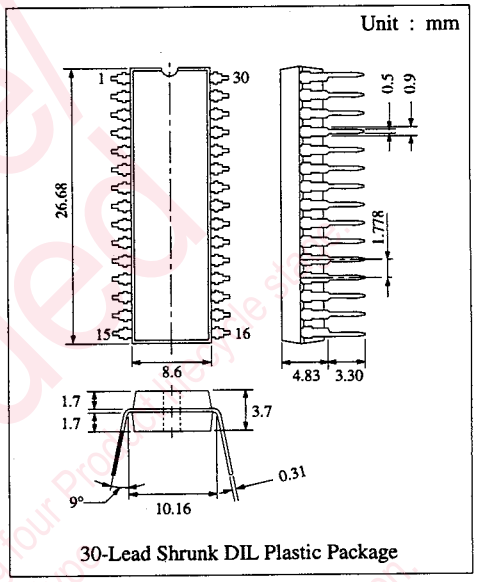
AN3248NK

VCR Luminance Signal Processor IC

■ Description

The AN3248NK is an integrated circuit for VCR luminance signal processing. The IC has all the functions integrated on it, which are required for VCR luminance signal processing, and have made great rationalization of external parts and number of pins by incorporating filters.

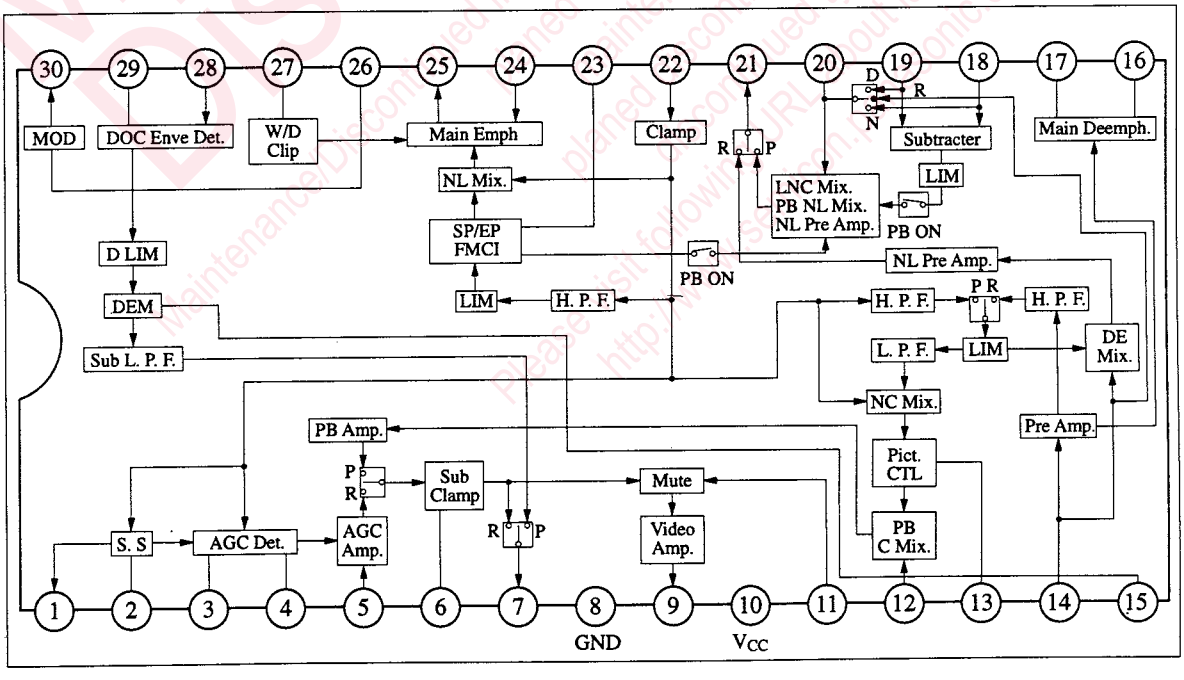


30-Lead Shrunk DIL Plastic Package

■ Features

- Adjustment-free dark clip used
- Incorporates the filters for non-linear emphasis, noise canceller and detail enhancer to greatly rationalize the external parts and reduce the number of pins

■ Block Diagram



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■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V_{CC}	6	V
Supply Current	I_{CC}	68	mA
Power Dissipation	P_D	490	mW
Operating Ambient Temperature	Topr	-20 ~ +70	°C
Storage Temperature	Tstg	-55 ~ +125	°C

