

AN3126

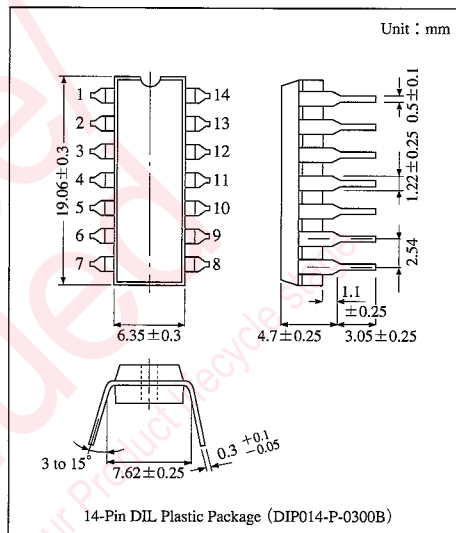
RF Modulator IC

Overview

The AN3126 is an integrated circuit designed for VHF-band RF modulator. Compared with our conventional IC (AN3125), the employment of a new circuit in the AN3126 reduces the number of external parts and provides enhanced sound and picture quality.

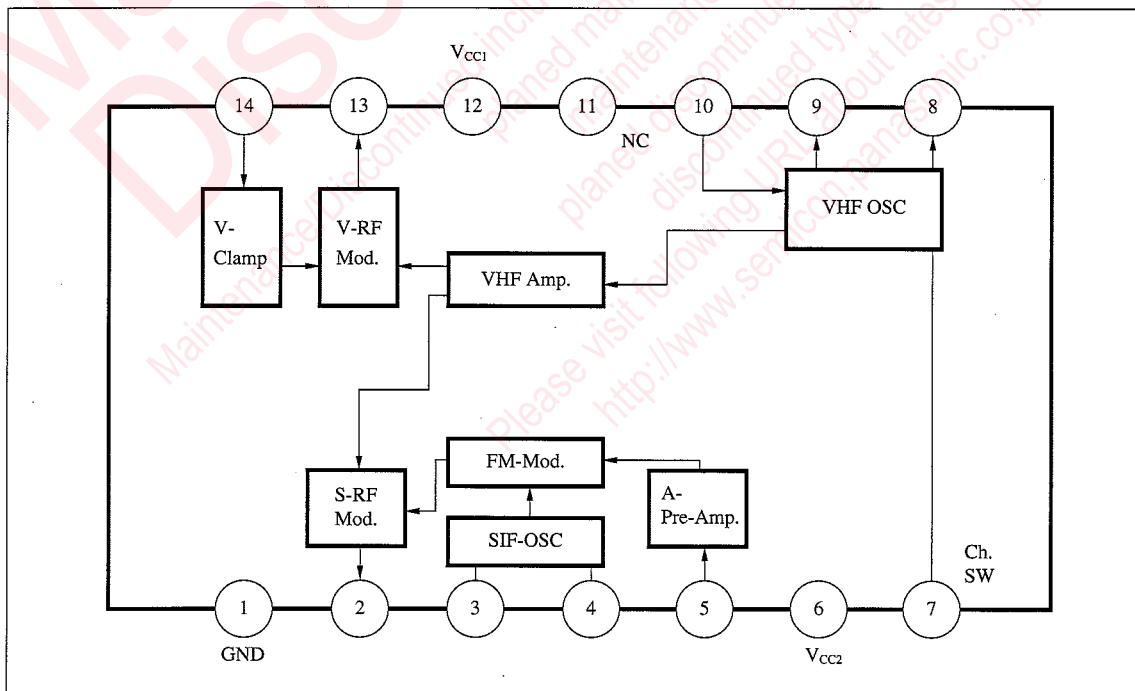
Features

- Operation on low voltage, $V_{CC}=5V$ and low current, $I_{CC}=18mA$
- VHF oscillator has a large oscillation margin
- High-performance white clip circuit
- P/S ratio can be set by external resistor
- Stabilized power supply built-in



ICs for VCR

Block Diagram



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V _{CC}	6	V
Supply current	I _{CC}	42	mA
Power dissipation	P _D	250	mW
Operating ambient temperature	T _{opr}	-20 to +75	°C
Storage temperature	T _{stg}	-55 to +150	°C

Recommended Operating Range (Ta=25°C)

Parameter	Symbol	Range
Operating supply voltage range	V _{CC}	4.5V to 5.5V

Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	min	typ	max	Unit
Current consumption	I _{tot}	+B=5V	13	18	23	mA

