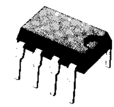
SGS-THOMSON MICROELECTRONICS

TDA2822M

DUAL LOW-VOLTAGE POWER AMPLIFIER

- SUPPLY VOLTAGE DOWN TO 1.8V
- LOW CROSSOVER DISTORTION
- LOW QUIESCENT CURRENT
- BRIDGE OR STEREO CONFIGURATION

The TDA2822M is a monolithic integrated circuit in 8 lead Minidip package. It is intended for use as dual audio power amplifier in portable cassette players and radios.



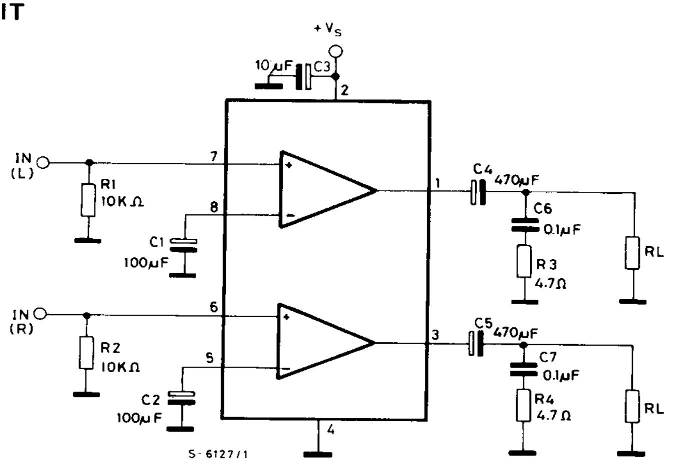
Minidip Plastic

ORDERING NUMBER: TDA2822M

ABSOLUTE MAXIMUM RATINGS

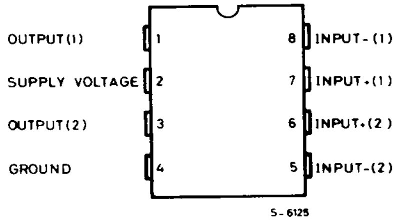
V_s	Supply voltage	15	V
I_o	Peak output current	1	A
P_{tot}	Total power dissipation at $T_{amb} = 50°C$	1	W
	at $T_{case} = 50°C$	1.4	W
T_{stg}, T_j	Storage and junction temperature	-40 to 150	°C

TEST CIRCUIT

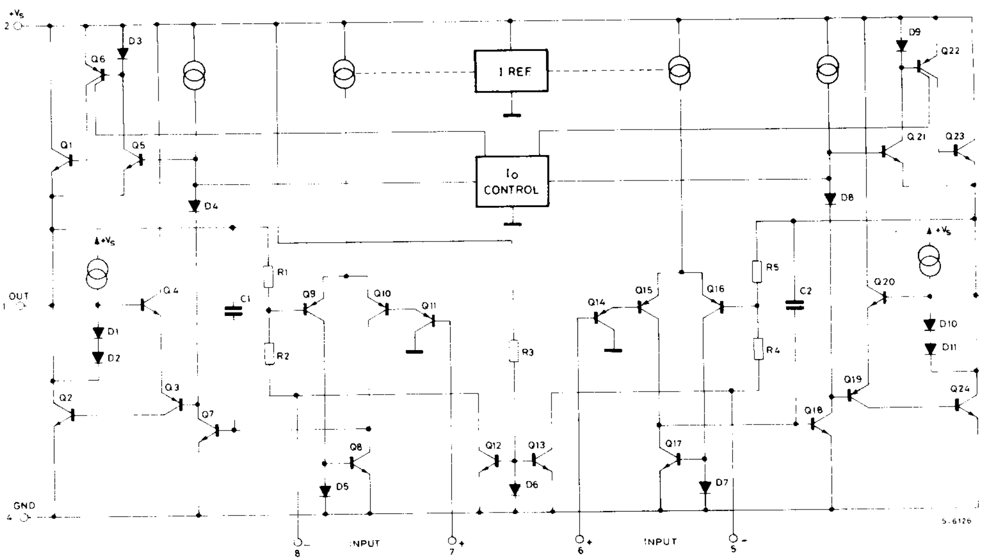


CONNECTION DIAGRAM

(Top view)



SCHEMATIC DIAGRAM



THERMAL DATA

$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	100	°C/
$R_{th\ j\text{-}case}$	Thermal resistance junction-pin (4)	max	70	°C/

