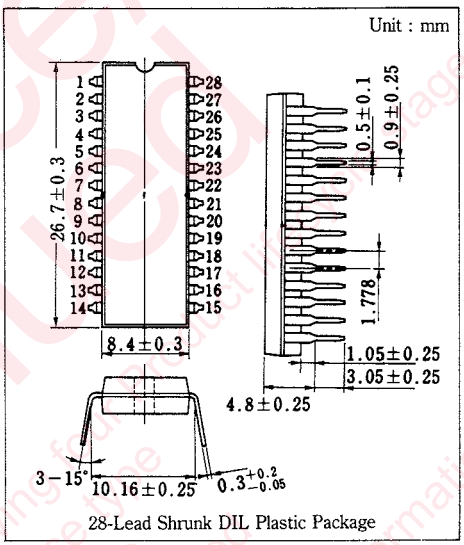
AN2640K

VHD Video Disc Player Chroma and Luminance Processing Circuit

■ Outline

The AN2640K is an integrated circuit designed for VHD-system video disk player. It has functions for chroma signal processing and luminance signal processing.

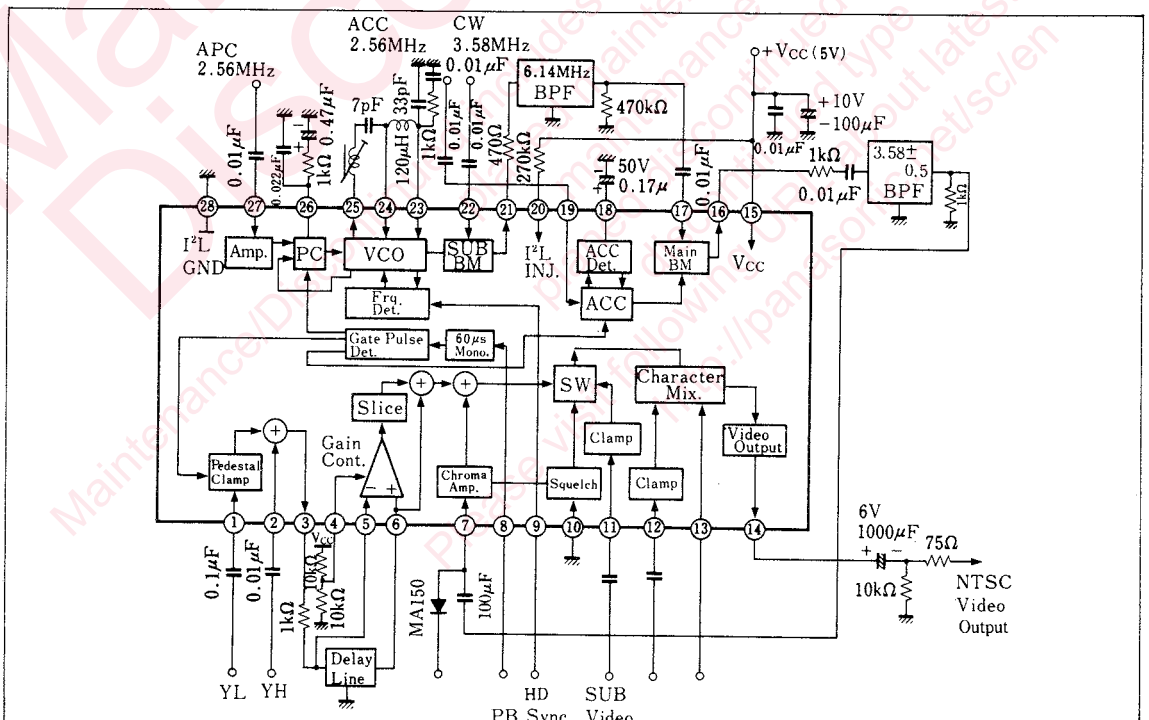


28-Lead Shrunk DIL Plastic Package

■ Features

- 5.0V supply voltage operation
- Frequency conversion from 2.56MHz carrier to 3.58MHz carrier
- Built-in automatic chroma control circuit
- Luminance signal processing
- Video output

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25℃)

