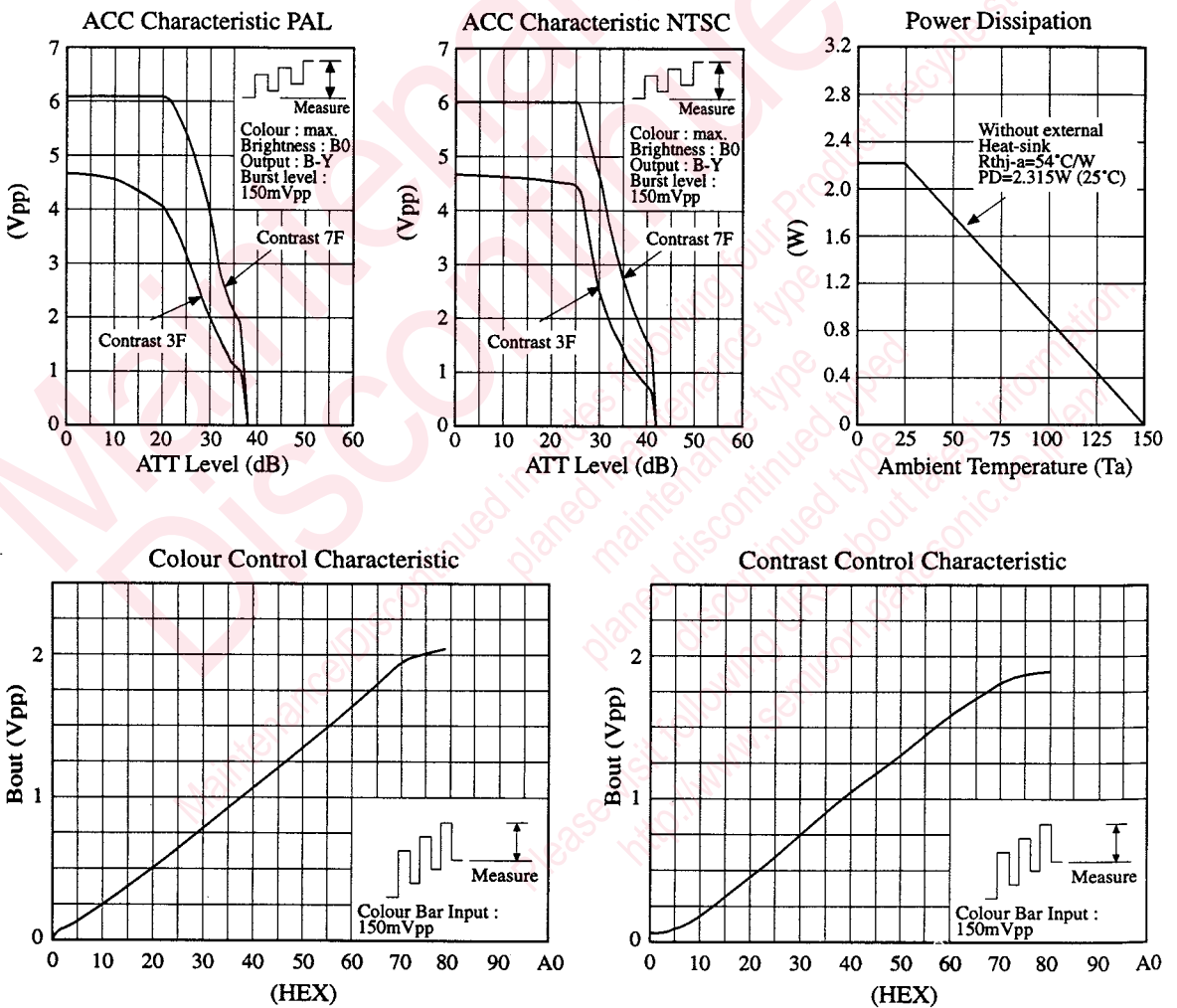
■ Electrical Characteristics (Ta=25°C) (Continue)

