AN7131 5W 低频功率放大器 9脚单列直插式塑封（附散热片）

松下

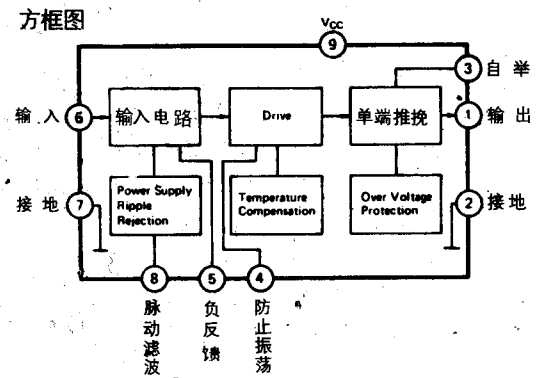
是电源电压为13.2V、负荷为4Ω的低频功率放大器，有纹波抑制电路，内含工作点自动稳定电路。

○内含温度保护和过压保护电路
○内含工作点自动稳定电路

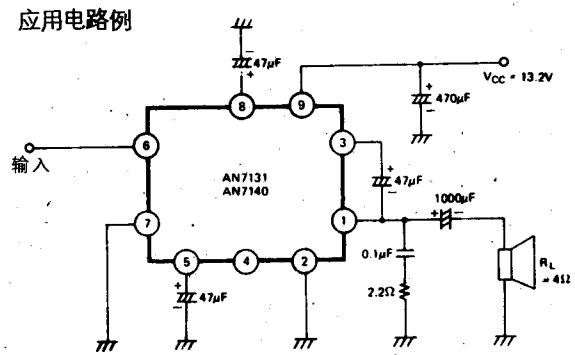
极限参数 （T_a=25°C）

$V_{CC(1)}$……24V（无信号时）
$V_{CC(2)}$……20V（工作时）
I_{CC}……4A
P_T……10W（T_a=30°C）
T_{opr}……−30～+75°C
T_{stg}……−40～+150°C

方框图



应用电路例



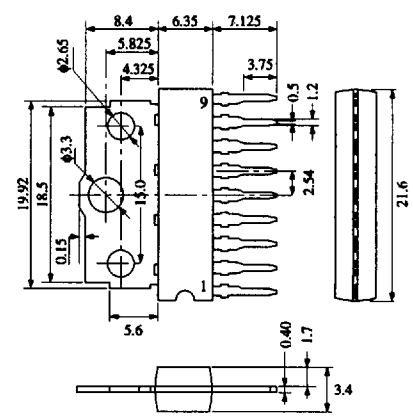
电特性参数 （V_{CC}=13.2V, R_L=4Ω, f=1kHz, T_a=25°C）

符号	测定条件		参数值 最小	典型	最大	单位
$I_{CC(ZS)}$	V_i=0	AN7131	7	20	45	mA
		AN7140	15	30	55	
G_V	V_i=3mV		51.5	53.5	55.5	dB
P_{OM}	K_F=10%		4.5	5		W
K_F	V_i=3mV	AN7131		0.3	1	%
		AN7140		0.15	1	
Z_i				30		kΩ
N_o	R_g=10kΩ			1.5	3	mV

AN7131

5W Audio Power Amplifier Circuit

Unit : mm



9-Lead SIL Plastic Package with Fin (9-SIP-F)

■ Description

The AN7131 is a monolithic integrated circuit designed for audio power amplifiers such as portable radio, radio cassette tape recorder and car radio. Stabilized operation due to wide supply voltage.