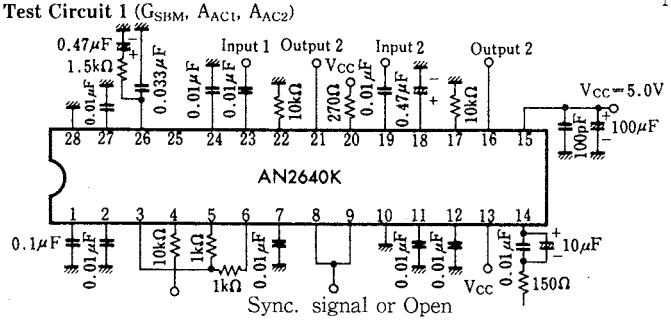
Item	Symbol	Rating	Unit
Supply voltage	V_{CC}	6.0	V
Supply current	I_{CC}	110	mA
Power dissipation	P_D	660	mW
Operating ambient temperature	T_{opr}	−20~+70	℃
Storage temperature	T_{stg}	−55~+150	℃

■ Electrical Characteristics (Ta=25℃)

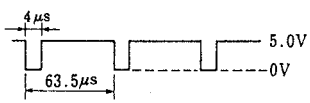
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Total circuit current	I_{tot}		V_{CC}=5.0V	50	70	86	mA
Terminal voltage	V_{2-10}		V_{CC}=5.0V	2.5	3	3.5	V
Terminal voltage	V_{7-10}		V_{CC}=5.0V	2.5	3	3.5	V
Terminal voltage	V_{8-10}		V_{CC}=5.0V	2.4	2.7	3.1	V
Terminal voltage	V_{9-10}		V_{CC}=5.0V	2.4	2.7	3.1	V
Terminal voltage	V_{17-10}		V_{CC}=5.0V	2.8	3.6	4.4	V
Terminal voltage	V_{19-10}		V_{CC}=5.0V	2.2	2.8	3.5	V
Terminal voltage	V_{22-10}		V_{CC}=5.0V	2.8	3.5	4.2	V
Terminal voltage	V_{23-10}		V_{CC}=5.0V	2.2	2.7	3.3	V
Terminal voltage	V_{24-10}		V_{CC}=5.0V	2.2	2.7	3.3	V
Terminal voltage	V_{27-10}		V_{CC}=5.0V	2.4	3.1	3.7	V
Sub balanced modulator gain	G_{SBM}	1	V_{CC}=5.0V, Input: 2.56MHz, 180mVrms	2.3	5	6.4	dB
ACC output	A_{AC1}	1	V_{CC}=5.0V, Input: 2.56MHz, 70mVrms	195	261	350	mVrms
ACC max. gain	G_{AC2}	1	V_{CC}=5.0V, Input: 2.56MHz, 10mVrms	14.5	17.5	20.5	dB
Sub balanced modulator offset	V_{OFF1}	2	V_{CC}=5.0V, Input: 15.7kHz, 1.0V_{P-P}		16	80	mV_{P-P}
Main balanced modulator	V_{OFF2}	2	V_{CC}=5.0V, Input: 15.7kHz, 1.0V_{P-P}		43	250	mV_{P-P}
Clamp voltage	V_{CL}	2	V_{CC}=5.0V	1.55	1.89	2.55	V
Video signal select offset	V_{OFF3}	2	V_{CC}=5.0V, Input: 15.7kHz, 2.0V_{P-P}	310	520	750	mV_{P-P}
APC lock	V_{APC}	3	V_{CC}=5.0V, Input: 2.557MHz, 70mVrms		12	50	mVrms
Freq. detection 1	A_{FD1}	4	V_{CC}=5.0V, Input: 2.568MHz, 180mVrms	200	283	400	mV_{P-P}
Freq. detection 2	A_{FD2}	4	V_{CC}=5.0V, Input: 2.547MHz, 180mVrms	200	291	400	mV_{P-P}
Sub video output	A_{SV}	4	V_{CC}=5.0V, Input: 15.7kHz, 0.35V_{P-P}	0.98	1.31	1.54	V_{P-P}
White char. output	A_W	4	V_{CC}=5.0V, Input: 15.7kHz, 0.35V_{P-P}	0.93	1.44	1.87	V_{P-P}
Y_L output	A_{YL}	5	V_{CC}=5.0V, Input: 15.7kHz, 0.35V_{P-P}	1.05	1.32	1.6	V_{P-P}
Black char. output	A_{BL}	5	V_{CC}=5.0V, Input: 15.7kHz, 0.35V_{P-P}	0.55	0.75	0.95	V_{P-P}
Aperture op. min.	A_{AP1}	5	V_{CC}=5.0V, Input: 15.7kHz, 0.35V_{P-P}	200	290	390	mV_{P-P}
Aperture op. max.	A_{AP2}	5	V_{CC}=5.0V, Input: 15.7kHz, 0.35V_{P-P}	1	1.26	1.5	V_{P-P}
Y_H gain	G_{YH}	5	V_{CC}=5.0V, Input: 3.58MHz, 90mVrms	8.9	11.4	14.1	dB
Chroma gain	G_{CH}	5	V_{CC}=5.0V, Input: 3.58MHz, 35mVrms	13.5	15.9	18.6	dB