■ Recommended Operating Range (Ta=25°C)

Item	Symbol	Range
Operating Supply Voltage Range	V_{CC}	4.5V ~ 5.5V

■ Electrical Characteristics (Ta=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Circuit current (Rec)	I_{CCR}	Rec mode	30	42	54	mA
Circuit current (PB)	I_{CCP}	PB mode	38	50	62	mA
EE mode holding voltage	V_{EE}	V_6=Variable	0		1.25	V
VV mode holding voltage	V_{VV}	V_6=Variable	2.25		5	V
AGC output amplitude	$V_{5\text{-}9}$	White 100% Vin=1Vpp	1.3	2	2.7	Vpp
D-clip level	$\Delta V_{5\text{-}25}$		40	50	60	%
SS min. input sensitivity	S_{22}	White 100% Vin=variable			450	mVpp
SS pulse output amplitude	V_1	White 100% Vin=1Vpp	4.3			Vpp
FM oscillation output amplitude	V_{30}	Iin=280μA	0.85	1	1.3	Vpp
FM oscillation second higher harmonic	$2f_{30}$	Iin=280μA		-39	-33	dB
FM oscillation control sensitivity	β_{30}	$\frac{f(500\mu A) - f(160\mu A)}{500\mu A - 160\mu A}$	11.5	13	15	kHz /μA
DEM demodulation sensitivity	S_7	Sine wave, V_5=2.5V Vin=350mVpp, fin=3 ~ 5MHz	40	69	100	mV/MHz
DOC DET ON	S_{28}	Sine wave, fin=4MHz	-20	-16	-11	dB
DOC DET OFF (hysteresis)	ΔS_{28}	Sine wave, fin=4MHz	0.2	1.5	6	dB
PB system overall gain	$G_{14\text{-}9}$	White 100% Vin=100mVpp	24	26	30	dB

