AN7086S

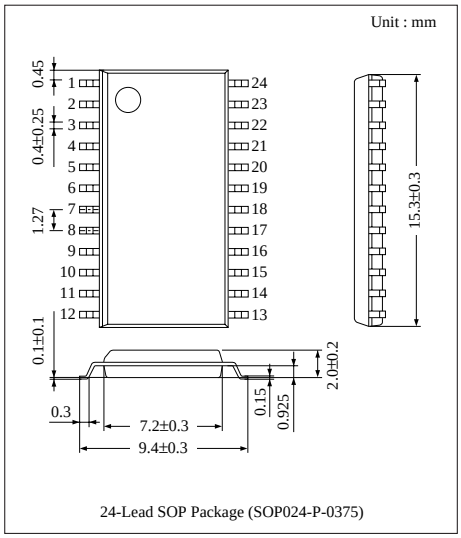
Recording/Playback Pre-/Power Amplifier IC for 3V Microcassette

■ Overview

The AN7086S is an integrated circuit developed for recording playback pre-/power amp., built-in VAS (Voice Activated System) function especially.

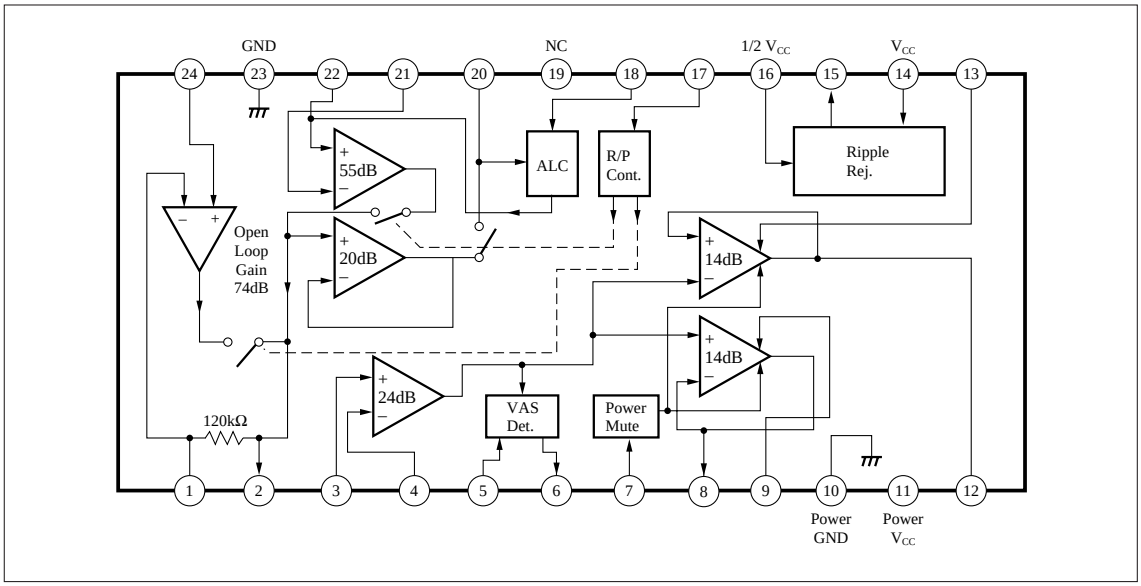
■ Features

- Rec. playback pre-/power amp. IC
- VAS function built-in
- Earphone monitor at recording is possible
- 350mW BTL, OCL power amp. built-in
- Mic. amp built-in
- ALC function built-in
- Rec./Play switching is possible with a single circuit switch



24-Lead SOP Package (SOP024-P-0375)

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25˚C)

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	6	V
Supply Current	I_{CC}	1000	mA
Power Dissipation	P_D	520	mW
Operating Ambient Temperature	T_{opr}	–20 ~ + 75	˚C
Storage Temperature	T_{stg}	–55 ~ + 125	˚C

■ Recommended Operating Range (Ta= 25˚C)

Parameter	Symbol	Range
Operating Supply Voltage Range	V_{CC}	1.8V ~ 4.5V

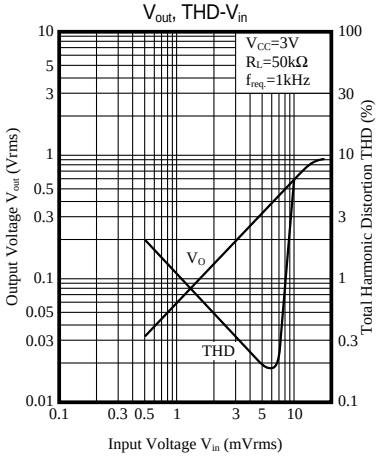
■ Electrical Characteristics (V_{CC}=3V, f=1kHz, Ta=25˚C)