Note) Operating supply voltage range

Test Circuit 1 (G_{SBM}, A_{AC1}, A_{AC2})



Sync. signal waveform



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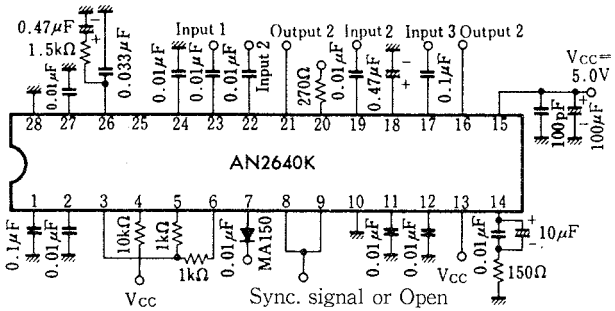
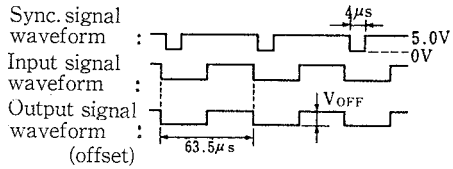
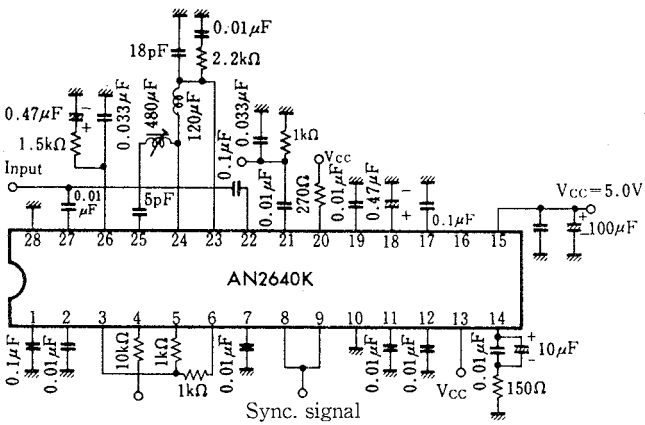
Test Circuit 2 (V_{OFF1}, V_{OFF2}, V_{CL}, V_{OFF3})

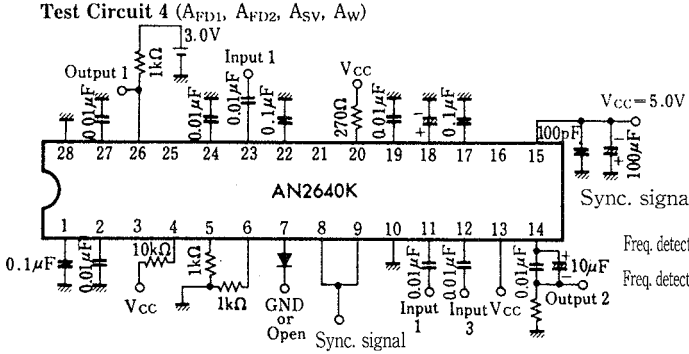


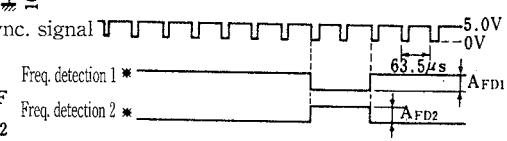


Test Circuit 3 (V_{APC})