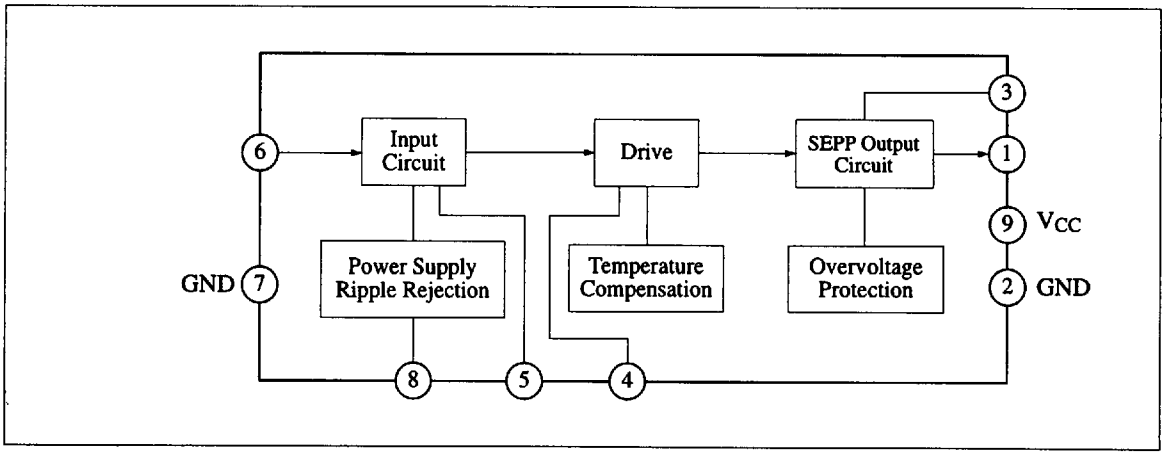
■ Features

- High gain, low distortion, low noise
- Reduction in external components
- Built-in thermal protection circuit
- Built-in over voltage protection circuit
- Incorporating automatic operating point stabilizer circuit
- Low shock noise when power is switched ON and OFF
- Low quiescent current

■ Pin

Pin No.	Pin Name
1	Output
2	GND (Output)
3	Bootstrap
4	Phase Compensation
5	N.F.B.
6	Input
7	GND (Input)
8	Ripple Filter
9	V_{CC}

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage *1	V_{CC}	24	V
Supply Current	I_{CC}	4	A
Power Dissipation (Ta = 30°C)	P_D	10	W
Operating Ambient Temperature	Topr	-30 ~ +75	°C
Storage Temperature	Tstg	-40 ~ +150	°C

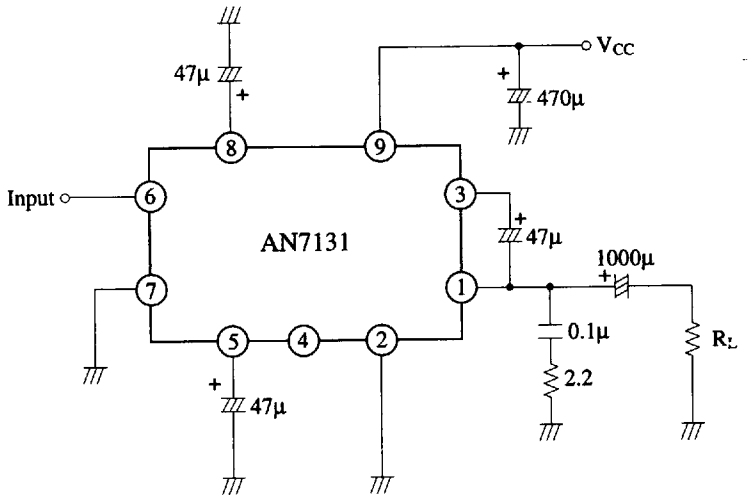
Operating Supply Voltage Range: V_{CC} = 5.0V~ 22.0V

*1 Without input signal V_{CC} = 24V

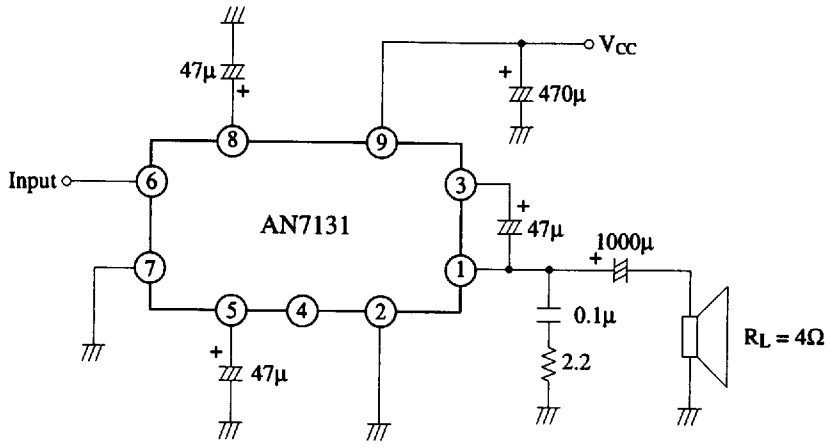
■ Electrical Characteristics (V_{CC}=13.2V, R_L=4Ω, f=1kHz, Ta=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Quiescent Current	I_{CQ}	V_{in} = 0mV	7	20	45	mA
Voltage Gain	G_V	V_{in} = 3mV	51.5	53.5	55.5	dB
Output Power	P_O	THD = 10%	4.5	5		W
Total Harmonic Distortion	THD	V_{in} = 3mV		0.3	1	%
Output Noise Voltage	V_{no}	R_g = 10kΩ		1.5	3	mV
Input Impedance	Z_{in}			30		kΩ