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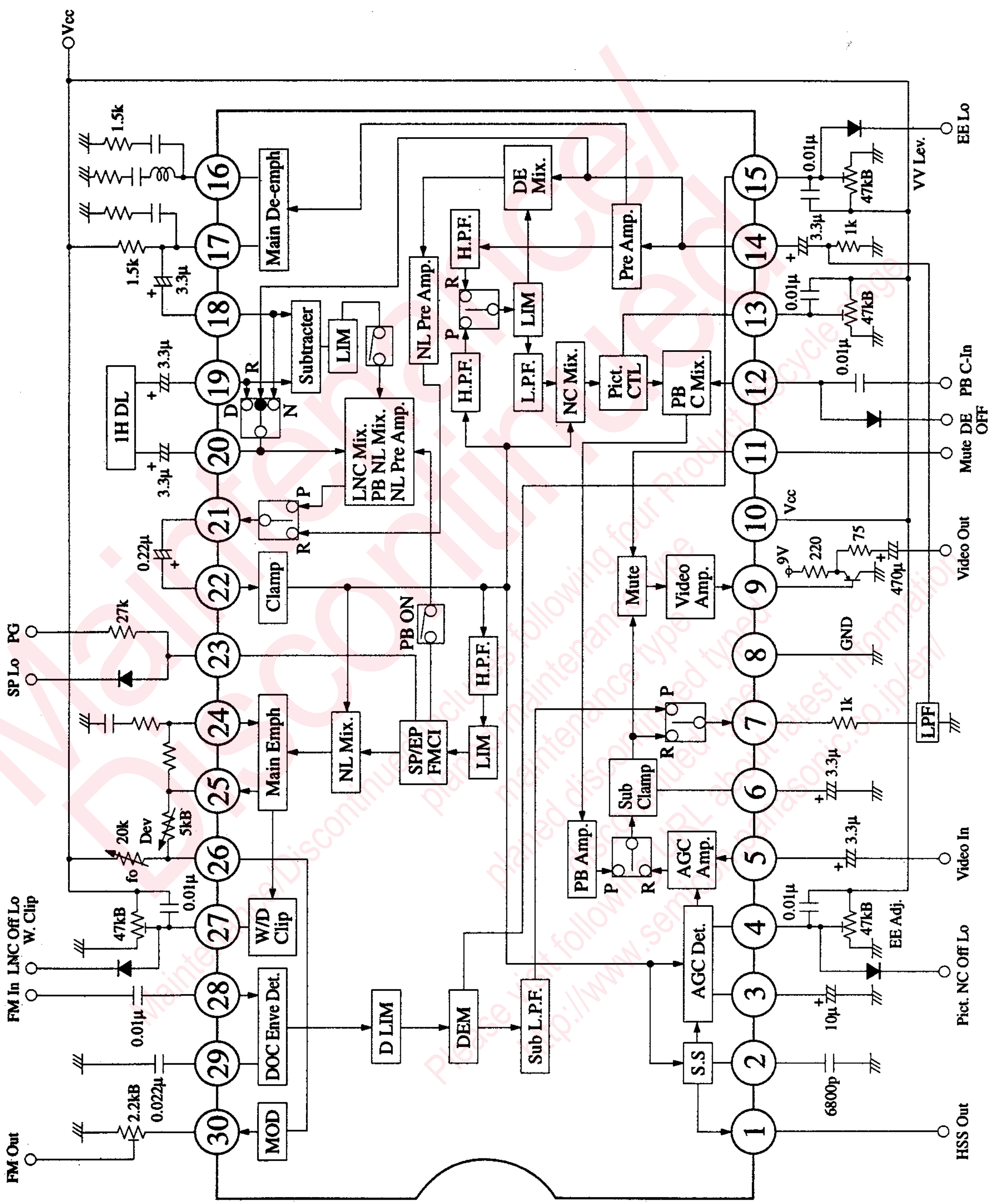
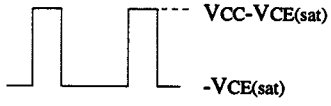
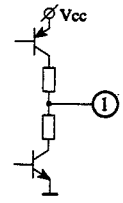
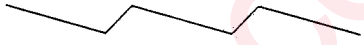
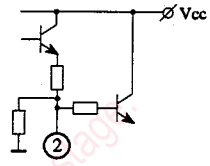
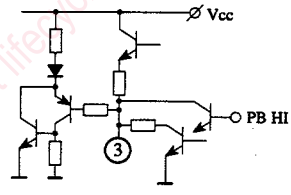
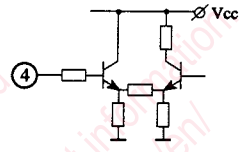
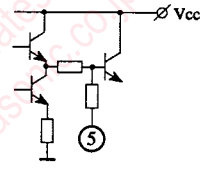
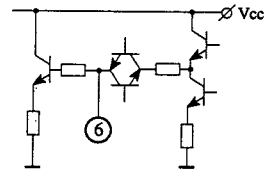
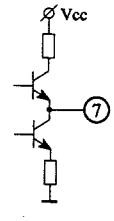
■ Application Circuit



■ Pin Descriptions

Pin No.	Pin Name	Description	Equivalent Circuit
1	Sync. separate output	Z=50Ω AC=4.7VOP  • Sync. signal separate output	
2	Sync. separate detection	DC=2.5V Z=500Ω  AC: Sync. Tip detection waveform • Detection pin for the sync. signal separating circuit. Connect the capacitor.	
3	AGC detection	DC=2.2V Z=375Ω • Detection pin for the AGC circuit. Connect the capacitor.	
4	EE level adjustment	OPEN Base Connect the level control VR of the AGC circuit. Low for noise canceller EDIT mode.	
5	Video signal input at REC	DC=3V Z=35kΩ AC: Video 1Vpp(std) Video signal input pin (EE). Connect the capacitor	
6	Sub Clamp detection	DC=2V (at clamp time) Z=8kΩ (at clamp time) Detection pin for the sub-clamp circuit.	
7	To Main LPF	DC=1.3V (REC) 1.7V (PB) Z=EF AC=Video 600mVpp (REC) Video 180mVpp (antiphase PB) • AGC output pin at EE. Connect to the main LPF. • DEM output pin at PB. Connect to the main LPF.	