Item	Symbol	Test cct	Condition	min.	typ.	max.	Unit
PAL Colour Killer Tolerance	e _{KP}	1	Colour Bar Signal, Burst 150mV _{pp} =0dB, Colour=Contrast=MAX	-30	-36	-41	dB
NTSC Colour Killer Tolerance	e _{KN}	1	Colour Bar Signal, Burst 150mV _{pp} =0dB, Colour=Contrast=MAX	-37	-41	-46	dB
PAL/SECAM Changeover Voltage	V _{47-P/S}	1	Pin 47 PAL/SECAM changeover threshold	2.35	2.5	2.65	V
RGB Output Circuit							
Drive Adjustment Range	A _{VD}	1	External input 0.2V _{pp} input, Y _s =1V, Drive: MIN-MAX, R, B output	3	6	9	dB
Cutoff Adjustment Range	V _{CUT}	1	No input, Pedestal level variation with cutoff:MIN-MAX	1.0	1.3	1.6	V
Deflection Signal Processing							
Horizontal Free-run Osc. Frequency	f _{HO}	1	No input Pin 19 output frequency	15.45	15.75	16.05	kHz
Horizontal Free-run Osc. Frequency Dependency with Supply Voltage	$\frac{\Delta f_{HO}}{V_{CC3}}$	1	f _{HO} (I ₁₇ =30mA), f _{HO} (I ₁₇ =15mA)	-100	0	100	Hz
Hor. Oscillation Starting Voltage	V _{fH(S)}	1	Horizontal osc. output is 1V _{pp} or more and f=10k-20kHz			5.2	V
Hor. Oscillation Pulse Duty Ratio	T _{HO}	1	I ₁₇ =15mA, V _{cc1} =9V V _{cc2} =5V, V _{cc3} =6.2V	35.0	38.0	41.0	%
Hor. Pull-in Range	f _{PH}	1	f _{HO} =15.75kHz	±400			Hz
Hor. Pulse Output Voltage	V ₁₉	1	V _{cc} =TYP	2.3	2.8	3.3	V
High-tension Detection Circuit Operating Voltage (Shutdown)	V _{sth}	1	I ₂₀ =50μA	0.63	0.68	0.73	V
Shutdown Leakage Current	I _{sth}	1	Measure I ₂₀ when Pin 20=0V			5.0	μA
Vertical Signal Processing							
PAL Vertical Free-run Osc. Frequency	f _{VO-P}	1	$\left(\frac{2}{625} f_{H-P}\right)$	48.5	50	51.5	Hz
NTSC Vertical Free-run Osc. Freq.	f _{VO-N}	1	$\left(\frac{2}{525} f_{H-N}\right)$	58.5	60	61.5	Hz
Vertical Free-run Osc. Pulse Width	T _{VO}	1	PAL : f _H =15.625kHz NTSC : f _H =15.75kHz	9.5	10.0	10.5	1/f _H
PAL Vertical Pull-in Enable Freq.	f _{PV-P}	1	f _{V-P} =50Hz	45	50	55	Hz
NTSC Vertical Pull-in Enable Freq.	f _{PV-N}	1	f _{V-N} =60Hz	55	60	65	Hz
Vout Output Voltage	V ₉	1	I ₁₇ =15mA, V _{cc1} =9V V _{cc2} =5V, V _{cc3} =6.2V	0	0.2	0.5	V
Ver. Pulse Shaper Output Pulse Width	T ₁₀	1		1.4	2.2	3.0	msec
Sandcastle Pulse							
PAL Burst Gate Pulse Width	T _{BGP-P}	1	Pin 18 PAL Burst gate pulse width	3.4	4.0	4.6	μsec
NTSC Burst Gate Pulse Width	T _{BGP-N}	1	Pin 18 NTSC Burst gate pulse width	2.5	3.0	3.5	μsec
PAL V-Blanking Width	T _P VBLK	1	Pin 18 PAL blanking pulse width (21±1)H	1.28	1.34	1.41	msec
NTSC V-Blanking Width	T _N VBLK	1	Pin 18 NTSC blanking pulse width (17±1)H	1.01	1.08	1.14	msec
Burst Gate Pulse Output Voltage	V _{BGP}	1	I ₁₇ =15mA, V _{cc1} =9V V _{cc2} =5V, V _{cc3} =6.2V	3.7	4.1	4.6	V
H-Blanking Pulse Output Voltage	V _{HBLK}	1	I ₁₇ =15mA, V _{cc1} =9V V _{cc2} =5V, V _{cc3} =6.2V	2.5	2.9	3.4	V
V-Blanking Pulse Output Voltage	V _{VBLK}	1	I ₁₇ =15mA, V _{cc1} =9V V _{cc2} =5V, V _{cc3} =6.2V	1.0	1.5	2.0	V
H Center Circuit							
H Center Variable Range (1)	T _{DH(1)}	1	H center : TYP→MIN H _{sync} rise and HBLK delay	-2.2	-1.6	-1.3	μsec
H Center Variable Range (2)	T _{DH(2)}	1	H center : TYP→MAX H _{sync} rise and HBLK delay	1.3	1.6	2.2	μsec
Lock Detector Circuit							
Lock Detector Output Voltage (Hi)	V _{12-Hi}	1	In Hor. Loop ON state, Pin 12 voltage at input of Hor. sync. signal	7.9	8.5	9.0	V
Lock Detector Output Voltage (Lo)	V _{12-Lo}	1	In Hor. Loop On state, Pin 12 voltage at no input		0.2	0.5	V

■ Electrical Characteristics (Ta=25°C) (Continue)