STEREO APPLICATION

Fig. 1 – Test circuit

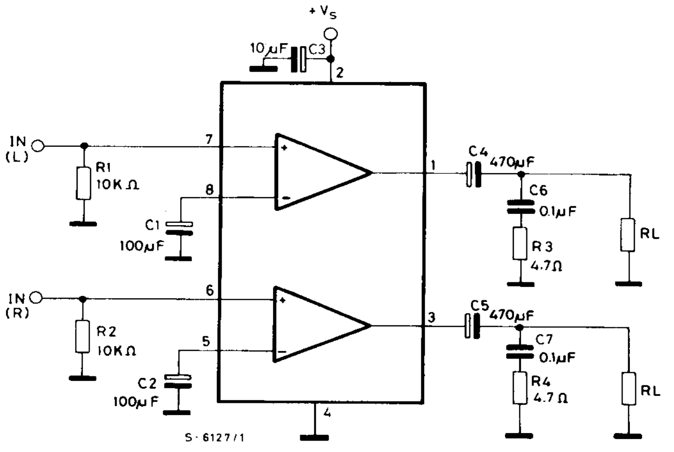
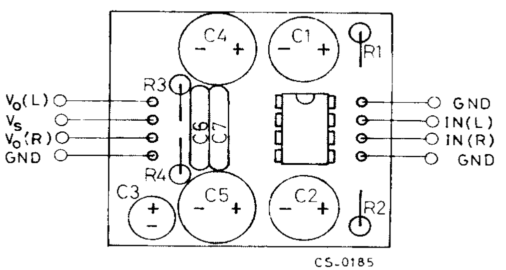


Fig. 2 – P.C. board and component layout of the circuit of Fig. 1 (1 : 1 scale)



ELECTRICAL CHARACTERISTICS ($V_s = 6V$, $T_{amb} = 25°C$, unless otherwise specified)

STEREO (Test circuit of Fig. 1)

	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
V_s	Supply voltage			1.8		15	V
V_o	Quiescent output voltage				2.7		V
		V_s = 3V			1.2		V
I_d	Quiescent drain current				6	9	mA
I_b	Input bias current				100		nA
P_o	Output power (each channel) (f = 1KHz, d = 10%)	R_L = 32Ω	V_s = 9V		300		mW
			V_s = 6V	90	120		mW
			V_s = 4.5V		60		mW
			V_s = 3V	15	20		mW
			V_s = 2V		5		mW
		R_L = 16Ω	V_s = 6V	170	220		mW
		R_L = 8Ω	V_s = 9V		1000		mW
			V_s = 6V	300	380		mW
		R_L = 4Ω	V_s = 6V	450	650		mW
			V_s = 4.5V		320		mW
			V_s = 3V		110		mW
d	Distortion (f = 1KHz)	R_L = 32Ω	P_o = 40mW		0.2		%
		R_L = 16Ω	P_o = 75mW		0.2		%
		R_L = 8Ω	P_o = 150mW		0.2		%
G_v	Closed loop voltage gain	f = 1KHz		36	39	41	dB
ΔG_v	Channel balance					± 1	dB
R_i	Input resistance	f = 1KHz		100			KΩ
e_N	Total input noise	R_s = 10KΩ	B = Curve A		2		μV
			B = 22Hz to KHz		2.5		μV
SVR	Supply voltage rejection	f = 100Hz	C1 = C2 = 100μF	24	30		dB
C_s	Channel separation	f = 1KHz			50		dB

BRIDGE APPLICATION

Fig. 3 - Test circuit

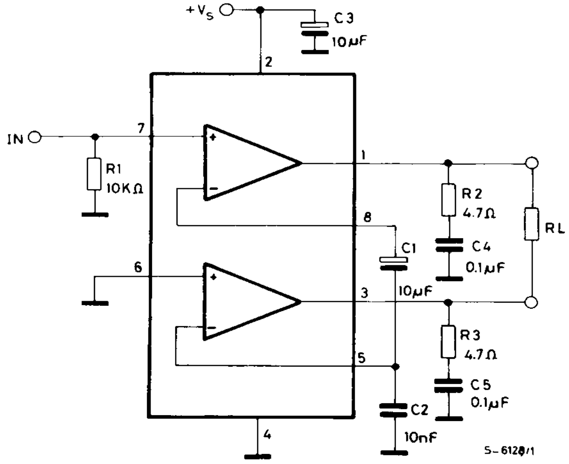
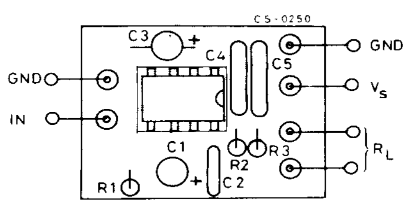


