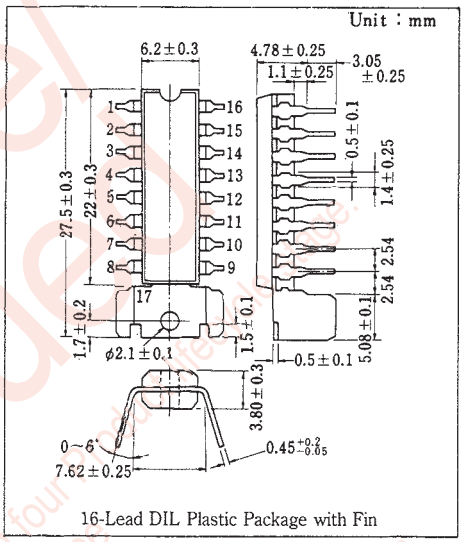
AN5255, AN5256

TV Sound IF Amplifier, Detector, AF Output Circuits

■ Outline

The AN5255 and the AN5256 are integrated circuits designed for TV sound signal processing circuit.

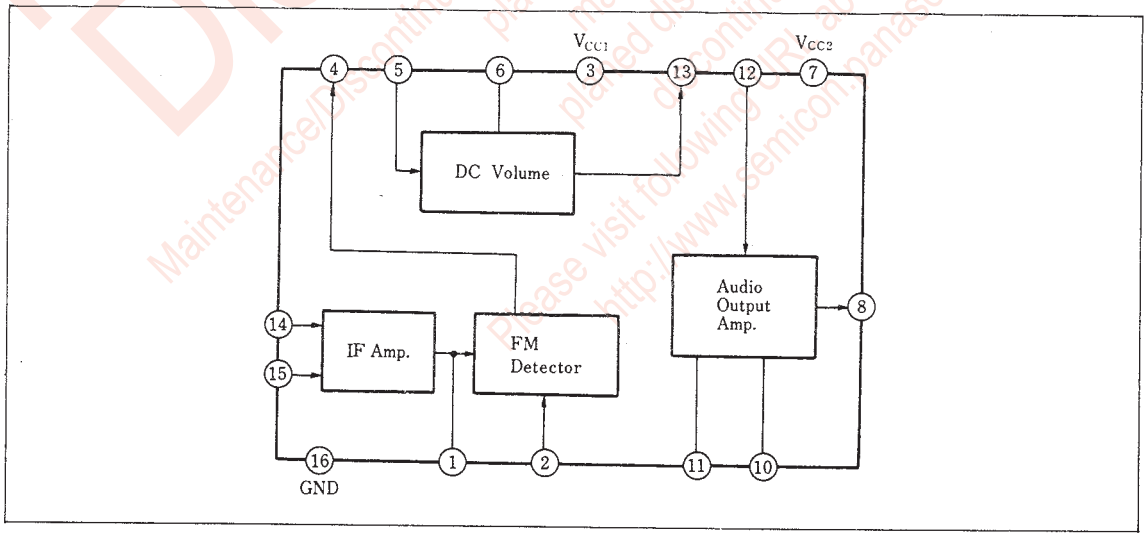


16-Lead DIL Plastic Package with Fin

■ Features

- The AN5255 or the AN5256 provides total TV sound signal processing circuitry from IF amplifier through AF output
- High input limiting sensitivity
- DC volume control system: control voltage 0~V_{CC} (AN5256: volume control with physiological characteristics)
- Provided with fixed detection output terminal, can also be used for TV sound multiplex applications

■ Block Diagram



■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	SIF Output	10	Feedback
2	Detector Input	11	Filter
3	V_{CC1}	12	AF Input
4	Detector Output	13	Variable Output
5	AF Input	14	SIF Input
6	DC Volume	15	Input Bias
7	V_{CC2}	16	GND
8	AF Output	17	Fin
9	GND	—	—

■ Absolute Maximum Ratings (Ta=25℃)

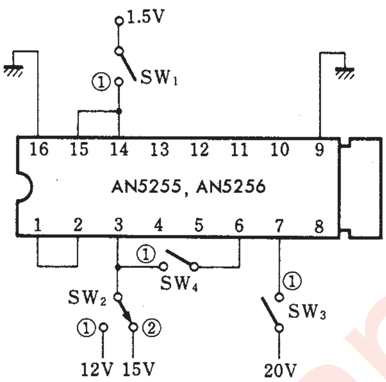
Item		Symbol	Rating		Unit
Voltage	Supply Voltage	V_{CC1}	V_{3-16}	13.8	V
		V_{CC2}	V_{7-16}	26	V
	Circuit Voltage	V_{6-16}	0	V_{3-16}	V
Current	Circuit Current	I_8	− 1.2	1.2	A_{peak}
Power Dissipation	Detector, DCVR Circuit	P_{D1}	0.6		W
	Output Circuit	P_{D2}	1.6		
Temperature	Operating Ambient Temperature	T_{opr}	−20～+70		℃
	Storage Temperature	T_{stg}	−55～+150		℃

Note: ⊕ and ⊖ are flow-in and flow-out currents to/from the circuit, respectively.

