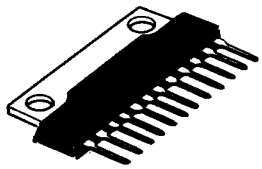
HA1388

18W BTL Audio Power Amplifier

The HA1388 is specifically designed for Components Car Stereo Amplifiers.
This power IC provides an output power of 18 watts at 13.2 volts to 4 ohm load with10 percent distortion and can be used without output capacitors because of the excellent ASO protection circuit.

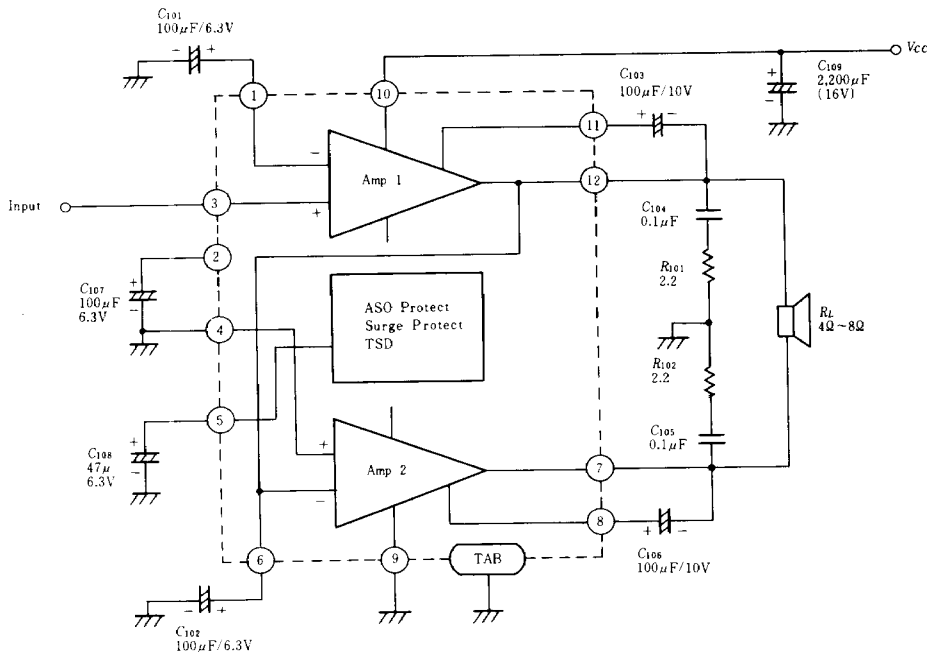


(SP-12T)

■ FEATURES

- Can be used as OCL.
- Over voltage handling capability up to 50 volts for 200ms pulse duration.
- Less number of external components.
- Thermal shutdown circuit included.

■TYPICAL APPLICATION



■ABSOLUTE MAXIMUM RATINGS ($Ta = 25℃$)

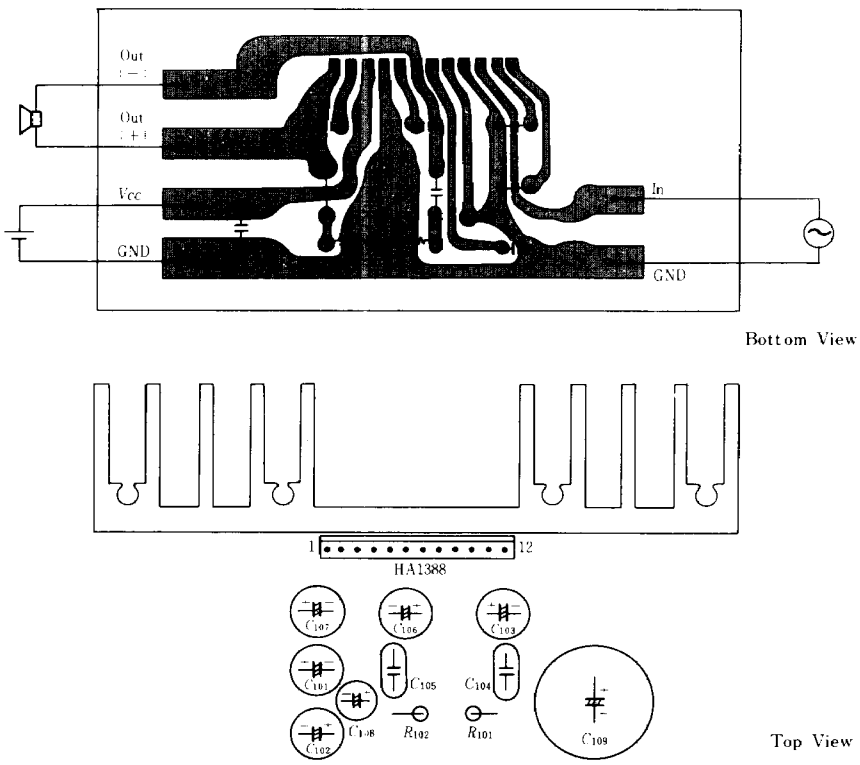
Item	Symbol	Rating	Unit	Note
Operating Supply Voltage	V_{CC}	18	V	
DC Supply Voltage	$V_{CC(DC)}$	26	V	1
Peak Supply Voltage	$V_{CC(peak)}$	50	V	2
Output Current	$I_{O(peak)}$	4	A	
Power Dissipation	P_T	15	W	
Thermal Resistance (Junction-Case)	θ_{j-c}	3	℃/W	
Junction Temperature	T_j	150	℃	
Operating Temperature	T_{opr}	−20 to +70	℃	
Storage Temperature	T_{stg}	−55 to +125	℃	

