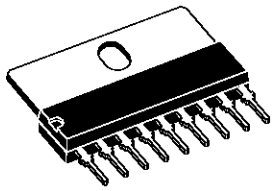
SGS-THOMSON MICROELECTRONICS

TDA2007A

6 + 6W STEREO AMPLIFIER

- HIGH OUTPUT POWER
- HIGH CURRENT CAPABILITY
- AC SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION



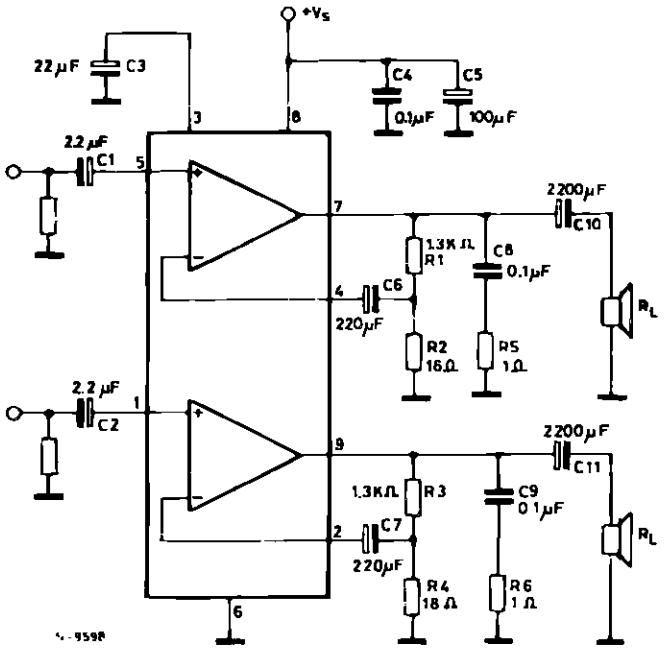
SIP9

ORDERING NUMBER : TDA2007A

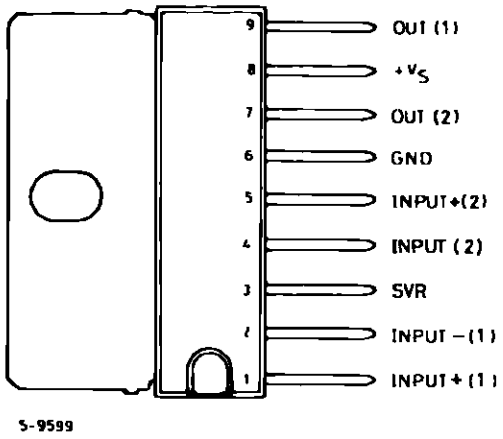
DESCRIPTION

The TDA2007A is a class AB dual Audio power amplifier assembled in single in line 9 pins package, specially designed for stereo application in music centers TV receivers and portable radios.

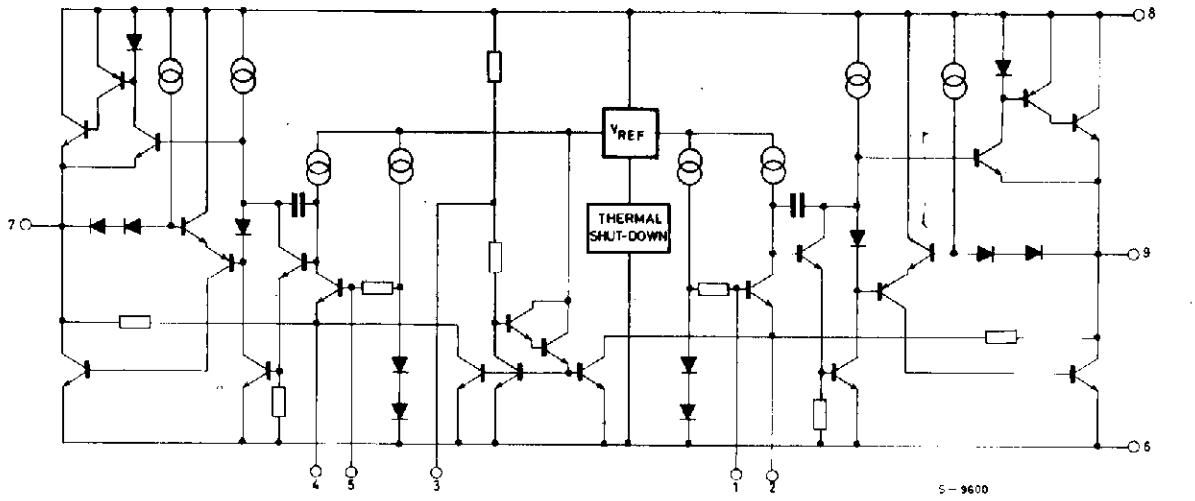
STEREO TEST CIRCUIT



PIN CONNECTION (top view)