Fig. 4 - P.C. board and components layout of the circuit of Fig. 3 (1 : 1 scale)



ELECTRICAL CHARACTERISTICS (V_s = 6V, T_{amb} = 25°C unless otherwise specified)

BRIDGE (Test circuit of Fig. 3)

	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
V_s	Supply voltage			1.8		15	V
I_d	Quiescent drain current	R_L = ∞			6	9	mA
V_{os}	Output offset voltage (between the outputs)	R_L = 8Ω				± 50	mV
I_b	Input bias current				100		nA
P_o	Output power (f = 1KHz, d = 10%)	R_L = 32Ω	V_s = 9V V_s = 6V V_s = 4.5V V_s = 3V V_s = 2V	 320 50 	1000 400 200 65 8		mW
		R_L = 16Ω	V_s = 9V V_s = 6V V_s = 3V		2000 800 120		mW
		R_L = 8Ω	V_s = 6V V_s = 4.5V V_s = 3V	900	1350 700 220		mW
		R_L = 4Ω	V_s = 4.5V V_s = 3V V_s = 2V	200	1000 350 80		mW
d	Distortion	P_o = 0.5W, f = 1KHz	R_L = 8Ω		0.2		%
G_v	Closed loop voltage gain	f = 1KHz			39		dB
R_i	Input resistance	f = 1KHz		100			KΩ
e_N	Total input noise	R_s = 10KΩ	B = Curve A		2.5		µV
			B = 22Hz to 22KHz		3		µV
SVR	Supply voltage rejection	f = 100Hz			40		dB
B	Power bandwidth (-3dB)	R_L = 8Ω	P_o = 1W		120		KHz

Fig. 5 - Quiescent current vs. supply voltage

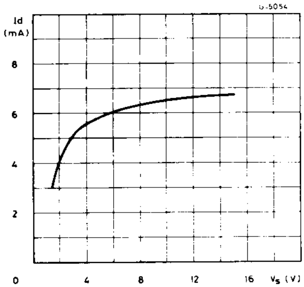


Fig. 6 - Supply voltage rejection vs. frequency

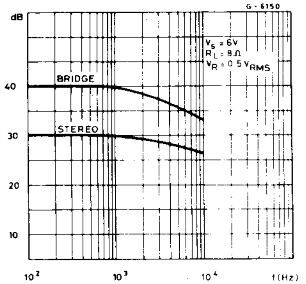


Fig. 7 - Output power vs. supply voltage (THD= 10%, f = 1KHz Stereo)

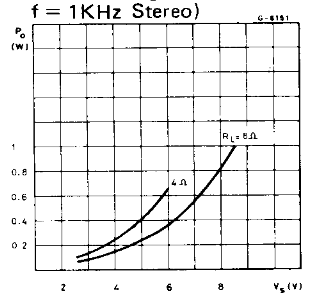


Fig. 8 - Distortion vs. output power (Stereo)

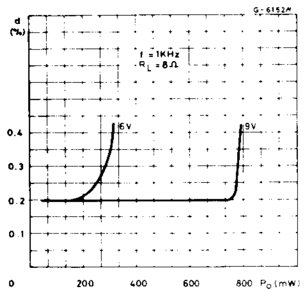


Fig. 9 - Distortion vs. output power (Stereo)

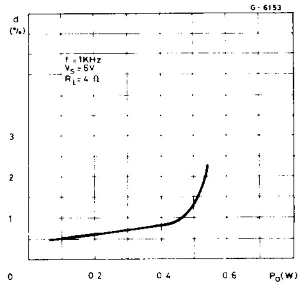


Fig. 10 - Output power vs. supply voltage (Bridge)

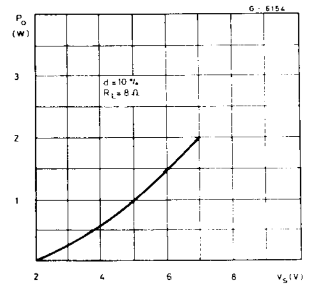


Fig. 11 - Distortion vs. output power (Bridge)