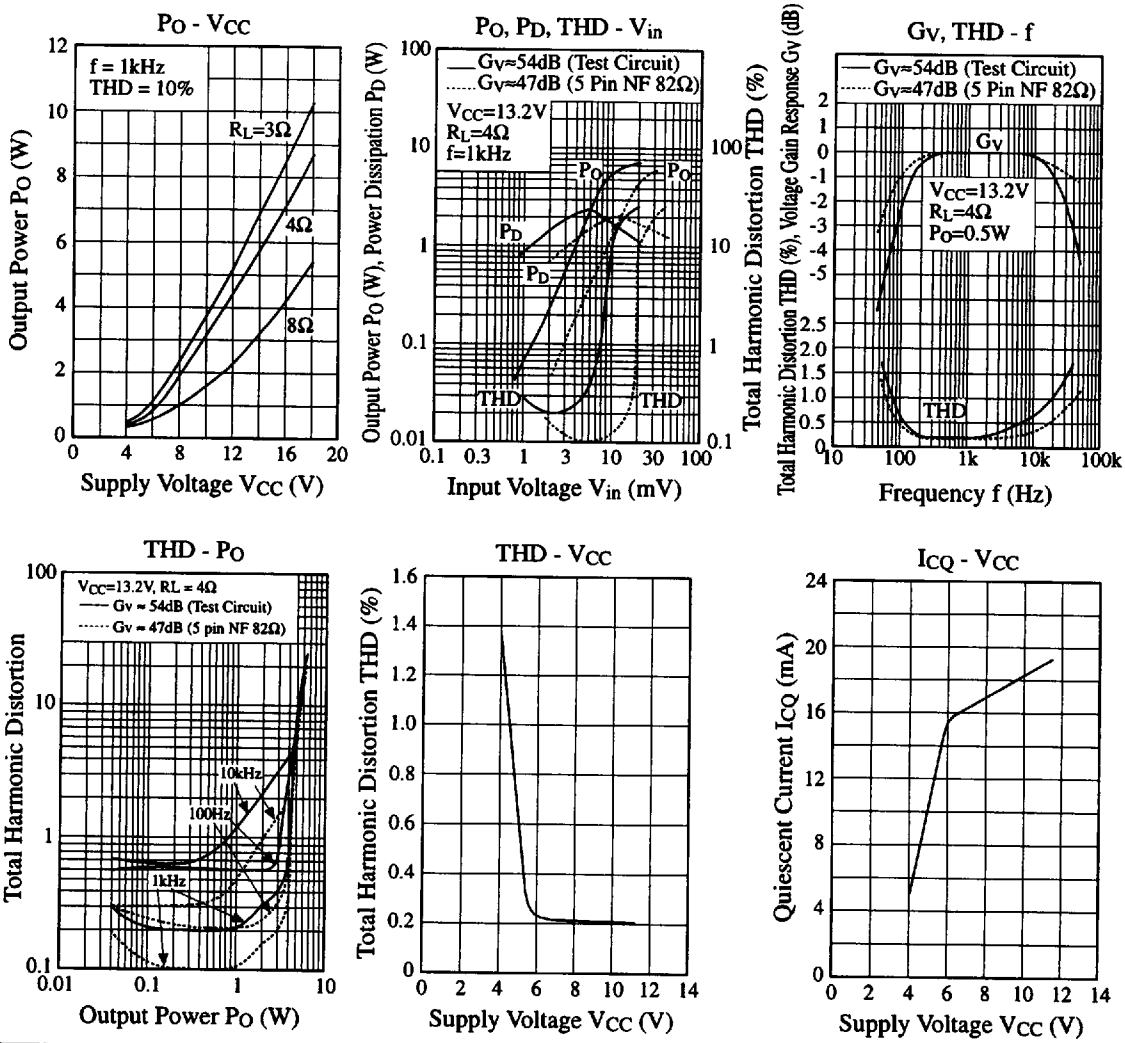
Test Circuit



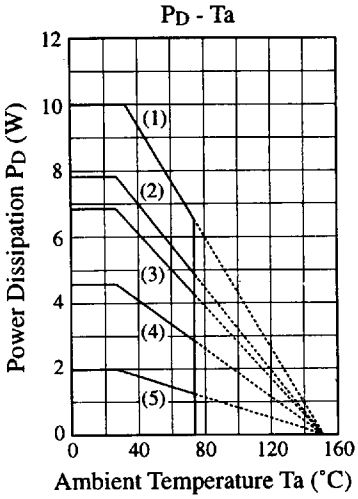
■ Application Circuit



■ Characteristics Curve

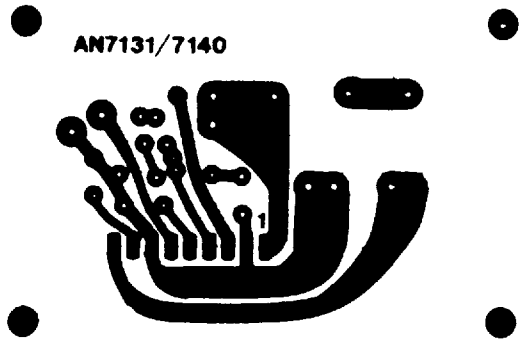


■ Characteristics Curve (Continue)



(1) Tc = Ta
(2) With a 100 x 100 x 3mm Al heat sink (black colour coated)
(3) Without a 200 x 200 x 2mm Al heat sink
(4) With a 25 x 25 x 2mm Al heat sink
(5) Without heat sink

■ Printed Circuit Board Layout (Scale: 1:1)



IC's For Radio, Audio

AN7120 — 2.1W Audio Power Amplifier

Maximum Ratings (Ta=25°C):
- V_{CC} (V_{7-10}) = 18V
- $I_{CC(Peak)}$ = 2A
- P_D = 1.2W
- P_D = 2.25W*
- Topr = −20~+70°C
- Tstg = −40~+150°C

*With heat sink

Electrical Characteristics (Ta=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
(V_{CC}=9V, R_L=4Ω, f=1kHz)						
Quiescent Current	I_{CQ}	V_i=0	10	27	50	mA
Open Loop Voltage Gain	G_{VO}	V_i=1mV		62		dB
Closed Loop Voltage Gain	G_{VC}	V_i=5mV	42	45	48	dB