SCHEMATIC DIAGRAM



THERMAL DATA

Symbol	Parameter	Value	Unit

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	Supply Voltage	28	V
I_O	Output Peak Current (repetitive f ≥ 20Hz)	3	A
I_O	Output Peak Current (non repetitive t = 100μs)	3.5	A
P_{tot}	Power Dissipation at T_{case} = 70°C	10	W
T_{stg}, T_j	Storage and Junction Temperature	–40 to 150	°C

ELECTRICAL CHARACTERISTICS (refer to the stereo application circuit, T_{amb} = 25°C, V_S = 18V, G_V = 36dB, unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_S	Supply Voltage		8		26	V
V_O	Quiescent Output Voltage			8.5		V
I_d	Total Quiescent Drain Curent			50	90	mA
P_O	Output Power (each channel)	f = 100Hz to 6KHz d = 0.5% V_S = 18V R_L = 4Ω V_S = 22V R_L = 8Ω	 5.5 5.5	 6 6		 W W
d	Distortion (each channel)	f = 1KHz, V_S = 18V, R_L = 4Ω P_O = 100mW to 3W f = 1KHz, V_S = 22V, R_L = 8Ω P_O = 100mW to 3W		0.1 0.05		% %
CT	Cross Talk (°°°)	R_L = ∞, R_g = 10KΩ f = 1KHz f = 10KHz	 50 40	 60 50		 dB dB
V_i	Input Saturation Voltage (rms)		300			mV
R_i	Input Resistance	f = 1KHz	70	200		KΩ
f_L	Low Frequency Roll Off (–3dB)	R_L = 4Ω, C10 = C11 = 2200μF		40		Hz
f_H	Low Frequency Roll Off (–3dB)			80		KHz
G_V	Voltage Gain (closed loop)	f = 1KHz	35.5	36	36.5	dB
ΔG_V	Closed Loop Gain Matching			0.5		dB
e_N	Total Input Noise Voltage	R_g = 10kΩ (°)		1.5		μV
		R_g = 10kΩ (°°)		2.5	8	μV
SVR	Supply Voltage Rejection (each channel)	R_g = 10KΩ f_{ripple} = 100Hz, V_{ripple} = 0.5V		55		dB
T_j	Thermal Shut-down Junction Temperature			145		°C

(°) Curve A. (°°) 22Hz to 22KHz.

Figure 1 : Stereo Test Circuit (G_V = 36 dB).