Notes. 1. Value at 30sec. 2. Pulse width ≦ 200ms, Rise time ≧ 1ms.

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

Item	Symbol	Test Condition		min.	typ.	max.	Unit
Quiescent Current	I_Q	V_{in}=0		40	80	160	mA
Input Bias Voltage	V_B	V_{in}=0		—	20	40	mV
Output Offset Voltage	ΔV_Q	V_{in}=0		—	—	±330	mV
Voltage Gain	G_V	V_{in}=−55dBm		53	55	57	dB
Output Power	P_{out}	THD=10%	R_L=4Ω	15	18	—	W
			R_L=8Ω	—	11	—	
Total Harmonic Distortion	THD	P_{out}=1.5W		—	0.2	1.0	%
Wide Band Noise	WBN	R_g=10kΩ, BW=20Hz to 20kHz		—	1.0	2.0	mV
Supply Voltage Rejection Ratio	SVR	f=500Hz		33	44	—	dB
Input Resistance	R_{in}			20	30	40	kΩ
Rolloff Frequency	f_L	G_V=−3dB from	Low	—	20	—	Hz
	f_H	f=1kHz Ref.	High	10	20	40	kHz

■PC-BOARD LAYOUT PATTERN

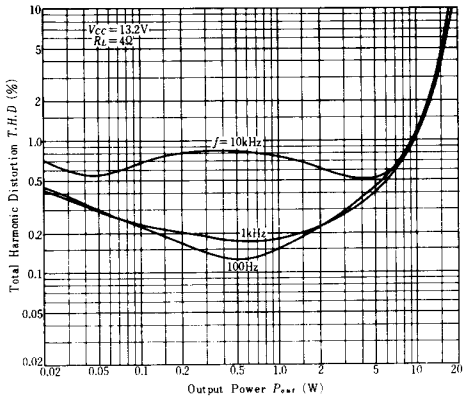


C_{101}, C_{102}	100μF/6.3V
C_{103}, C_{106}	100μF/10V
C_{104}, C_{105}	0.1μF/M
C_{107}	100μF/6.3V
C_{108}	47μF/6.3V
C_{109}	2200μF/16V
R_{101}, R_{102}	2.2Ω

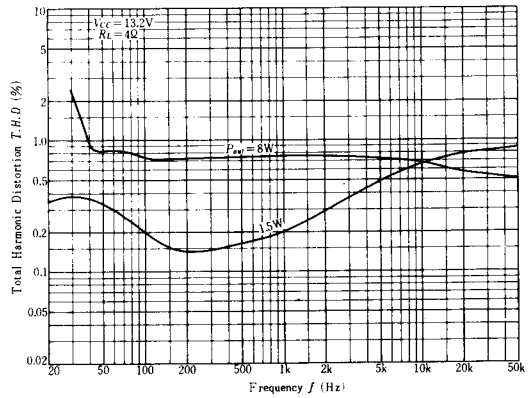
■EXTERNAL COMPONENTS

Parts No.	Recommended Value	Purpose	Larger than recommended value	Smaller than recommended value
C_{101}, C_{102}	100μF	Inverting DC decoupling	Danger of burn-out	Higher low frequency rolloff
C_{103}, C_{106}	100μF	Boot Strap	Danger of burn-out at load dump surge	Smaller power bandwidth
C_{104}, C_{105}	0.1μF	Frequency stability	Increase of drain current at high frequency	Danger of oscillation
C_{107}	100μF	Ripple rejection	—	Danger of oscillation at low supply voltage
C_{108}	47μF	ASO protection	Danger of burn-out	Danger of burn-out
R_{101}, R_{102}	2.2Ω	Frequency stability	Danger of oscillation	Danger of oscillation

