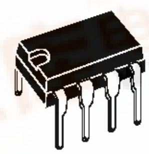
SGS-THOMSON MICROELECTRONICS

TDA2822M

DUAL LOW-VOLTAGE POWER AMPLIFIER

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



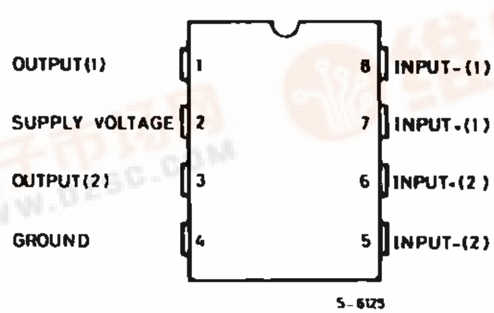
MINIDIP

ORDERING NUMBER : TDA2822M

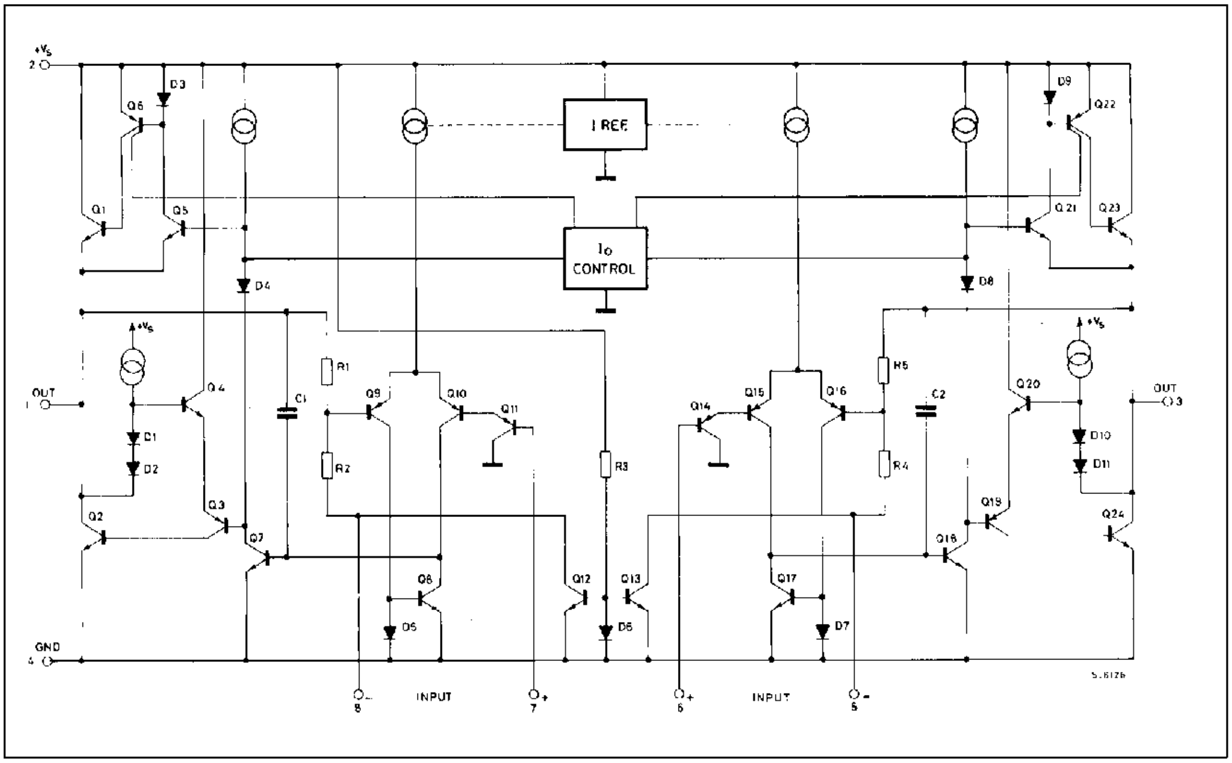
DESCRIPTION

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.

PIN CONNECTION (Top view)



SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_s	Supply Voltage	15	V
I_o	Peak Output Current	1	A
P_{tot}	Total Power Dissipation at T_{amb} = 50 °C at T_{case} = 50 °C	1 1.4	W W
T_{stg}, T_j	Storage and Junction Temperature	– 40, + 150	°C

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient Max.	100	°C/W
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-pin (4) Max.	70	°C/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
STEREO (test circuit of Figure 1)						
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)					mW
	(f = 1kHz, d = 10%)	R_L = 32Ω V_S = 9V		300		
		V_S = 6V	90	120		
		V_S = 4.5V		60		
		V_S = 3V	15	20		
		V_S = 2V		5		
		R_L = 16Ω V_S = 6V	170	220		
		R_L = 8Ω V_S = 9V		1000		
		V_S = 6V	300	380		
		R_L = 4Ω V_S = 6V	450	650		
		V_S = 4.5V		320		
		V_S = 3V		110		
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 22kHz		2.5		µV
SVR	Supply Voltage Rejection	f = 100Hz, C1 = C2 = 100µF	24	30		dB
C_s	Channel Separation	f = 1kHz		50		dB
BRIDGE (test circuit of Figure 2)						
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%)					mW
		R_L = 32Ω V_S = 9V		1000		
		V_S = 6V	320	400		
		V_S = 4.5V		200		
		V_S = 3V	50	65		
		V_S = 2V		8		
		R_L = 16Ω V_S = 9V		2000		
		V_S = 6V		800		
		V_S = 3V		120		
		R_L = 8Ω V_S = 6V	900	1350		
		V_S = 4.5V		700		
		V_S = 3V		220		
		R_L = 4Ω V_S = 4.5V		1000		
		V_S = 3V	200	350		
		V_S = 2V		80		
d	Distortion	P_o = 0.5W, R_L = 8Ω, f = 1kHz		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