Parameter	Symbol	Condition	min.	typ.	max.	Unit
Quiescent Circuit Current	I_{tot}	At No Input/Playback	10	20	35	mA
<Pre-Amp.>						
Open Circuit Gain	G_{V1}	V_{in}= – 85dBV, R_g= 1kΩ	65	74	—	dB
Total Harmonic Distortion	THD_1	V_{in}= 3mVrms, R_g= 1kΩ	—	0.1	1	%
Maximum Output Voltage	V_{O1}	THD= 1%, R_g= 1kΩ	0.3	0.6	—	Vrms
Noise Voltage Referred to Input	V_{ni}	R_g= 1kΩ, DIN/AUDIO Filter	—	1	1.8	μVrms
<Recording Amp.>						
Close Circuit Gain	G_{V2}	V_{in}= – 80dBV	69.5	72.5	75.5	dB
Total Harmonic Distortion	THD_R	V_{in}= – 80dBV	—	1.3	3	%
Maximum Output Voltage	V_{oR}	THD = 5%	0.8	1.08	—	Vrms
Output Noise Voltage	V_{nR}	R_g= 2.2kΩ, DIN/AUDIO Filter	—	–46	–42	dBV
<Power Amp.>						
Closed Circuit Gain	$G_V – P_O$	V_{in}= 5mVrms, R_L= 8Ω	38.5	41	43.5	dB
Total Harmonic Distortion	$THD – P_O$	V_{in}= 5mVrms, R_L= 8Ω	—	0.11	1	%
Maximum Output Voltage	$V_O – P_O$	THD = 10%, R_L= 8Ω	300	350	—	mW
Output Noise Voltage	$V_n – P_O$	R_g= 0Ω, R_L= 8Ω, DIN/AUDIO Filter	—	–74	–65	dBV
Output Offset Voltage	V_{DC}	R_g= 0Ω, R_L= 8Ω,	–50	0	50	mV
<VAS>						
VAS Operation Input Voltage	VAS	Mic. input level at Piny Voltage= 0.2V	8	14	18	μVrms
<ALC>						
Effective Voltage	V_{ALC}	V_{in}= – 60dBV, R_g= 1.5kΩ	–6.6	–4.5	–2.5	dBV
Effective width	W_{ALC}	V_{in}= – 30dBV, R_g= 1.5kΩ	—	1.5	3	%
<Ripple Rejection>						
Playback System Ripple Rejection	RR_P	f_r = 270Hz, V_r = 30mVrms, R_g= 1kΩ	—	–70	–50	dBV
Recording System Ripple Rejection	RR_R	f_r = 270Hz, V_r = 30mVrms, R_g= 2.2kΩ	—	–40	–30	dBV
<Switching Pin>						
Rec./Playback Switching Pin	V_{PB}	Playback mode	0.1	—	0.3	V
Rec./Playback Switching Pin	V_{REC}	Recording mode	1.6	—	2.3	V

■ Characteristics Curve

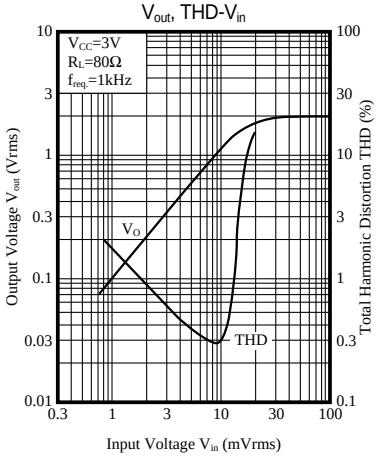
Pre. Amp.

Input/Output Characteristics
V_{out}, THD-V_{in}



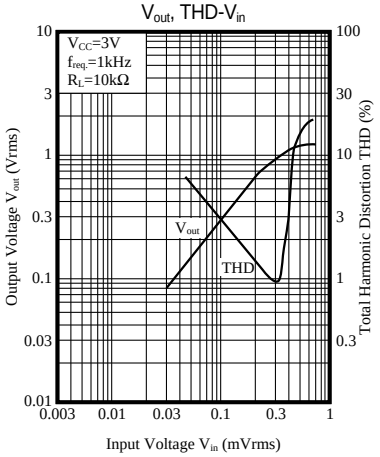
Power Amp.

