BIPOLAR ANALOG INTEGRATED CIRCUIT

μPC1230H

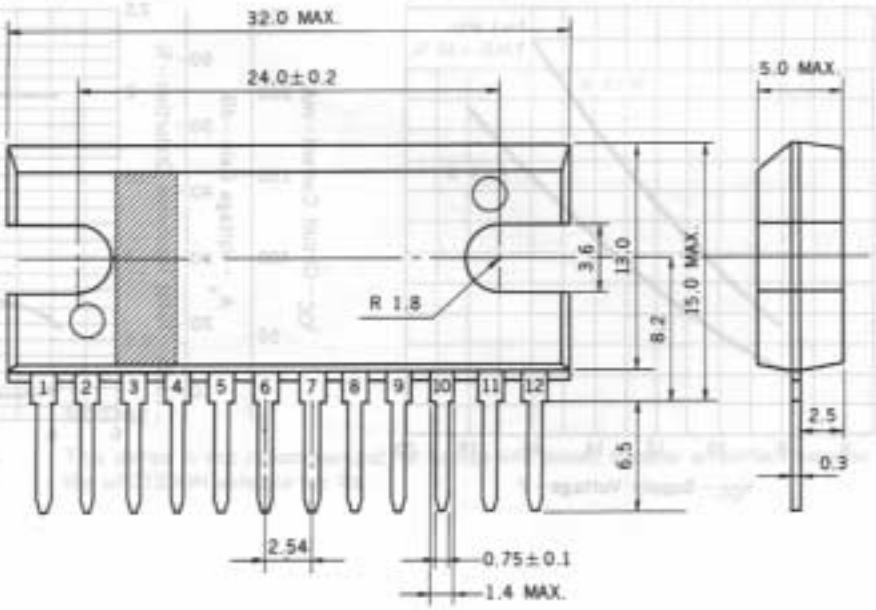
23 W AF POWER AMPLIFIER
SILICON BIPOLAR MONOLITHIC INTEGRATED CIRCUIT

The μPC1230H is an audio power amplifier in a 12-lead single in-line package, specifically designed for car stereo application. Typically it provided 23 watts output power at 14.4 volt and 20 watts at 13.2 V on a 4 ohm load.
This device can be used without output capacitors, because it incorporates the orignal short circuit protection which protects output power transistors and a speaker at the same time when the output terminal is shorted to ground.

FEATURES

- Can be used as OCL connection.
- Very low output offset voltage : V_{offset} = 150 mV (MAX.)
- High output power : P_O = 23 W TYP. R_L = 4 Ω at 14.4 V
  P_O = 20 W TYP. R_L = 4 Ω at 13.2 V
- Very low distortion.
- *Very low number of external low size components, very simple mounting system with no electrical* isolation between the package and the heat sink.
- Low thermal resistance : θ_{J-C} = 2.5 °C/W
- Following protective circuit as provide
  (1) Load dump protection
  (2) Output therminal short circuit protection
  (3) Thermal shut down protection
  (4) Speaker protection

PACKAGE DIMENSIONS
(in millimeters)



ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C)

Supply Voltage (Note)	$V_{CC\ surge}$	40	V
Supply Voltage (Quiecent)	V_{CC1}	25*	V
Supply Voltage (Operational)	V_{CC2}	18	V
Circuit Current (Peak)	$I_{CC\ peak}$	4.5	A
Package Dissipation	P_D	20	W
Operating Temperature	T_{opt}	−30 to +75*	°C
Storage Temperature	T_{stg}	−55 to +150	°C

*Using an aluminum heat sink $\theta_{th(c-a)}$ = 4 °C/W
Note : Pulse width = 200 ms, Trise ≥ 1 ms

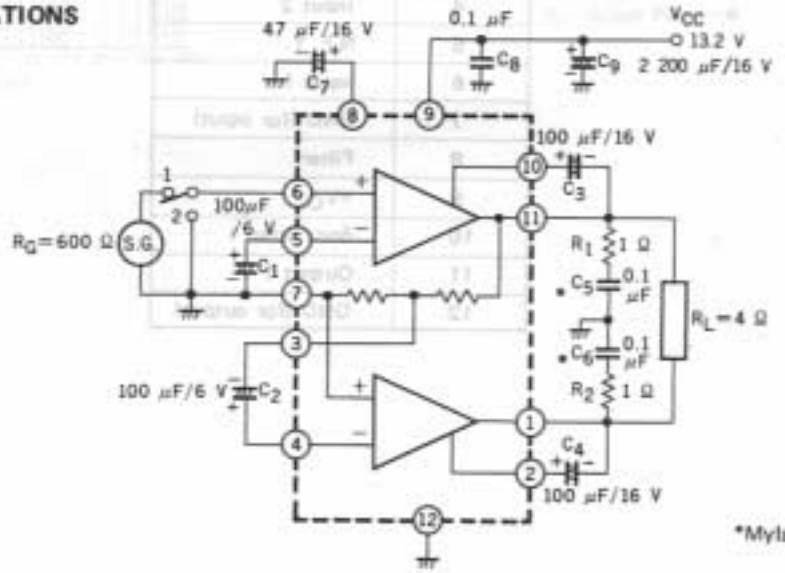
RECOMMENDED OPERATING CONDITIONS (Ta = 25 °C)