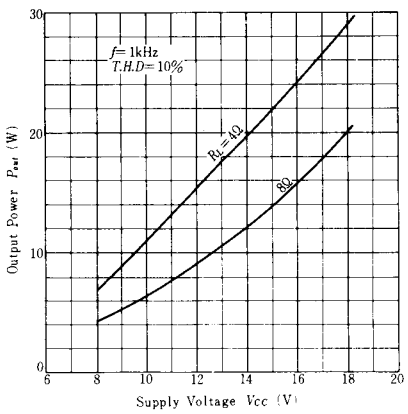
TOTAL HARMONIC DISTORTION VS. OUTPUT POWER



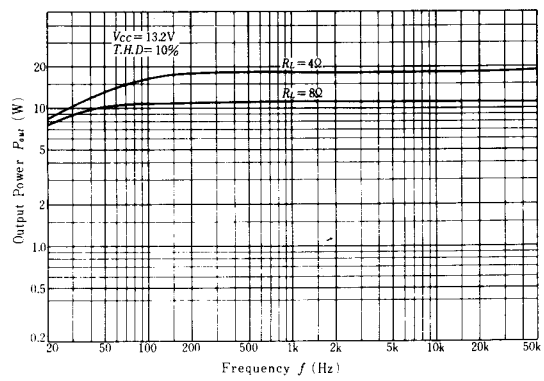
TOTAL HARMONIC DISTORTION VS. FREQUENCY



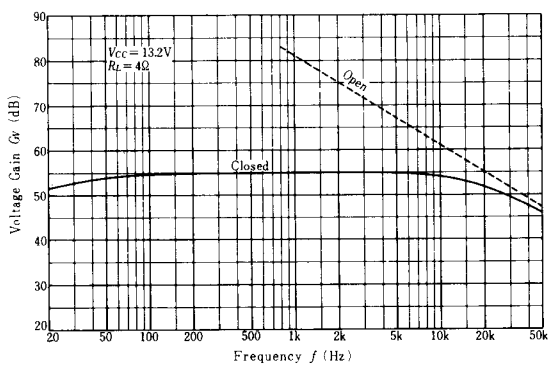
OUTPUT POWER VS. SUPPLY VOLTAGE



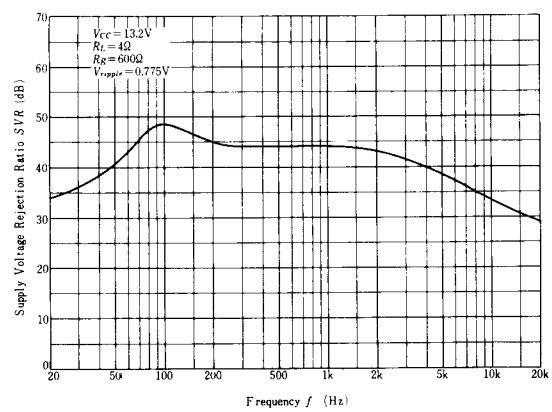
OUTPUT POWER VS. FREQUENCY



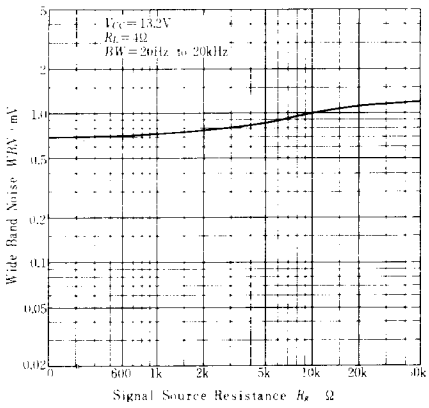
VOLTAGE GAIN VS. FREQUENCY



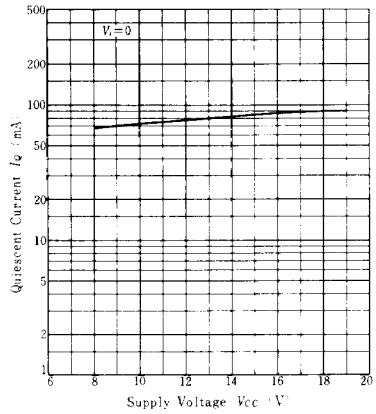
SUPPLY VOLTAGE REJECTION RATIO VS. FREQUENCY



WIDE BAND NOISE VS. SIGNAL SOURCE RESISTANCE



QUIESCENT CURRENT VS. SUPPLY VOLTAGE



POWER DISSIPATION VS. OUTPUT POWER