Video Circuit Characteristics

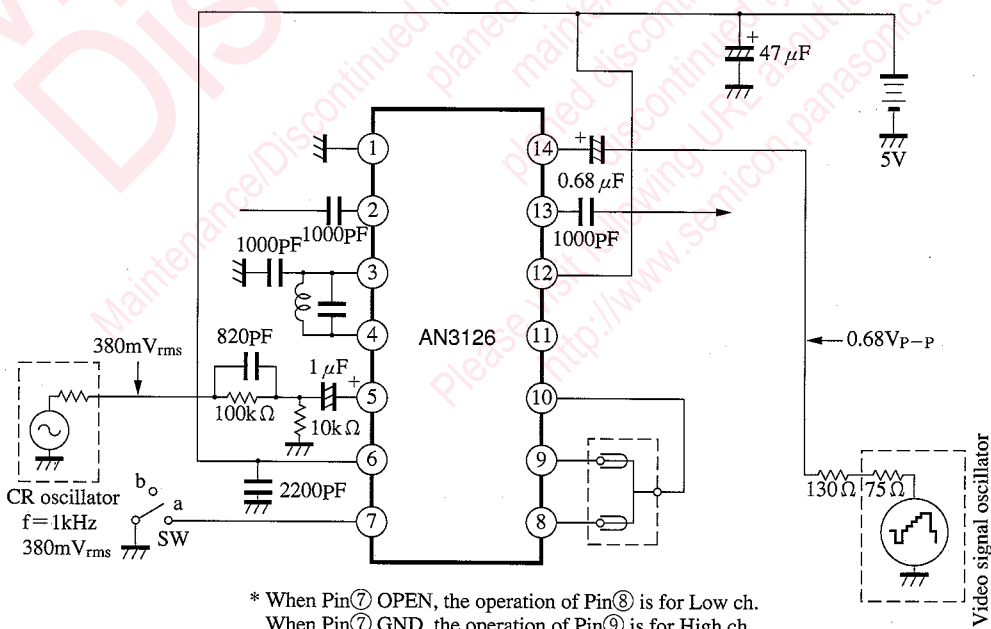
Video carrier output level *	V _P	APL10, 50, 90m=75%	87	89	91	dBμ
Maximum video modulation factor	m _{max}	Input 1.2V _{P-P}	90	95	99	%
Video modulation factor	m	APL10, 50, 90 Input 0.68V _{P-P}	70	75	80	%
Sync distortion	S _{sync}	m=75%	-8.5	—	+4	%

Audio Circuit Characteristics

Audio sub-carrier output level *	V _S		82	—	86	dB
Audio FM modulation sensitivity	4f _{FM}	Sin=380mV _{rms}	±19.9	—	±31.3	kHz
Audio SN ratio	SN _S		55	63	—	dB

* Based on the value measured at 75 Ω system, 2dB is added to the value measured at 50 Ω when measured at 50 Ω system.

Application Circuit



Pin Descriptions

Pin No.	Pin name	Typ. waveform	Description	I/O impedance	Equivalent circuit
1	GND	—	GND	—	—
2	AUDIO RF OUT	84dB μ	Audio RF output pin (the audio FM signal is AM-modulated and output)	26 Ω	
3	4.5MHz TANK	3V	Audio tank coil connection pin.	—	
4	4.5MHz TANK		Audio tank coil connection pin.	—	
5	AUDIO IN		Audio input pin.	20k Ω	
6	V _{CC1}	—	Supply voltage 1.	—	—
7	CH SW	1.5V	CH selector SW OPEN \leftrightarrow GND	30k Ω	
8	SAW OUT1 (LOW CH)	3.9, 5V	SAW resonator output (LOW CH) pin	1k Ω	
9	SAW OUT2 (HIGH CH)	5V, 3.9V	SAW resonator output (HIGH CH) pin	1k Ω	
10	SAW IN	3.4V	SAW resonator input pin.	3k Ω	
11	NC	—	NC	—	—
12	V _{CC2}	—	Supply voltage 2.	—	—
13	VIDEO RF OUT	89dB μ	Video RF output pin (the video signal is AM-modulated and outputted.)	26 Ω	
14	VIDEO IN		Video input pin.	—	

ICs for VCR

■ Supplementary Explanation

• Reference Value for Design in Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Condition	min	typ	max	Unit
Video Circuit Characteristics						
DG	DG	$m = 75\%$	-5	+2	+5	%
DP	DP	$m = 75\%$	-5	-1	+5	0eg
Video modulation factor difference between channels	$4m$	ch1 : $m = 75\%$	-2	0	+2	%
Audio Circuit Characteristics						
Audio FM modulation distortion I	THD1	$S_{in} = 380\text{mVrms}$	—	0.2	1	%
Audio FM modulation distortion II	THD2	$S_{in} = 1300\text{mVrms}$	—	0.8	3	%
Audio buzz	Buzz	$m = 75\%$	52	58	—	dB

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

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