Supply Voltage Range	9.5 to 16	V
Load Impedance	3.2 to 16	Ω

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

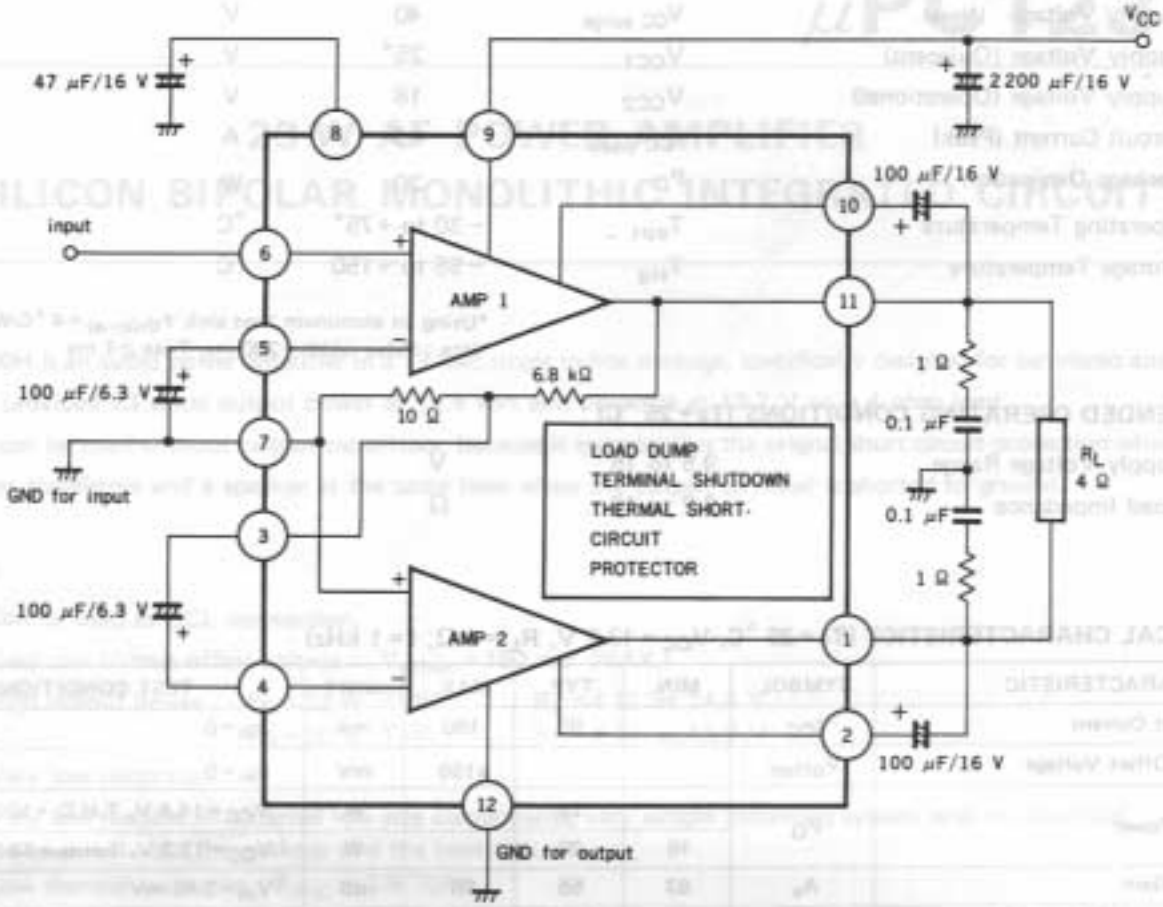
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Quiescent Current	I_{CC}		90	180	mA	v_{in} = 0
Output Offset Voltage	V_{offset}			±150	mV	v_{in} = 0
Output Power	P_O		23		W	V_{CC} = 14.4 V, T.H.D. = 10 %
		16	20		W	V_{CC} = 13.2 V, T.H.D. = 10 %
Voltage Gain	A_V	53	55	56	dB	V_{in} = 2.45 mV
Total Harmonic Distortion	T.H.D.		0.15	1.0	%	P_O = 2 W
Output Noise Level	v_n		0.65		mV	R_G = 0, BW = 20 to 20 kHz
Supply Voltage Rejection Ratio	SVR		45		dB	R_G = 0, f_{rip} = 100 Hz, v_{rip} = 0.5 V
Input Resistance	R_i		45		kΩ	
Rolloff Frequency	f_H		90		kHz	A_v = −3 dB from 1 kHz Ref. High
	f_L		15		Hz	A_v = −3 dB from 1 kHz Ref. Low

TEST CIRCUIT & TYPICAL APPLICATIONS



*Mylar film capacitor

BLOCK DIAGRAM



CONNECTION DIAGRAM

Pin No.	Function
1	Output 2
2	Boot Strap 2
3	Divided Output
4	Input 2
5	N.F. 1
6	Input 1
7	GND (for input)
8	Filter
9	$+V_{CC}$
10	Boot Strap 1
11	Output 1
12	GND (for output)