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maintenance type
planed discontinued type
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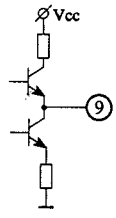
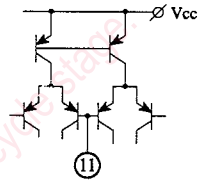
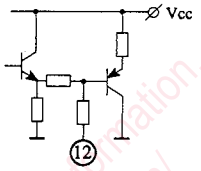
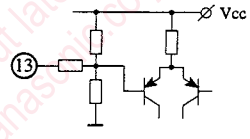
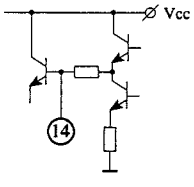
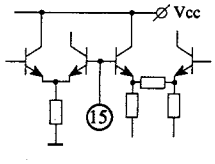
■ Pin Descriptions (Continue)

Pin No.	Pin Name	Description	Equivalent Circuit
9	EE/VV output	DC=1.1V Z=20Ω AC=Video 2Vpp Video output pin	
11	Pseudo V mute control	OPEN Base Mute control pin (CTL for video output) (EE) Low...Through Mid...Mutes to the black level. Hi...Mutes to the white level (PB) Low...Through Mid...Mutes to the pseudo H level. Hi...Mutes to the pseudo V level. Connect the VR.	
12	Chroma input at PB	DC=2.7V Z=15kΩ AC=200mVpp (burst) (input should be at low impedance) PB chroma signal input pin Low for detail enhancer OFF mode. Connect the capacitor.	
13	Picture control	DC=2.5V Z=75kΩ At PB Picture control pin (picture quality control) Hi...Hard Lo...Soft Connect the VR.	
14	Pre-amplifier input	DC=3.4V Z=30kΩ AC=Video 300mVpp (REC) Video 90mVpp (antiphase PB) Input a signal from the main low-pass filter. Connect the capacitor.	
15	FM demodulation gain control	OPEN Base Lo...EE mode Mid to Hi...Placed in the PB mode and doubles as the PB level control pin. Connect the VR.	

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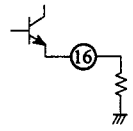
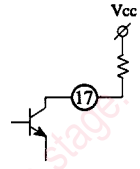
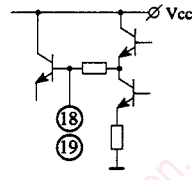
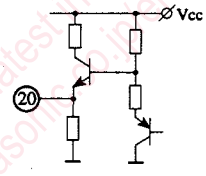
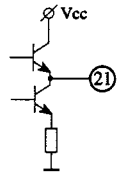
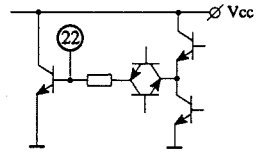
■ Pin Descriptions (Continue)

Pin No.	Pin Name	Description	Equivalent Circuit
16	Main De-emphasis	DC=1.6V AC=Video 300mVpp (antiphase) Main de-emphasis circuit (emitter). Connect to GND with 1.5kΩ. Filter connectable.	
17	Main De-emphasis output	DC=3.4V (PB) 3.5V (EE) AC=Video 300mVpp Main de-emphasis circuit (collector). Connect to Vcc with 1.5KΩ. Filter connectable.	
18 19	LNC input 1H DL input	DC=3.4V Z=30kΩ AC=Video 300mVpp Pin 18: Input a signal from the main de-emphasis circuit collector through capacitor connection. Pin 19: Input a 1H delay signal from CCD. The capacitance of both pins should be equal.	
20	1H DL output	DC=2.9V Z=EF AC=Video 260mVpp Connect an output pin capacitor for CCD input.	
21	DE, LNC output	DC=2.3V Z=EF AC=Video 1Vpp Output pin for the non-linear pre-amp. Connect the capacitor, and then, to the next pin.	
22	Clamp input	DC=3.4V (Sync. Tip) AC=Video 1Vpp • Clamp input pin. • The capacitor used should be as specified.	

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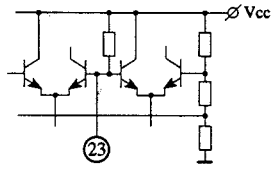
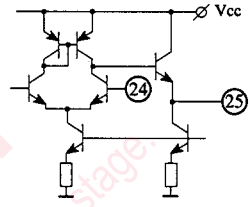
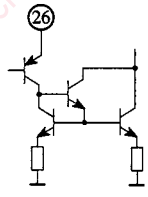
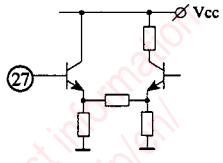
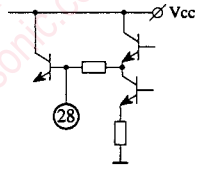
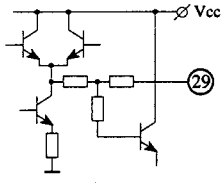
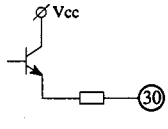
■ Pin Descriptions (Continue)