Input/Output Characteristics
V_{out}, THD-V_{in}



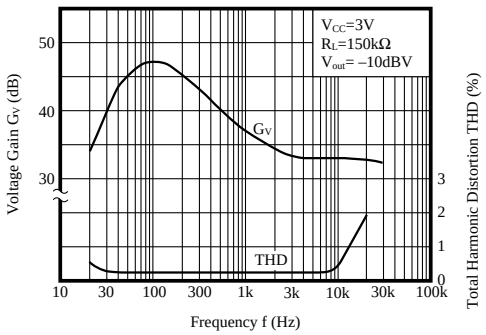
Rec. Amp.

Input/Output Characteristics
V_{out}, THD-V_{in}



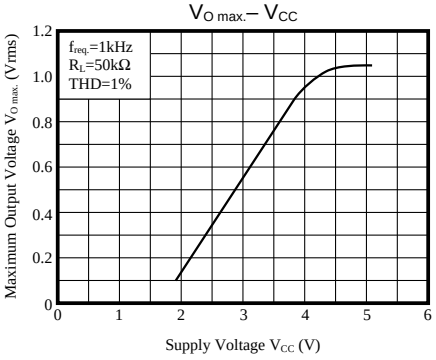
Pre. Amp.

Frequency Characteristics
G_V, THD – f



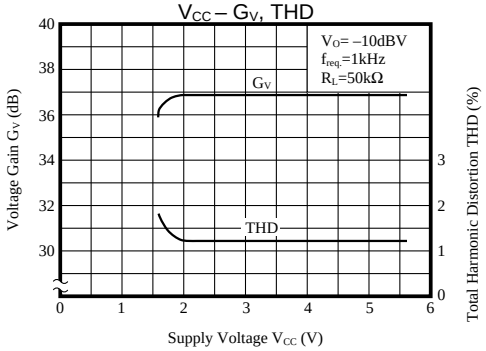
Pre. Amp.

Maximum Output Voltage
$V_{O\,max.}$– V_{CC}



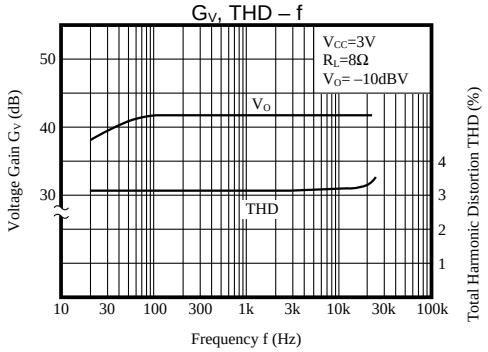
Pre. Amp.

Supply Voltage Characteristics
V_{CC} – G_V, THD



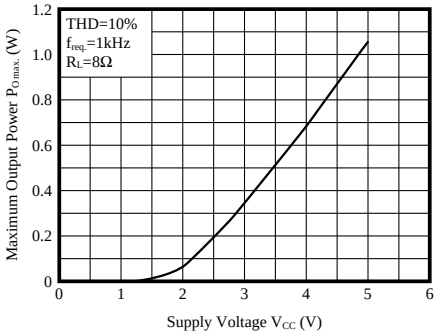
Power Amp.

Frequency Characteristics
G_V, THD – f



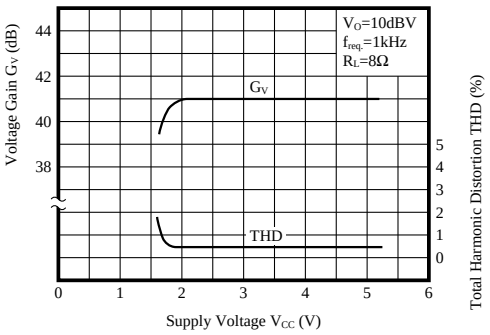
Power Amp.

Maximum Output Power
$P_{O\,max.}$ – V_{CC}



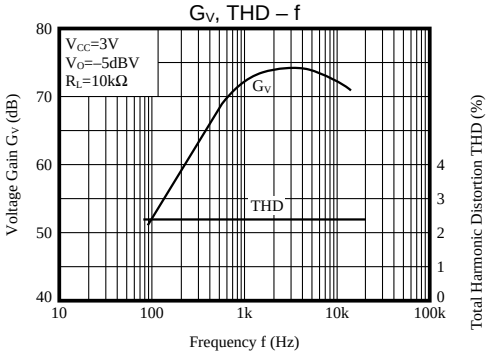
Power Amp.

Supply Voltage Characteristics
G_V, THD – V_{CC}



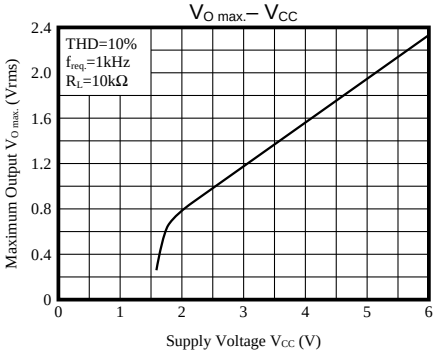
Rec. Amp.