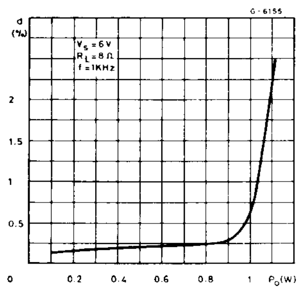


Fig. 12 - Total power dissipation vs. output power (Bridge)

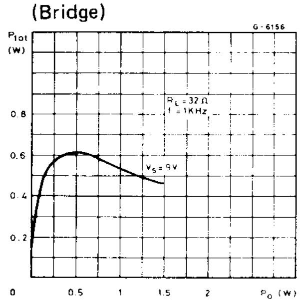


Fig. 13 - Total power dissipation vs. output power (Bridge)

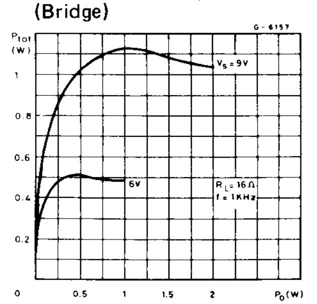


Fig. 14 - Total power dissipation vs. output power (Bridge)

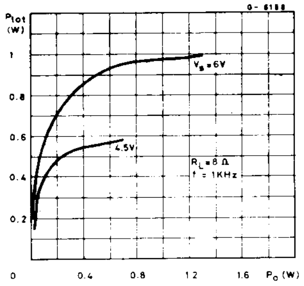


Fig. 15 - Total power dissipation vs. output power (Bridge)

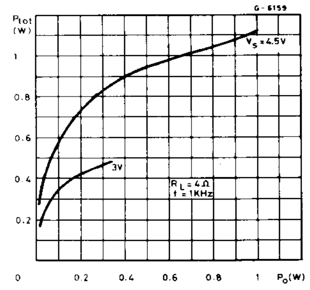


Fig. 16 - Typical application in portable players

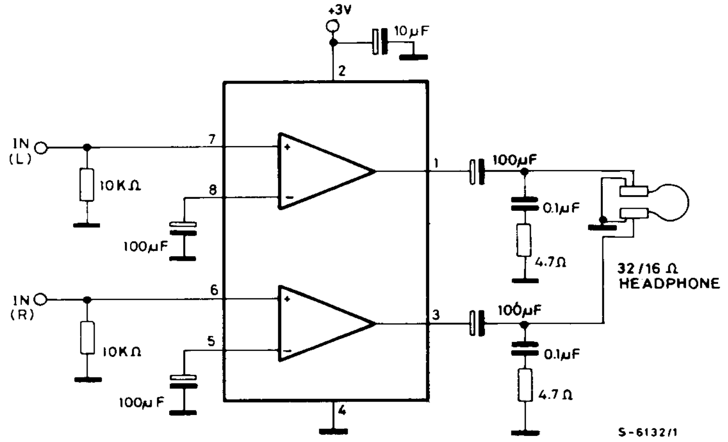


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Fig. 17 – Application circuit for portable radio receivers