Output Power	P_O	THD=10%	1.7	2.1		W
		R_L=8Ω, THD=10%		1.4		W
Total Harmonic Distortion	THD	V_i=5mV		0.5	1.5	%
Output Noise Voltage	V_{no}	Rg=10kΩ		0.4	1	mV
Input Impedance	Z_i			25		kΩ

AN7130 — 4.2W Audio Power Amplifier

Maximum Ratings (Ta=25°C):
- V_{CC}(V_{9-2}) = 18V
- I_{CC} = 3A
- P_D = 10W (Ta=30°C, θ_{j-c}=12°C/W)
- Topr = −30~+75°C
- Tstg = −40~+150°C

Electrical Characteristics (Ta=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
(V_{CC}=13.2V, R_L=4Ω, f=1kHz)						
Quiescent Current	I_{CQ}	V_i=0	10	20	50	mA
Closed Loop Voltage Gain	G_{VC}	V_i=5mV	43	46	49	dB
Output Power	P_O	THD=10%	3.7	4.2		W
Total Harmonic Distortion	THD	V_i=5mV		0.4	1.5	%
Output Noise Voltage	V_{no}	Rg=10kΩ		0.5	1.2	mV
Input Impedance	Z_i			25		kΩ

AN7131 / AN7140 — 5W Audio Power Amplifier

Maximum Ratings (Ta=25°C):
- V_{CC}(V_{9-2}) = 24V*1
- V_{CC}(V_{9-2}) = 20V*2
- I_{CC} = 4A
- P_D = 10W (Ta=30°C)
- Topr = −30~+75°C
- Tstg = −40~+150°C