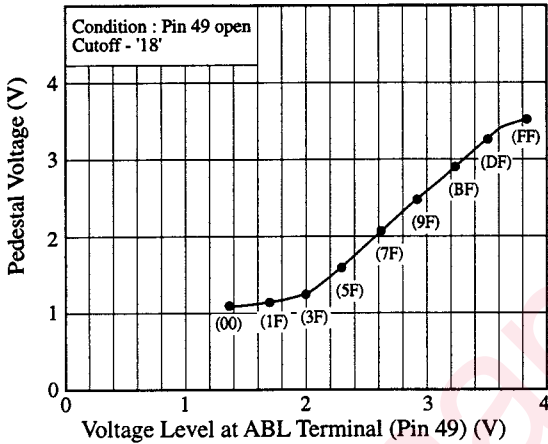
Item	Symbol	Test cct	Condition	min.	typ.	max.	Unit
Service Switch Circuit							
Service Switch Threshold	V _{sth}	1		0.35	0.65	1.10	V
Service SW Operation	e _{ser}	1	Input : Stair step 0.4Vpp. Measure amplitude at Pin 50 (SCL)=00			150	mVpp
Spot Killer							
Spot Killer Operation	K _{SP}	1	Measure each output pedestal level when the current of 1mA is applied to Pin 31	6.8	7.5	8.2	V

■ Characteristics Curve Diagrams

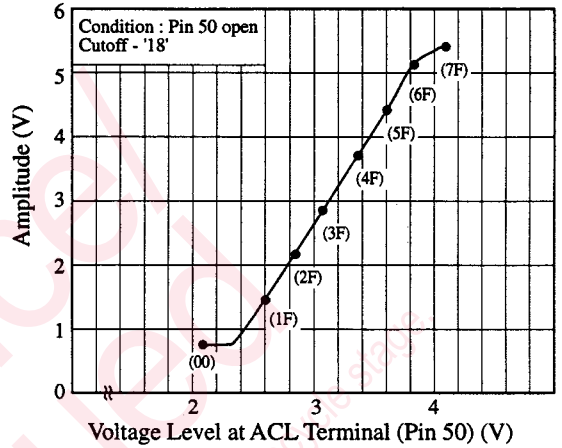


● Characteristics Curve Diagrams (Continue)