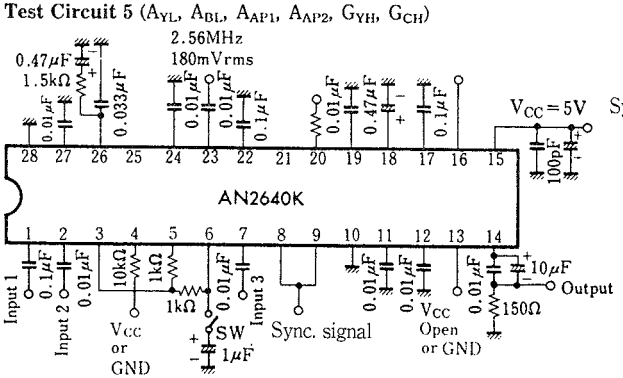
Test Circuit 4 (A_{FD1}, A_{FD2}, A_{SV}, A_W)

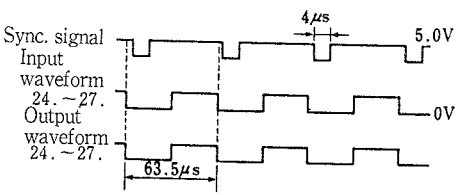




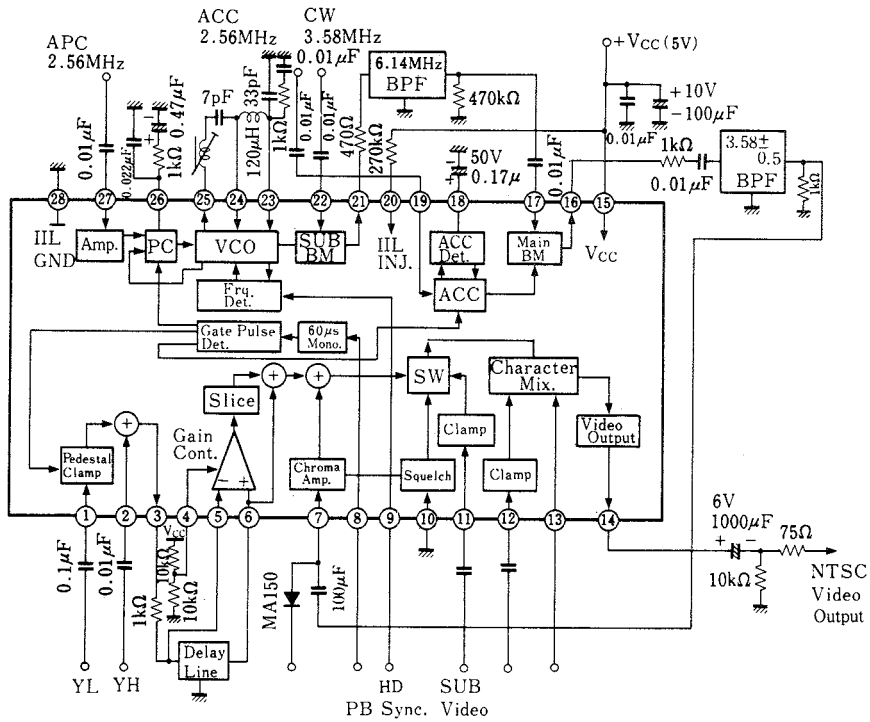
※: Frequency detection is output during 2 pulses to 16 pulses of a sync. signal.

Test Circuit 5 (A_{YL}, A_{BL}, A_{AP1}, A_{AP2}, G_{YH}, G_{CH})





■ Application Circuit



■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	Y_L Input	15	V_{CC}
2	Y_H Input	16	Main Balanced Modulator Output
3	Y Output	17	Main Balanced Modulator Carrier Input
4	Aperture Gain Control	18	ACC Detector Output
5	Aperture Input	19	ACC Input
6	Y Input	20	IIL Injector
7	Chroma and Squelch Input	21	Sub Balanced Modulator Output
8	Playback Sync. Input	22	Sub Balanced Modulator Carrier Input
9	HD Pulse Input	23	VCO Input
10	GND	24	VCO Input
11	Sub Video Input	25	VCO Output
12	White Character Input	26	Loop Filter
13	Black Frame Input	27	APC Chroma Input
14	Video Output	28	GND

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