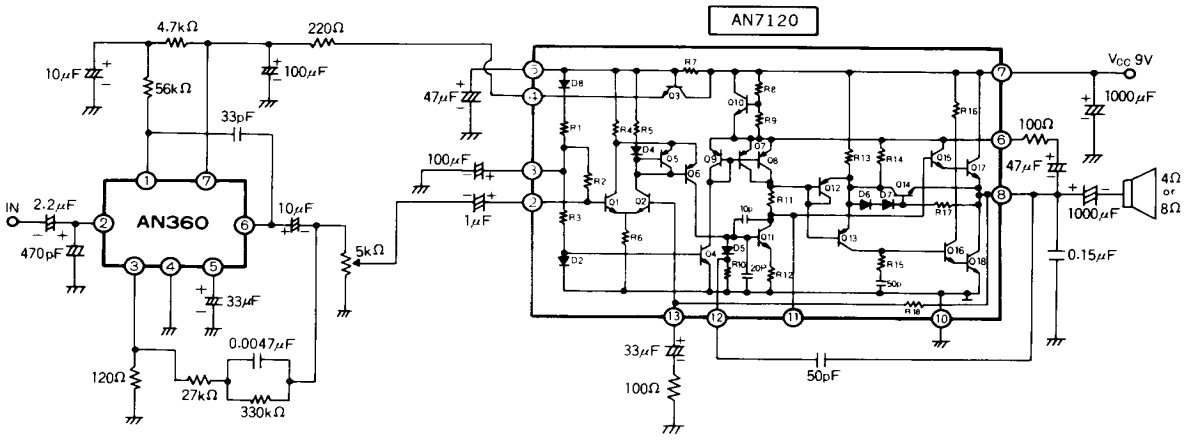
*1 Without signal (AN7131 only)
*2 Operation

Electrical Characteristics (Ta=25°C)

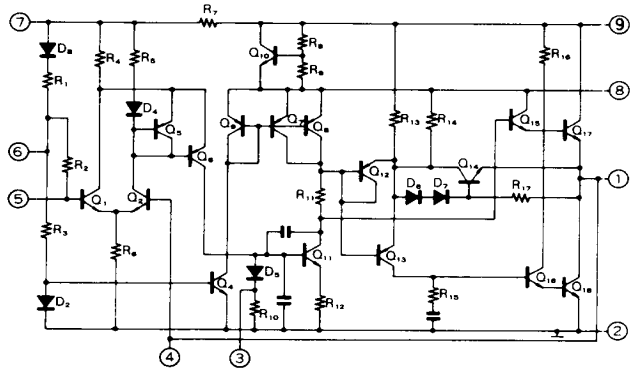
Item	Symbol	Condition		min.	typ.	max.	Unit
(V_{CC}=13.2V, R_L=4Ω, f=1kHz)							
Quiescent Current	I_{CQ}	V_i=0	AN7131	7	20	45	mA
			AN7140	15	30	55	mA
Voltage Gain	G_V	V_i=3mV		51.5	53.5	55.5	dB
Output Power	$P_{O(max)}$	THD=10%		4.5	5		W
Total Harmonic Distortion	THD	V_i=3mV	AN7131		0.3	1	%
			AN7140		0.15	1	%
Output Noise Voltage	V_{no}	Rg=10kΩ			1.5	3	mV
Input Impedance	Z_i				30		kΩ

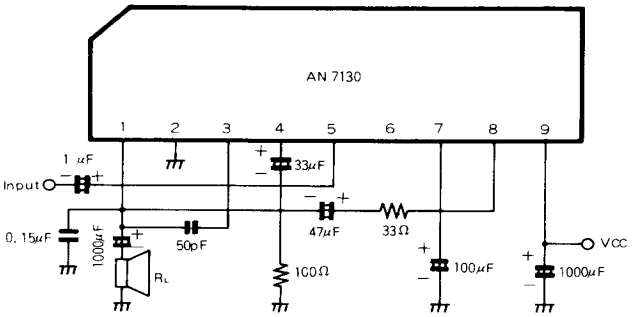
Circuit Diagram	Application Circuit

AN7120 (Package I—17,14—Lead Plastic DIL with Fin)



AN7130 (Package I—8,9—Lead Plastic SIL with Fin)





AN7131, AN7140

(Package I—8,9—Lead Plastic SIL with Fin)