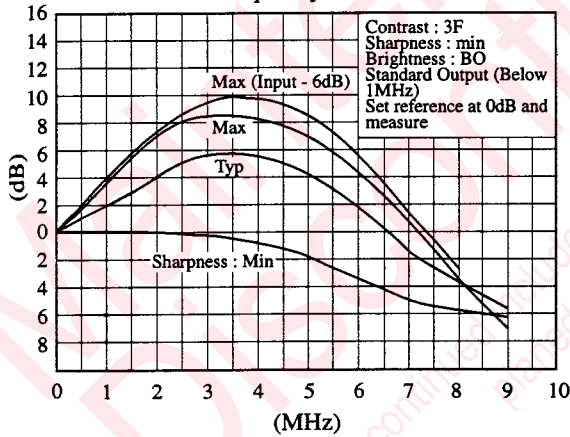
ABL Characteristic



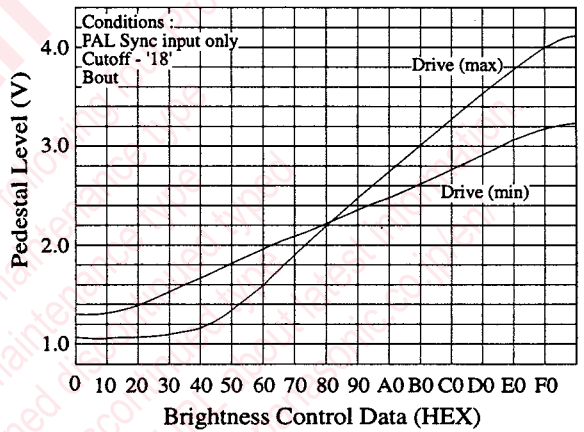
ACL Characteristic



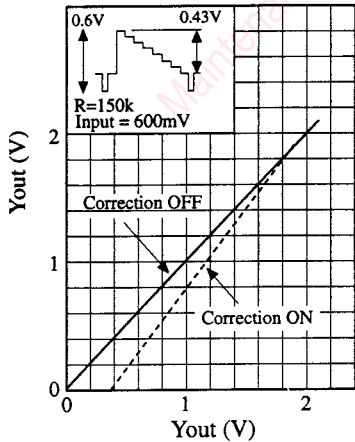
Video Frequency Characteristic



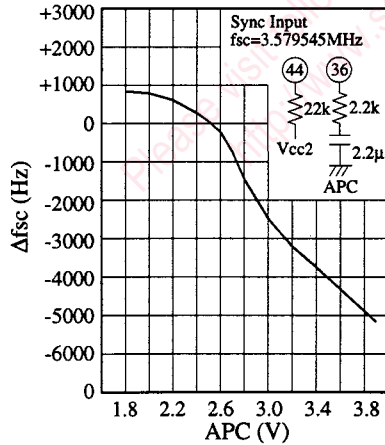
Brightness Control Characteristic



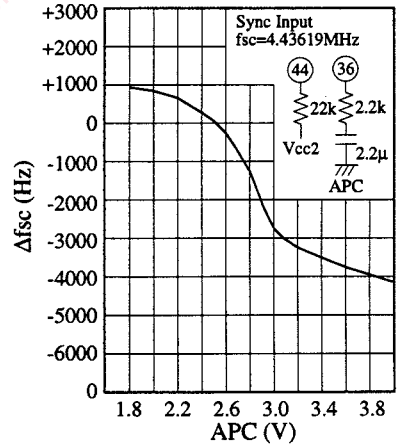
Black Level Correction Characteristic



β Curve NTSC



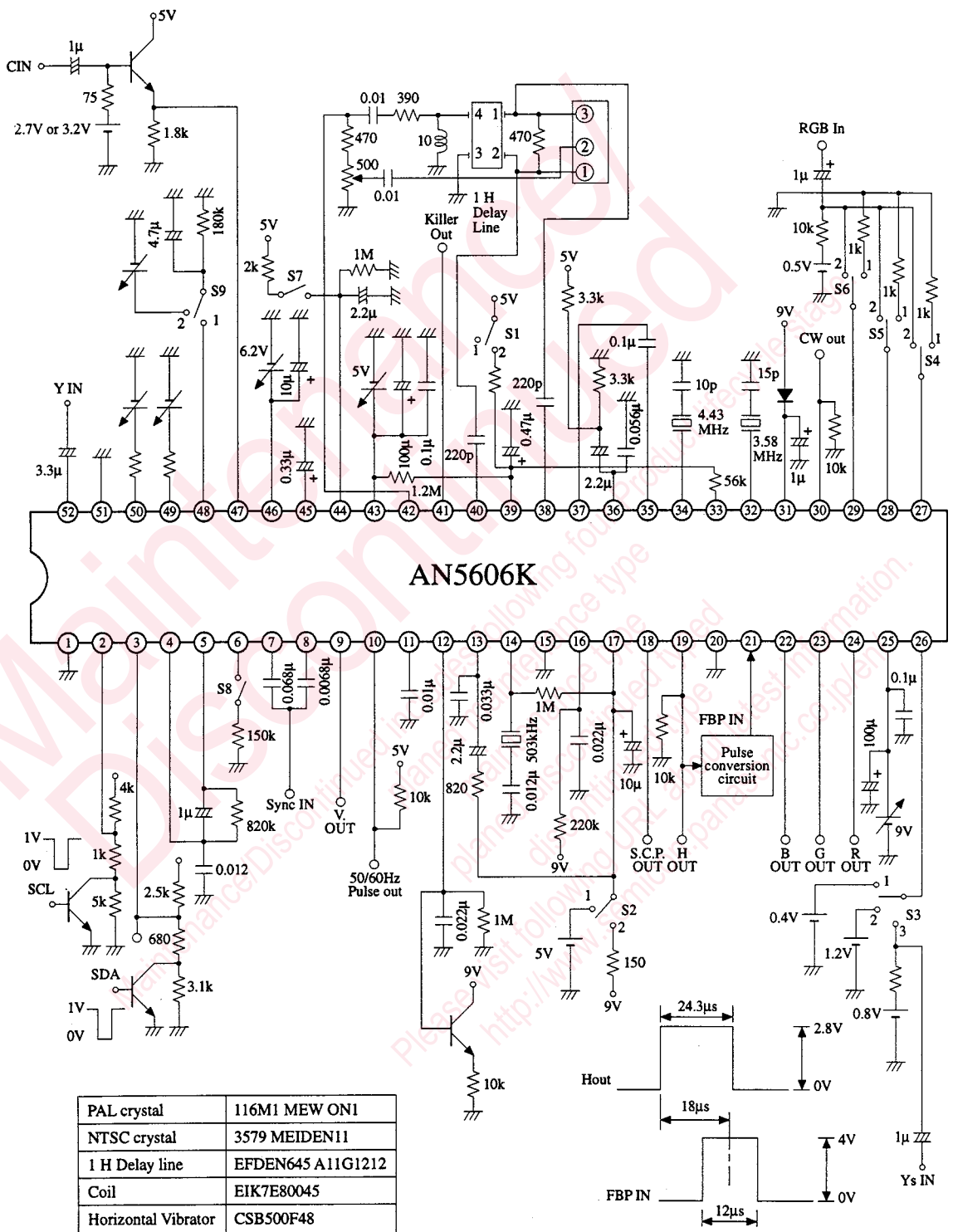
β Curve PAL



■ Pin Descriptions

Pin No.	Pin Name	Pin No.	Pin Name
1	GND (I ² C)	27	B input
2	SCL input	28	G input
3	SDA input	29	R input
4	Vertical integration filter	30	CW output
5	Vertical sync. separation input	31	Spot Killer input
6	Black level correction starting point adjustment	32	3.58MHz oscillation
7	Vertical sync. input	33	Killer bypass
8	Horizontal sync. input	34	4.43MHz oscillation
9	Vertical output	35	ACC filter 1
10	50/60Hz pulse output	36	APC filter
11	50/60Hz shaper	37	ACC filter 2
12	Horizontal sync. detection filter	38	R-Y input
13	Horizontal AFC 1 filter	39	Killer filter
14	503kHz (32fH) oscillation	40	B-Y input
15	GND (Vertical)	41	Killer output
16	Horizontal AFC 2 filter	42	Chroma signal output
17	Supply voltage 4 (Horizontal)	43	Supply voltage 2 (Chroma)
18	Sandcastle pulse output	44	ACC detection filter
19	Horizontal drive pulse output	45	Y Clamp capacitor
20	High tension detection (shutdown) input	46	Supply voltage 3 (Video)
21	Flyback pulse input	47	Chroma signal input
22	B output	48	Black level detection filter
23	G output	49	Automatic brightness limiter, ABL