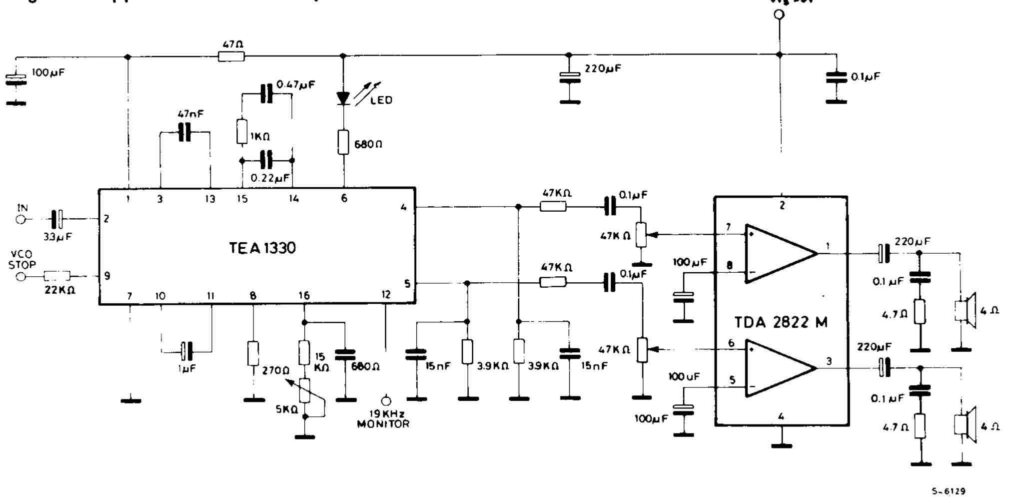
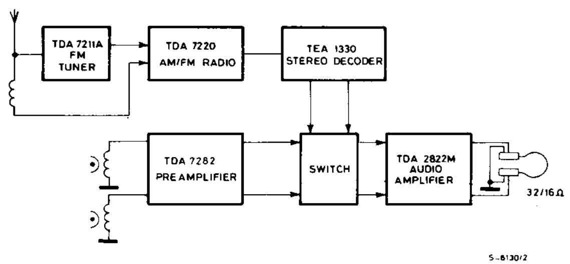
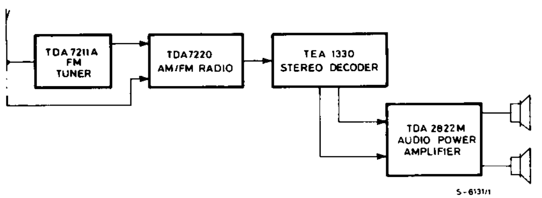


Fig. 18 – Portable radio cassette players



TYPE	SUPPLY VOLTAGE
TDA 7220	1.5V to 6V
TDA 7211A	1.2V to 6V
TEA 1330	3V to 15V
TDA 7282	1.5V to 6V
TDA 2822M	1.8V to 15V

Fig. 19 – Portable stereo radios



TYPE	SUPPLY VOLTAGE
TDA 7220	1.5V to 6V
TDA 7211A	1.2V to 6V
TEA 1330	3V to 15V
TDA 2822M	1.8V to 15V

Fig. 20 Low cost application for portable players (using only one 100μF output capacitor)

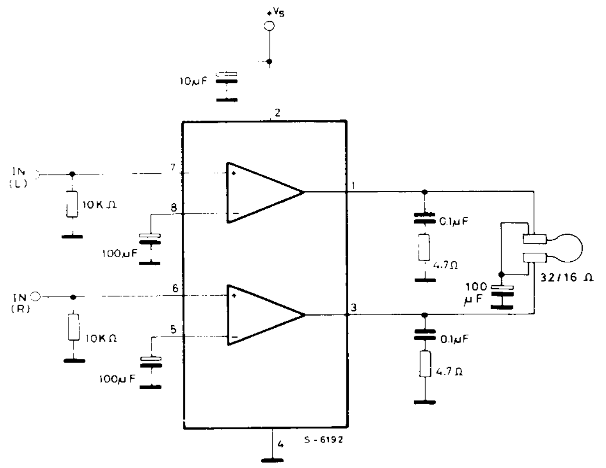
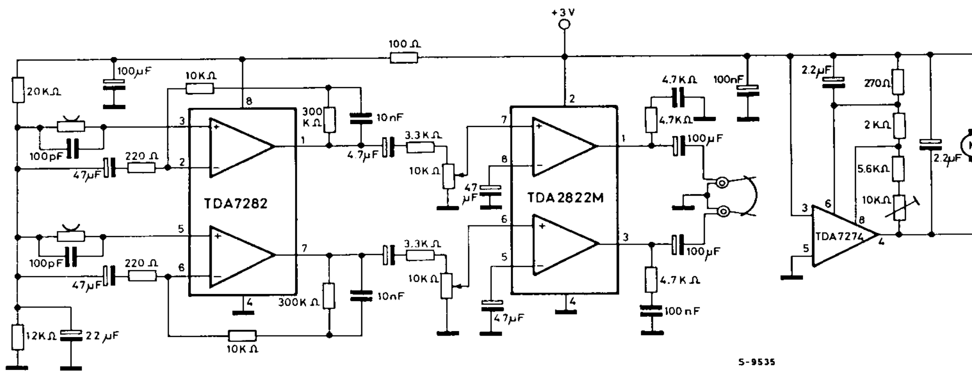


Fig. 21 - 3V Stereo cassette player with motor speed control



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