

BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1308V

18 W AF POWER AMPLIFIER

SILICON BIPOLAR MONOLITHIC INTEGRATED CIRCUIT

DESCRIPTION

The μ PC1308V is an audio power amplifier in a 14-lead vertical dual in-line package, specifically designed for car stereo applications.

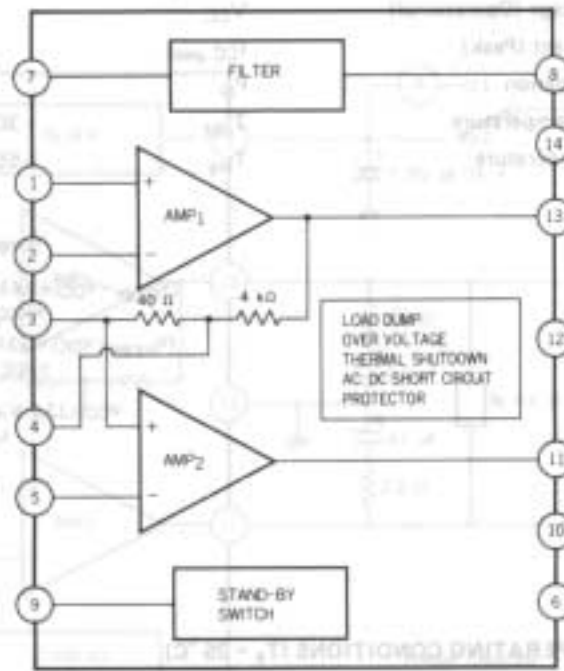
Typically it provides output power of 18 W at 14.4 V or 15 W at 13.2 V to a 4 Ω load.

This IC can be used without output capacitors, because its two output terminals have the same potential and it includes an original short circuit protection function which protects internal output power transistors and a speaker at the same time when one output terminal is shorted to ground.

FEATURES

- Internal stand-by switch circuit; CMOS drive possible.
- Can be used as OCL connection.
- Very low output offset voltage : $V_{\text{offset}} = 150 \text{ mV (MAX.)}$
- High output power : $P_O = 18 \text{ W (TYP.)}$ @ $R_L = 4 \Omega$, $V_{CC} = 14.4 \text{ V}$, THD = 10 %
 $P_O = 15 \text{ W (TYP.)}$ @ $R_L = 4 \Omega$, $V_{CC} = 13.2 \text{ V}$, THD = 10 %
- Very low distortion : THD = 0.1 % (TYP.)
- Following protection circuits are included.
 - (1) Load dump voltage surge protection circuit.
 - (2) Thermal shut down protection circuit.
 - (3) Output terminal short circuit protection circuit, (V_{CC} to OUT, OUT to GND, OUT to OUT)
 - (4) Loudspeaker protection circuit.

BLOCK DIAGRAM



CONNECTION DIAGRAM

PIN No.	CONNECTION	PIN No.	CONNECTION
1	Input 1	8	VCC
2	NFB 1	9	Stand-by switch
3	GND (Input)	10	NC
4	Output 1 Devided	11	Output 2
5	NFB 2	12	GND (Output)
6	GND (Output)	13	Output 1
7	Filter	14	NC

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ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Supply Voltage (Notel)	V_{CC} surge	60	V
Supply Voltage (Operational)	V_{CC}	18	V
Circuit Current (Peak)	I_{CC} peak	4.5	A
Power Dissipation	P_D	20	W
Operating Temperature	T_{opt}	-30 to +75	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

DESCRIPTION

The PC1308V is a monolithic bipolar integrated circuit designed for use as a power amplifier. It features a high output power capability and a wide bandwidth. The device is fabricated using standard bipolar technology and is available in a standard 8-pin DIP package. The typical operating supply voltage is 13.2 V, and the maximum output power is 20 W. The device is designed to operate over a temperature range of -30 to +75 $^\circ\text{C}$.