24	R output	50	Automatic contrast limiter, ACL
25	Supply voltage 1 (Video/RGB output)	51	GND (Video/Chroma)
26	Ys input	52	Video signal input

Test Circuit 1



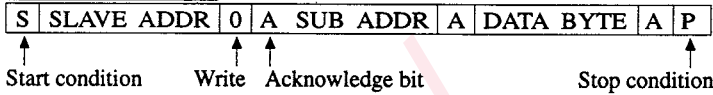
● I²C Bus protocol (1)

I²C Bus Formats

(1) Slave address :

1 0 0 0 1 0 1 0

(2) Slave address format :



(3) Subaddress byte and data byte format :

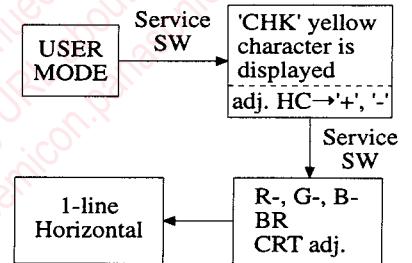
Sub-addr (H)	Functions	Data Byte								Initial Setting at Power ON	
		D7	D6	D5	D4	D3	D2	D1	D0		
00	Colour	0	A06	A05	A04	A03	A02	A01	A00	3F (TYP)	
01	Tint	0	A16	A15	A14	A13	A12	A11	A10	3F (TYP)	
02	Brightness	A27	A26	A25	A24	A23	A22	A21	A20	7F (TYP)	
03	Contrast	0	A36	A35	A34	A33	A32	A31	A30	3F (TYP)	
04	Sharpness	0	A46	A45	A44	A43	A42	A41	A40	3F (TYP)	
05	Cutoff R	A57	A56	A55	A54	A53	A52	A51	A50	7F (TYP)	
06	Cutoff G	A67	A66	A65	A64	A63	A62	A61	A60	7F (TYP)	
07	Cutoff B	A77	A76	A75	A74	A73	A72	A71	A70	7F (TYP)	
08	Drive R	A87	A86	A85	A84	A83	A82	A81	A80	7F (TYP)	
09	Drive B	A97	A96	A95	A94	A93	A92	A91	A90	7F (TYP)	
0A	H Center	0	0	0	0	AA3	AA2	AA1	AA0	08 (TYP)	
0B	MODE SW (PAL/NTSC)									PNS	Refer to I ² C Bus protocol (2)
0B	50/60Hz SW									VFS	Refer to I ² C Bus protocol (2)
0B	RGB Back MODE									RGB	Refer to I ² C Bus protocol (2)
0B	RGB Back									R G B	Refer to I ² C Bus protocol (2)
0B	Blanking SW									BLK	Refer to I ² C Bus protocol (2)
0B	VCO SW									VCO	Refer to I ² C Bus protocol (2)

● I²C Bus protocol (1)

Data byte Condition at Sub-addr. (0BH)