■ Electrical Characteristics (Ta=25℃)

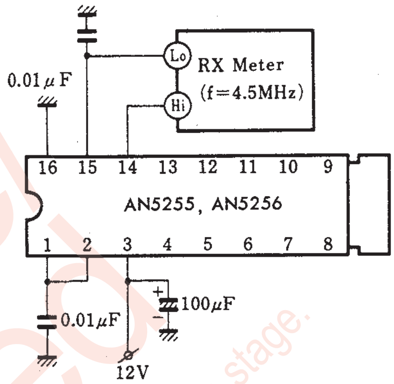
Item		Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
DC Characteristics								
Total Circuit Current		I_{tot}	1	V_{3-16}=12V	25	34.5	44	mA
Circuit Voltage		V_{1-16}	1	V_{3-16}=12V Pin ⑭ and ⑮ are connected.	3.4	4.2	5.0	V
		V_{4-16}	1		2.8	3.7	4.5	V
		V_{8-16}	1		8.8	9.5	10.2	V
	AN5255	V_{13-16}	1		7.0	8.0	9.0	V
	AN5256				6.0	6.7	7.4	
IF Amplification Detector								
Input Limiting Sensitivity		$V_{i(lim)}$	3	f_o=4.5MHz, f_m=400Hz, Δf=±25kHz		50	140	μ V_{rms}
AM Rejection		AMR	3	f=4.5MHz, f_m=400Hz, Mod=30% (AM), V_i=100mV_{rms}	38	45		dB
Input Resistance		R_i	2	f=4.5MHz	5	14	100	kΩ
Input Capacitance		C_i	2		4	8	12	pF
Output Voltage (Det.)		V_O	3	f_o=4.5MHz, f_m=400Hz,	200	300	440	mV_{rms}
Total Harmonic Distortion		$THD_{(IF)}$	3	Δf=±25kHz, V_i=100mV_{rms}		0.3	1.0	%
Volume Circuit								
Attenuation (max. Remaining Sound)		A_{tt}	3	f=1kHz, V_i=0.5V_{rms}, V_6=0V		2	5	mV_{rms}
Amplification	AN5255	A_{13-5}	3	f=1kHz, V_i=OSV$_{rms}$ V_6=12V	− 2	0	2	dB
	AN5256				-1.4	0.6	2.6	
Total Harmonic distortion		$THD_{(AF)}$	3	f=1kHz, V_i=0.5V_{rms}, V_6=12V		0.35	1.0	%
Output Circuit								
Output Power (max.)		P_O	3	f=1kHz, R_L=16Ω, THD=10%	1.8	2.0		W
Voltage Gain		G_V	3	f=1kHz, $V_{i(12)}$=50mV_{rms}	30	32	34	dB
Total Harmonic Distortion		$THD_{(out)}$	3	f=1kHz, P_O=1W		0.7	1.2	%
Static Circuit Current		I_{CQ}	1	V_{CC}=20V	8	20	50	mA

Test Circuit 1 (I_{tot}, V_{1-16}, V_{4-16}, V_{8-16}, V_{13-16}, I_{CQ})