Frequency Characteristics
G_V, THD – f



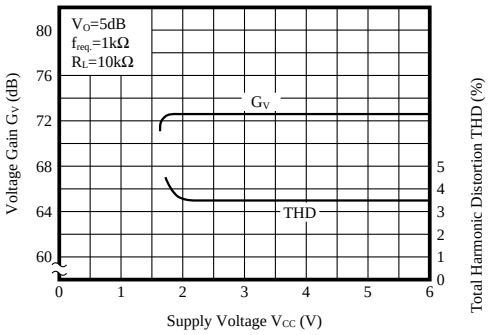
Rec. Amp.

Maximum Output Voltage
$V_{O\,max.}$ – V_{CC}



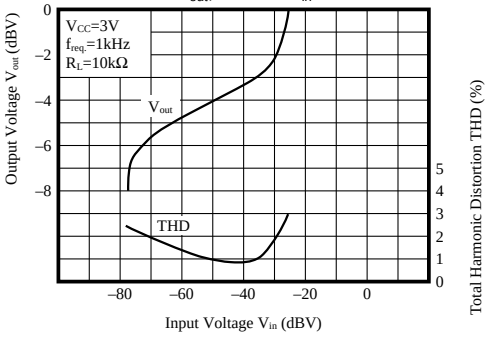
Rec. Amp.

Supply Voltage Characteristics
G_V, THD – V_{CC}

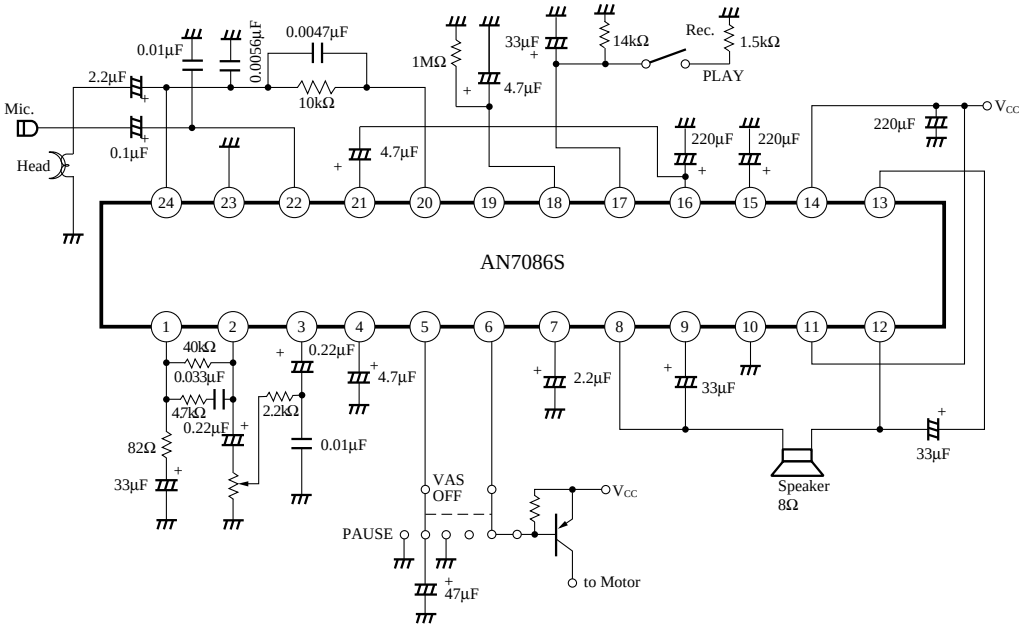


ALC

Input/Output Characteristics
V_{out}, THD – V_{in}



■ Application Circuit



■ Pin Descriptions

Pin No.	Pin Name	Pin No.	Pin Name
1	Pre-Amp. NF Pin	13	B.S.2
2	Pre-Amp. Output Pin	14	V_{CC}
3	Power Amp. Input Pin	15	Filter Pin
4	Power Amp. NF Pin	16	Center
5	VAS Detection	17	Rec./Play Switching Pin
6	MOTOR Output Pin	18	ALC Detection
7	Power Mute Pin	19	NC
8	Power Output 1 Pin	20	Rec. Amp. Output Pin
9	B.S.1	21	Mic. Amp. NF Pin
10	Power GND	22	Mic. Amp. Input Pin
11	Power V_{CC}	23	Pre. GND
12	Power Output 2-pin	24	Pre. Amp. Input Pin