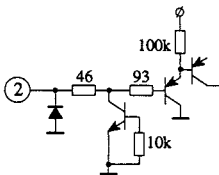

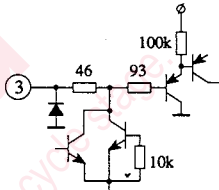

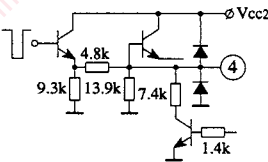
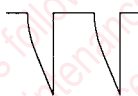
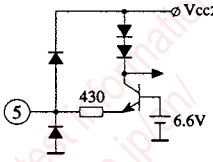
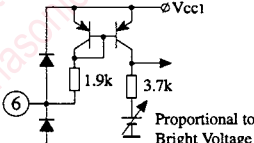
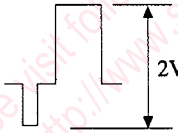
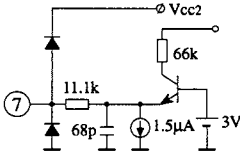
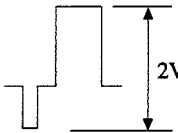
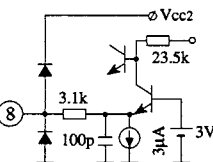
Functions	Data (* mark shows SW ON)	Condition	
Mode SW	PNS	*1	PAL
		0	NTSC
50/60Hz	VFS	*0	50Hz
		1	60Hz
RGB Back MODE	RGB	1	Without Vsync. Lock
		*0	With Vsync. Lock
RGB Back	B	1	ON
		*0	OFF
	G	1	ON
		*0	OFF
	R	1	ON
		*0	OFF
Blanking SW	BLK	1	Without Blanking
		*0	With Blanking
VCO SW	VCO	1	3.58MHz
		*0	4.43MHz

● For TV set (Service mode)

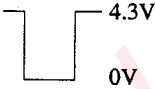
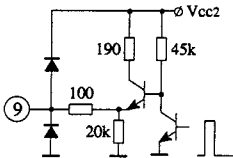
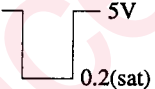
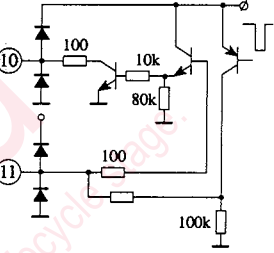

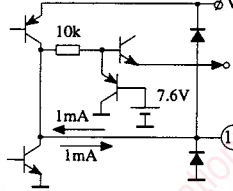
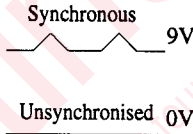
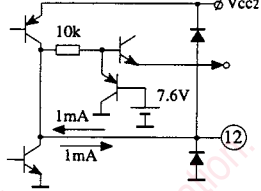

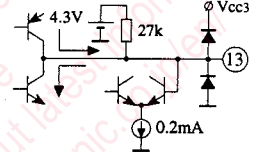
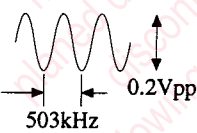
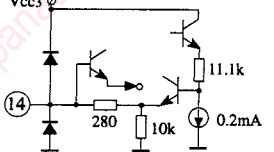


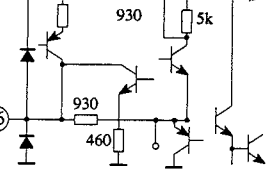
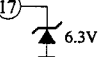


Press 'NORM' twice to go back to user mode.

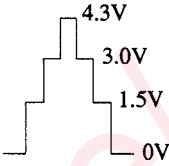
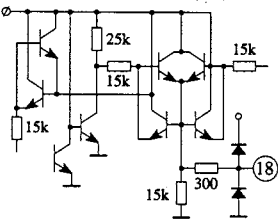
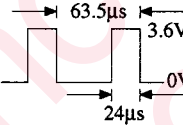
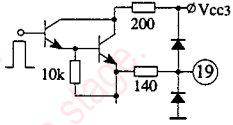
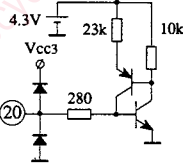
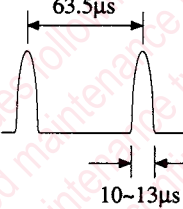
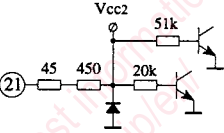
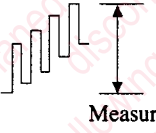
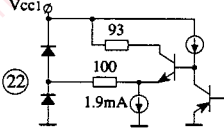

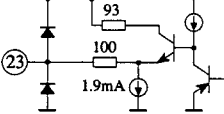

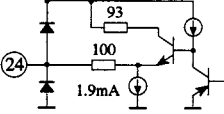

Pin Descriptions

Pin No.	Pin Name	Pin Description	Typical Waveform	I/O IMP.	Equivalent Circuit
1	GND	GND for DAC and I ² C		0	
2	I ² C SCL input	Pin for connection to MICOM (High Impedance connection)		∞	
3	I ² C SDA input	Pin for connection to MICOM (High Impedance connection)		∞	
4	V Sync. Sep Integration filter	V. Sync-signal integration filter (LPF) pin. Negative-polarity composite sync-signal is output from the V. sync-sep. circuit. DC 8.3V		3.6kΩ	
5	V Sync. Sep Input	V. sync-signal input pin. From the integration filter is obtained the V. sync-signal which is then input to the IC at this pin for sync. DC 5.9V		430Ω	
6	Black Level Correction Start Point	Black Level correction circuit. Start-point adjustment pin. R is connected between this pin and GND	DC	1.9kΩ	
7	Sync. in (V)	Input pin for Sync. Sep. DC = 2.3V 2V ±3dB D-range 3.3V Composite input		11.1kΩ	
8	Sync. in (H)	Input pin for Sync. Sep. DC = 2.3V 2V ±3dB D-range 3.3V Composite input		3.1kΩ	