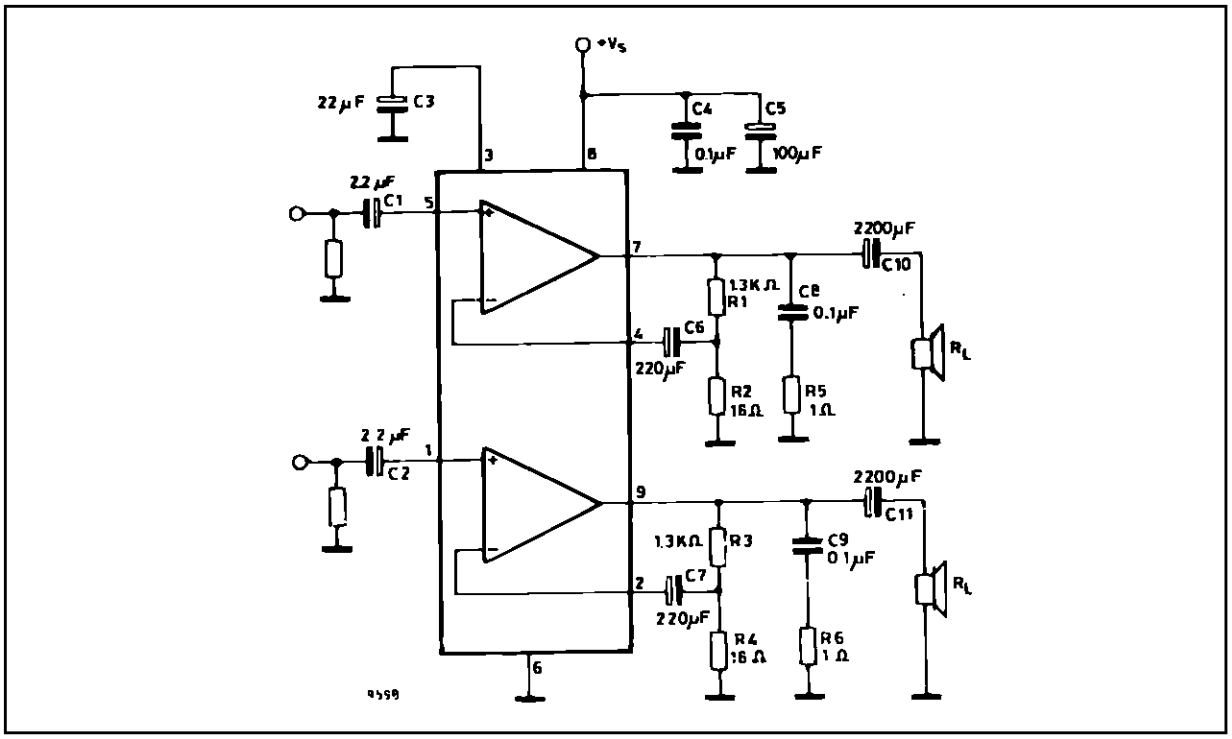
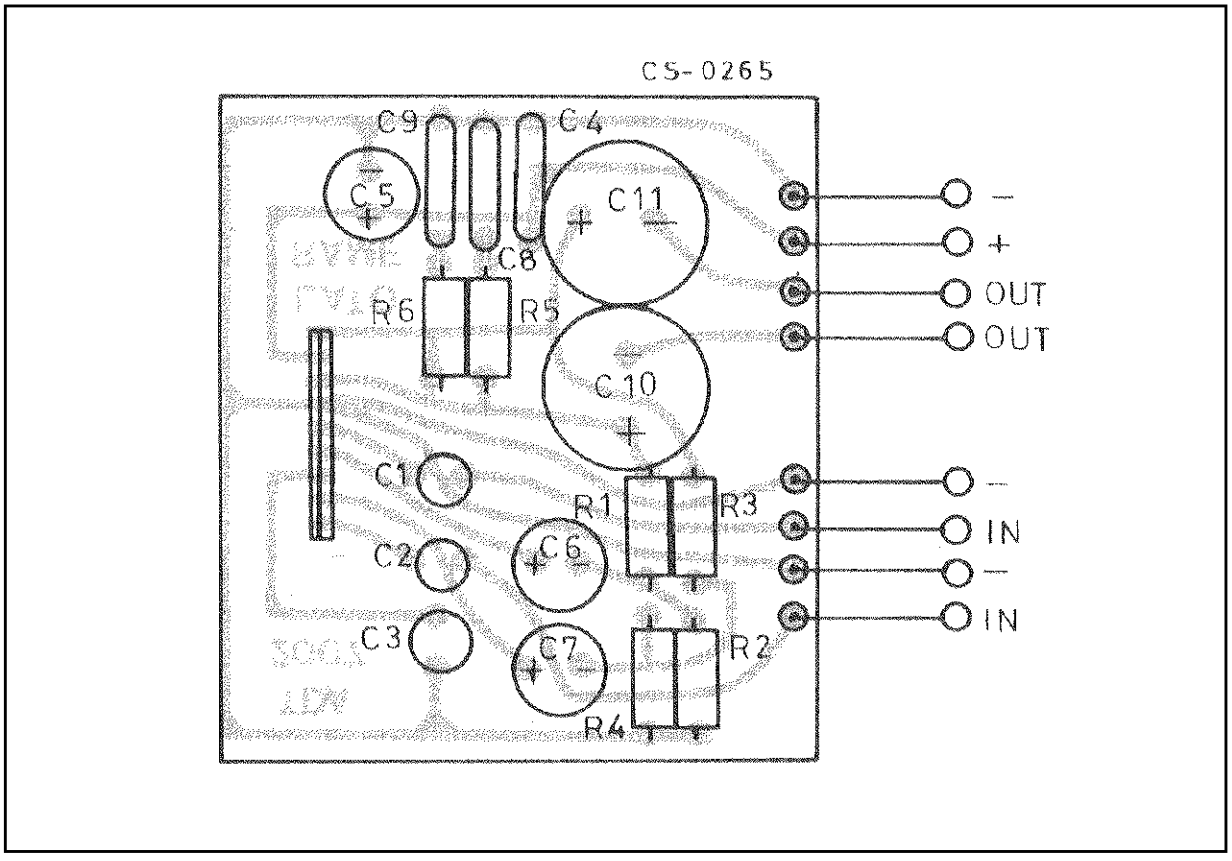


Figure 2 : P.C. Board and Components layout of the Circuit of Fig.1 (1 : 1 scale).