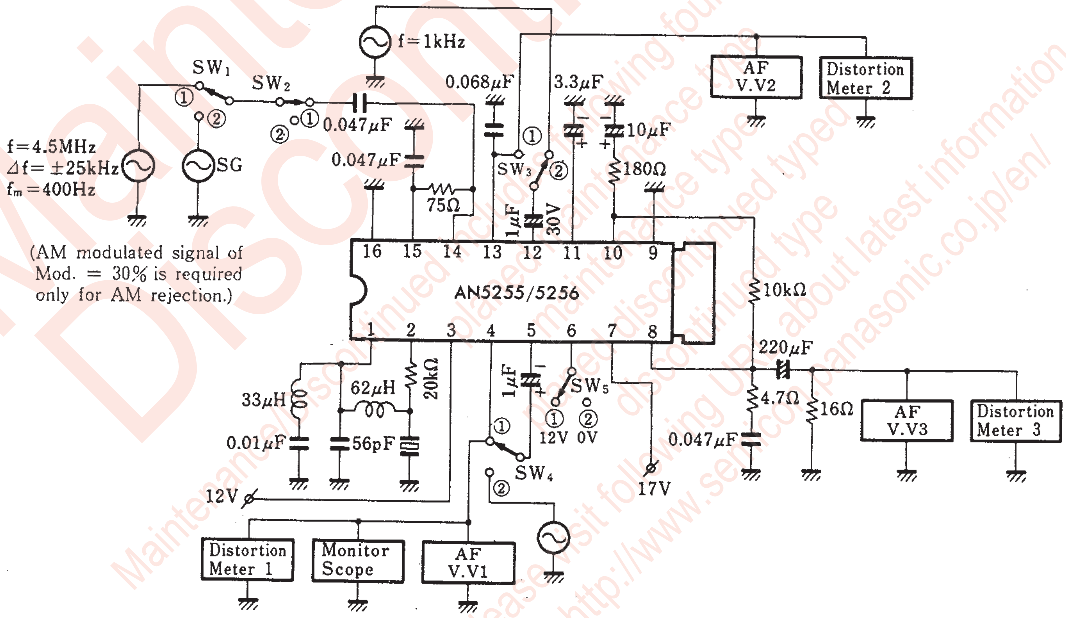


Item / Switch	I_{tot}	V_{1-16}	V_{4-16}	V_{8-16}	V_{13-16}	I_{CQ}
SW1	—	①	—	—	—	—
SW2	①	②	①	—	①	—
SW3	—	—	—	①	—	①
SW4	①	—	—	—	①	—

Test Circuit 2 (R_i, C_i)

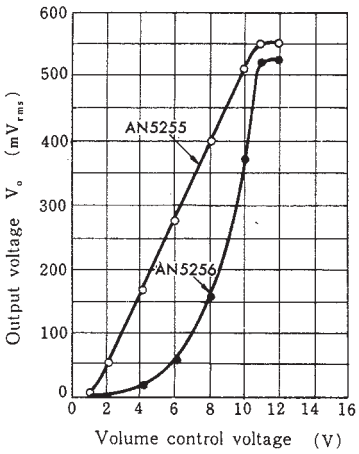


Test Circuit 3 ($V_{i(lim)}$, AMR, V_o, $THD_{(IF)}$, A_{tt}, A_{13-5}, $THD_{(AF)}$, P_O, G_V, $THD_{(out)}$)



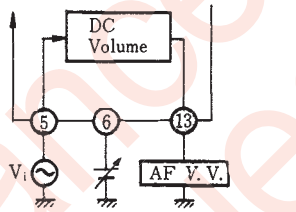
Item / Switch	$V_{i(lim)}$	AMR	V_O	$THD_{(IF)}$	A_{tt} AN5255	A_{tt} AN5256	A_{13-5} AN5255	A_{13-5} AN5256	$THD_{(AF)}$	P_O	G_V	$THD_{(out)}$
SW1	①	①	①	①	—	—	—	—	—	—	—	—
SW2	①	①	①	①	2	2	2	2	②	②	②	②
SW3	—	—	—	—	1	2	1	2	①	②	②	②
SW4	②	②	②	②	2	2	2	2	②	—	—	—
SW5	—	—	—	—	2	1	1	1	①	—	—	—
Measuring equipment	AF V.V1	AF V.V1	AF V.V1	Dis. Meter 1	AF V.V2		AF V.V2		Dis. Meter 2	AF V.V3	AF V.V3	Dis. Meter 3

DC Volum Control Curve

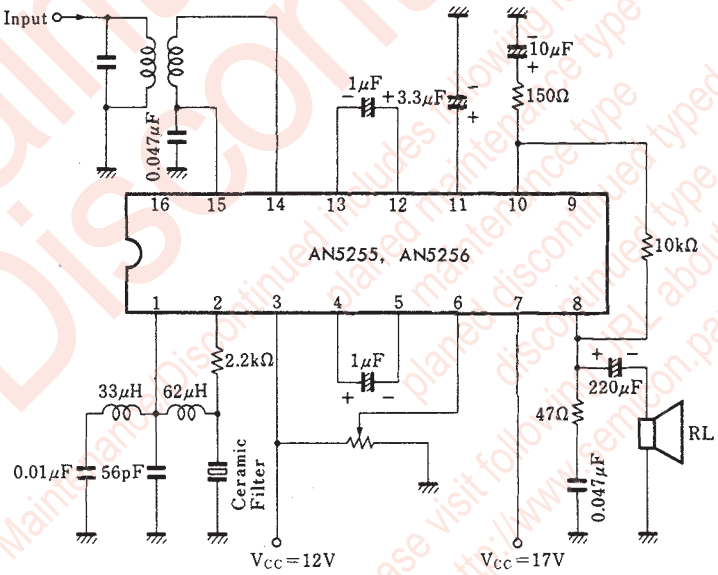


● Condition

V_{CC}=12V, V_i=500mV_{rms} (1kHz)



■ Application Circuit



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