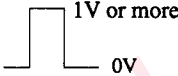
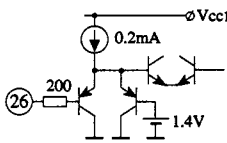
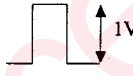
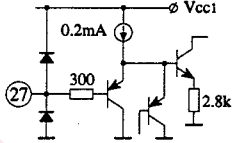
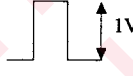
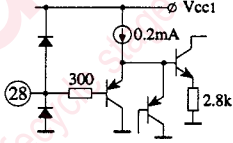

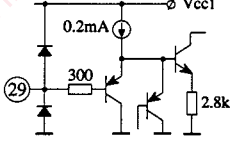
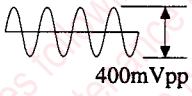
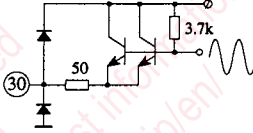
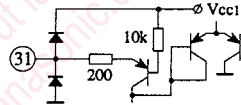
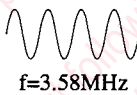
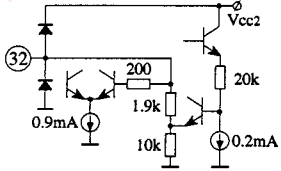
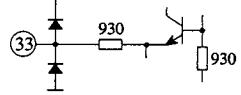
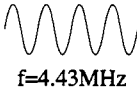
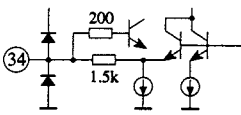
■ Pin Descriptions (Continue)

Pin No.	Pin Name	Pin Description	Typical Waveform	I/O IMP.	Equivalent Circuit
9	Vout	Output pin for vertical osc. pulse signal. Hi : 4.3V Lo : 0V (Can connect to AN5534)		100Ω	
10	V Pulse Shaper Output	For 50/60Hz discrimination by the MICOM. This circuit is used to stretch the V pulse Collector Output : Hi : 5.0V Lo : 0.2 (sat)V MICOM Connection		Open Collector	
11	V Pulse Shaper Condenser	Pin for connecting V-pulse shaper condenser		100kΩ	
12	Lock Det. Filter	Filter Pin for detection of sync. between H osc. and input sync. RC filter is connected to this pin Hi : 8.3V Lo : 0.2 (sat)V, MICOM connection		10kΩ	
13	AFC1 Filter	H. AFC current output pin. The RC filter connected to this pin cause the H AFC to operate Freq. adjustment Hi : Freq. is low Lo : Freq. is high		27kΩ	
14	503kHz Vcc	H. osc. pin. Oscillations by connection of 503kHz resonator at this pin. DC 2.2V		280	
15	GND2	GND for sync-circuits		0	
16	AFC2 Filter	Filter pin for phase detection in the adjustment of the position of the picture Phase Adjustment : Hi : Phase Lead Lo : Phase Lag		∞	
17	H Vcc	Vcc pin for the sync-circuit Vcc = 6.3V	DC	0	

■ Pin Descriptions (Continue)

Pin No.	Pin Name	Pin Description	Typical Waveform	I/O IMP.	Equivalent Circuit
18	Sand castle pulse output	Pin for producing the layered pulse that consists of the V, H, blanking and burst-gate pulse for synchronisation of AN5606K with other ICs Threshold Voltage Burst Gate Pulse 3.6V H. Blanking Pulse : 2.2V V. Blanking Pulse : 0.8V		300	
19	Horizontal drive pulse output	Horizontal drive pulse output. Emitter output : Hi : (5V-2D) Lo : 0V		140	
20	High voltage detection input (shut down input)	Pin for shutdown input When 0.6-0.8V or more is input, then shutdown occur and the H. output signal is cut off If shutdown is not used, then connect this pin to ground	DC	∞	
21	Horizontal blanking pulse input	H. Blanking pulse input pin. Blanking pulse is used not only for clamp-generation circuit, but also for Colour blanking, Y-blanking, Black-level correction circuits, and Picture Position Control H. Blanking Pulse : Threshold Voltage 0.7V AFC2 pulse : Threshold voltage 2.0V		∞	
22	B Output	B Output pin		100Ω	
23	G Output	G Output pin		100Ω	
24	R Output	R Output pin		100Ω	
25	Vcc1	Video, Chroma Vcc pin Typ. 9V		0	