Pin No.	Pin Name	Description	Equivalent Circuit
23	PG input & 2H/6H change-over	DC=5V (Open) Z=27kΩ Lo...SP mode. The characteristics of non-linear emphasis and non-linear de-emphasis differ from the EP mode. Mid to Hi...EP mode. Controls FMCI by switching Mid/Hi.	
24	Feedback amp. input	DC=2V Z=EF (Pin 25) OPEN base (Pin 24) AC=Video 300mV Main emphasis output Pin 24 ... NF side. Connect LPF. Pin 25 ... Output side. Connect a resistor to the Pin 25, and then, connect to the Pin 26.	
25	Main emphasis circuit		
26	MOD input	DC=2V Z=OPEN Emitter FM modulation circuit input pin. Connect a resistor. (Resistor between pins 25 and 26): For deviation control (Resistor between pin 26 and Vcc): For fo control	
27	W-clip adjustment	OPEN Base White clip level control pin. Lo...Line noise canceller Off Connect the VR.	
28	PB FM input	DC=3.3V Z=10kΩ PB FM signal input pin.	
29	Envelop detection	DC=2.3V (no RF input) Z=30kΩ FM signal envelop detection pin.	
30	FM output	DC=3.8V Z=200Ω+OPEN Emitter AC= REC FM 1V FM modulation signal output pin. DOC pulse output pin at PB. Connect a resistor.	

Note : The above characteristics are reference design values, and not guarantee values.

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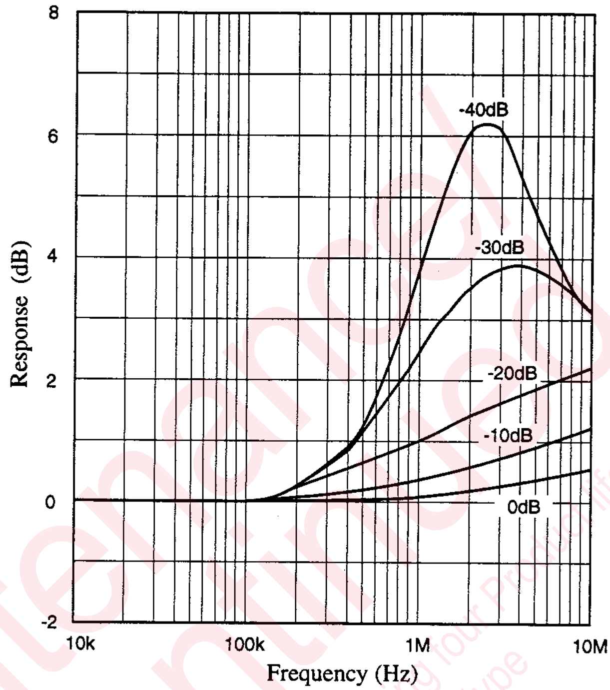
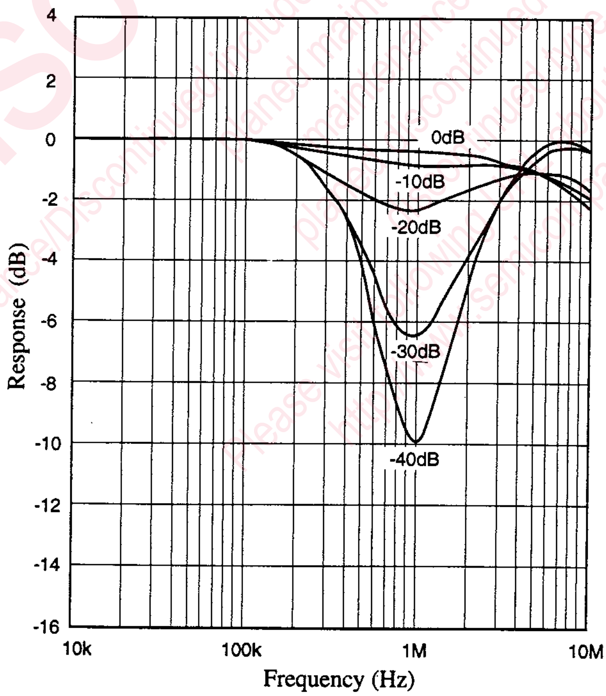
■ Characteristic Curves

Detail Enhancer Characteristic (REC)



Noise Canceller Characteristic (PB)



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