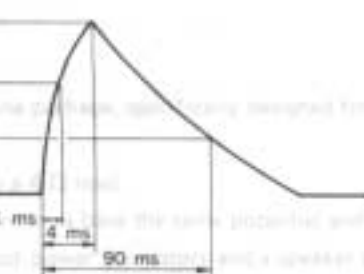
FEATURES

- Standard 8-pin DIP package
- High output power capability
- Wide bandwidth
- Low distortion
- High reliability

RECOMMENDED OPERATING CONDITIONS ($T_a = 25^\circ\text{C}$)

Supply Voltage Range	V_{CC}	9 to 16	V
Load Impedance	R_L	3.2 to 16	Ω
Pin 9 Voltage (Operating)	V_{pin9}	3.5 to V_{CC}	V
Pin 9 Voltage (Stand-by)	V_{pin9}	0 to 1.5	V

- Following connection groups are included:



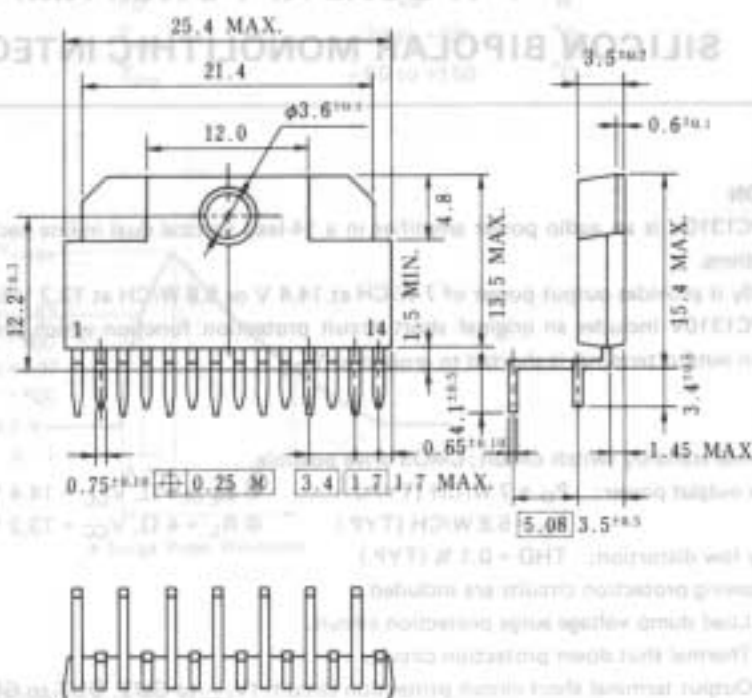
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $V_{CC} = 13.2\text{ V}$, $R_L = 4\ \Omega$, $f = 1\text{ kHz}$, Using 4 $^\circ\text{C/W}$ heat sink)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Quiescent Current	I_{CC}		90	150	mA	$V_i = 0$
Output Offset Voltage	V_{offset}		0	± 150	mV	$V_i = 0$
Output Power	P_O		18		W	$V_{CC} = 14.4\text{ V}$, THD = 10 %**
		12	15		W	$V_{CC} = 13.2\text{ V}$, THD = 10 %**
Voltage Gain	A_V	44	46	48	dB	
Total Harmonic Distortion	THD		0.1	0.5	%	$P_O = 1\text{ W}$
Output Noise Level	V_n		0.45	1.5	mV _{r.m.s.}	$R_G = 10\text{ k}\Omega$, BW = 20 Hz to 20 kHz
Supply Voltage Rejection Ratio	SVR	40	46		dB	$R_G = 0$, $f_{rip} = 100\text{ Hz}$, $V_{rip} = 0.5\text{ V}$
Input Resistance	R_i	45	65		k Ω	
Roll-off Frequency	f_H		80		kHz	$A_V = -3\text{ dB}$ from 1 kHz Ref. High
	f_L		10		Hz	$A_V = -3\text{ dB}$ from 1 kHz Ref. Low
Stand-by Current	$I_{CC(SB)}$		0.32	0.5	mA	$0 \leq V_g \leq 1.5\text{ V}$

(**Using a Voltmeter: HP-400FL)

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14 PIN V-DIP PACKAGE DIMENSIONS (Unit : mm)



RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	UNIT	MIN.	MAX.
Supply Voltage	V _{CC}	V	4.5	15
Operating Temperature	T _{amb}	°C	-40	125
Storage Temperature	T _{stg}	°C	-55	150
Input Current	I _{in}	μA	1	10
Output Current	I _{out}	mA	10	100
Power Dissipation	P _D	mW	100	1000
Package Thermal Resistance	θ _{JA}	°C/W	100	100
Lead Solderability		%	100	100
Weldability		%	100	100
Fluxability		%	100	100
Reliability		%	100	100

CONNECTION DIAGRAM