APPLICATION SUGGESTION

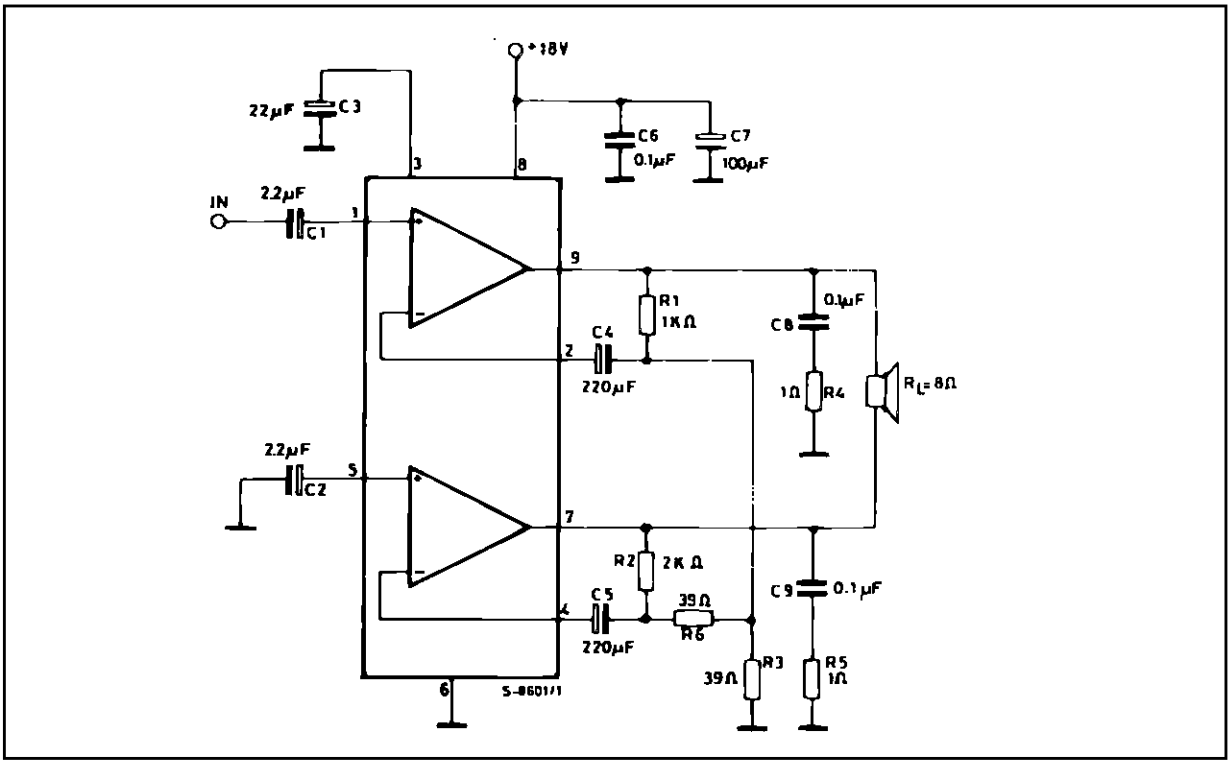
The recommended values of the components are those shown on application circuit of fig.1. Different values can be used ; the following table can help the designer.

Component	Recommended value	Purpose	Larger Than	Smaller Than
R1, R3	1.3KΩ	Close Loop Gain Setting (*)	Increase of Gain	Decrease of Gain
R2 and R4	18Ω		Decrease of Gain	Increase of gain
R5 and R6	1Ω	Frequency stability	Danger of Oscillation at High Frequency with Inductive Load	
C1 and C2	2.2µF	Input DC Decoupling	High Turn-on Delay	High Turn-on Pop Higher Low Frequency Cutoff. Increase of Noise
C3	22µF	Ripple Rejection	Better SVR Increase of the Switch-on Time	Degradation of SVR
C6 and C7	220µF	Feedback Input DC Decoupling		
C8 and C9	0.1µF	Frequency Stability		Danger of Oscillation

(*) The closed loop gain must be higher than 26 dB.

APPLICATION INFORMATION

Figure 3 : 12 W Bridge Amplifier (d = 0.5%, G_V = 40 dB).



SIP9 PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			7.1			0.280
a1	2.7		3	0.106		0.118
B			23			0.90
B3			24.8			0.976
b1		0.5			0.020	
b3	0.85		1.6	0.033		0.063
C		3.3			0.130	
c1		0.43			0.017	
c2		1.32			0.052	
D			21.2			0.835
d1		14.5			0.571	
e		2.54			0.100	
e3		20.32			0.800	
L	3.1			0.122		
L1		3			0.118	
L2		17.6			0.693	
L3			0.25			0.010
L4	17.4		17.85	0.685		0,702
M		3.2			0.126	
N		1			0.039	
P			0.15			0.006