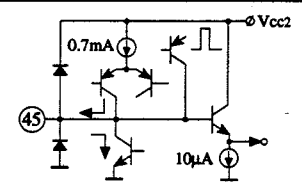

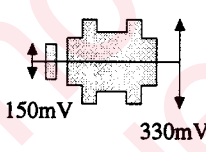
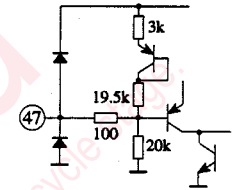
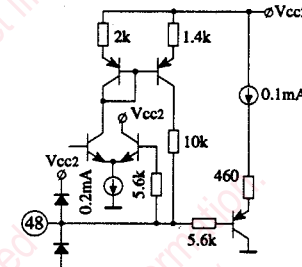
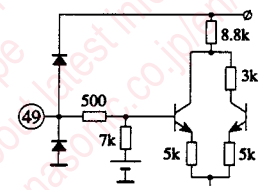
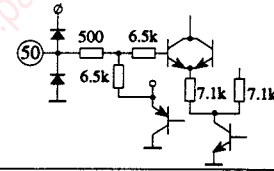

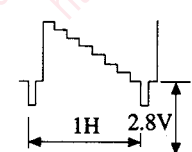
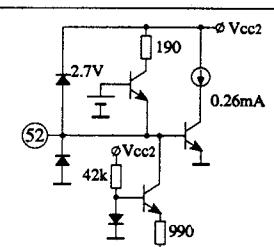
■ Pin Descriptions (Continue)

Pin No.	Pin Name	Pin Description	Typical Waveform	I/O IMP	Equivalent Circuit
26	Ys Input	Input pin for switching pulse to switch between internal signal and external RGB signal		∞	
27	External B Input	External B input pin DC coupling		∞	
28	External G Input	External G input pin DC coupling		∞	
29	External R Input	External R input pin DC coupling		∞	
30	CW Out	Carrier output pin for processing the Chroma signal of AN5606K By means of VCO switch-over, the output freq. is changed 3.579545 MHz 4.433619 MHz		50Ω	
31	Spot-Killer	Pin for necessarily fast discharge of the residual voltage at the CRT Diode, Transistor, Condenser are connected	Vcc = 9V-VBE Operating	Open Emit-ter	
32	3.58MHz Oscillation	Chroma 3.58MHz Osc. pin Externally connected crystal-resonator and capacitor DC 2.2V (ON) DC 3.5V (OFF)		1.9kΩ	
33	Killer-Bias	Standard bias voltage output for the killer-circuit	DC	930Ω	
34	4.43 MHz Oscillation	Chroma 4.43MHz Osc. pin. Ext. connected crystal-resonator and condenser DC 2.2V (ON) DC 3.5V (OFF)		1.5kΩ	

■ Pin Descriptions (Continue)

Pin No.	Pin Name	Pin Description	Typical Waveform	I/O IMP.	Equivalent Circuit
35	ACC Filter 1	Chroma ACC circuit noise-removal filter pin	DC	12.7k Ω	
36	Chroma Phase Detection Filter Pin	Phase detection filter pin for chroma-osc. frequency DC 2.5V	DC	46.3k Ω	
37	ACC Filter 2	Chroma ACC circuit noise-removal filter pin	DC	12.7k Ω	
38	R-Y Input	PAL Chroma (R-Y) input pin DC 2.2V in the burst signal for every 1H interval, the carrier phase is inverted		10.1k Ω	
39	Killer Filter	Killer-detection filter pin	DC	∞	
40	B-Y Input	PAL Chroma (B-Y) input pin DC 2.2V In the burst signal, for every 1H interval, the carrier phase is inverted		10.1k Ω	
41	Killer detection output	Killer ON/OFF output Hi : 5.0V (Burst present) Lo : 0.2V (sat)	DC	30.1k Ω	
42	Chroma output	Output pin for ACC-adjusted chroma signal DC 4.2V		50 Ω	
43	Vcc2	Video, Chroma Vcc pin for circuit Typ 5.0V	DC	0	
44	ACC Detection filter	ACC detection filter pin Between Vcc2 and this pin is connected the RC in parallel	DC	∞	

■ Pin Descriptions (Continue)

Pin No.	Pin Name	Pin Description	Typical Waveform	I/O IMP.	Equivalent Circuit
45	Y Clamp Condenser	Y clamp-condenser pin DC 1.5V (Center)	DC	∞	
46	Vcc3	Vcc pin for video circuit Typ. 6.2V	DC	0	
47	Chroma Signal Input	External Chroma Input pin Burst signal typ 150mVpp, 330mVpp \pm 3 dB D-range 1.0V DC input to switch between PAL/SECAM : PAL 2.0V, SECAM 3.0V, Open DC 2.0V		10k Ω	
48	Black Level Detection Filter	Black Level Detection pin	DC	2.8k Ω	
49	Brightness Control Automatic Brightness Limiter (ABL)	Brightness control pin for automatic control of Brightness of the CRT 1.4V/V Variable range 3V DC 3.0V	DC	7.5k Ω	
50	Contrast Control (ACL) Automatic Contrast Limiter	Contrast control pin for automatic control of the CRT contrast. 2~4V positive polarity ACL DC 3.0V	DC	7.0k Ω	
51	GND	GND for Video/Chroma/RGB	DC	0	
52	Video Signal Input	Video signal input pin		0	

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