Figure 1 : Test Circuit (Stereo)

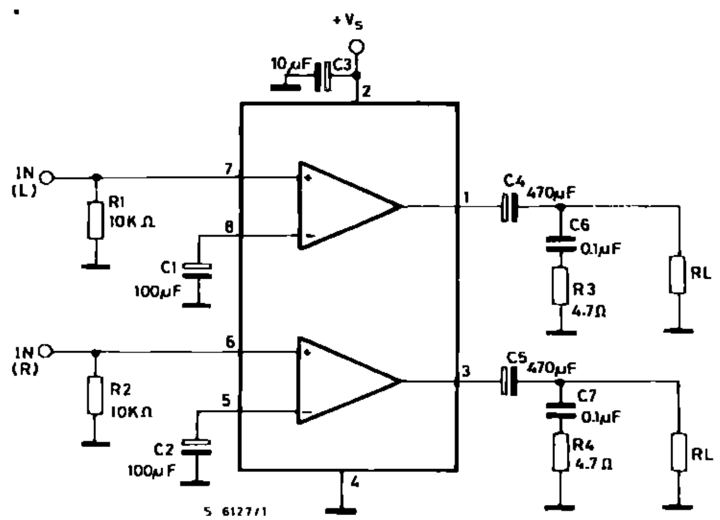


Figure 2 : Test Circuit (Bridge)

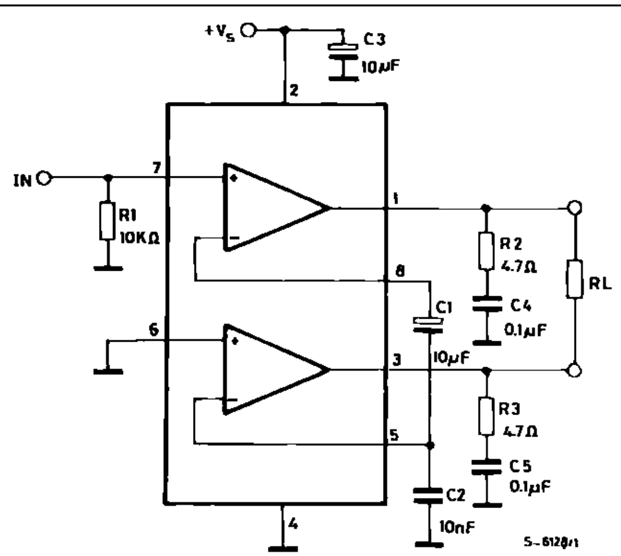


Figure 3 : P.C. Board and Components Layout of the Circuit of Figure 1

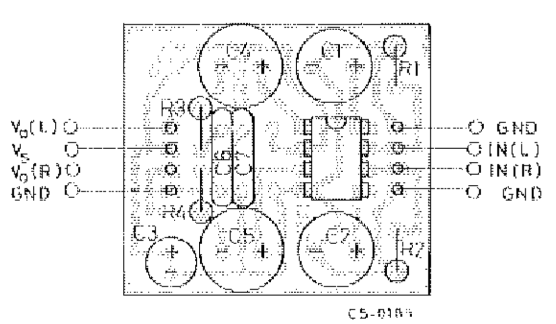


Figure 4 : P.C. Board and Components Layout of the Circuit of Figure 2

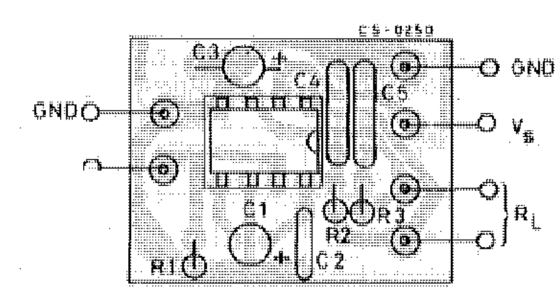


Figure 5 : Quiescent Current versus Supply Voltage

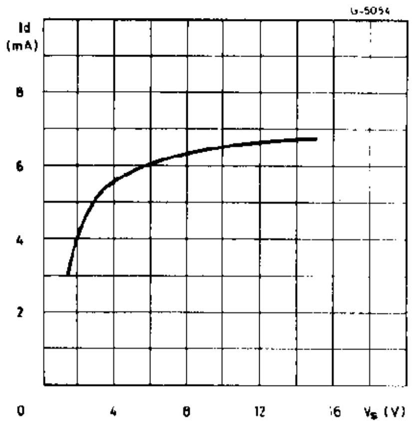


Figure 6 : Supply Voltage Rejection versus Frequency

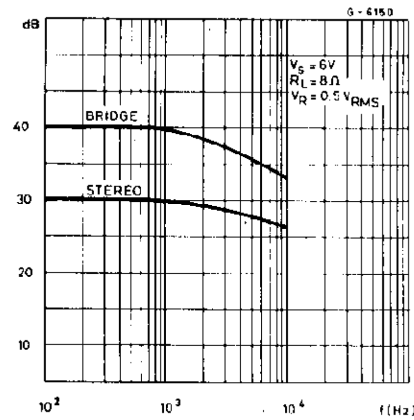


Figure 7 : Output Power versus Supply Voltage (THD = 10%, f = 1kHz Stereo)

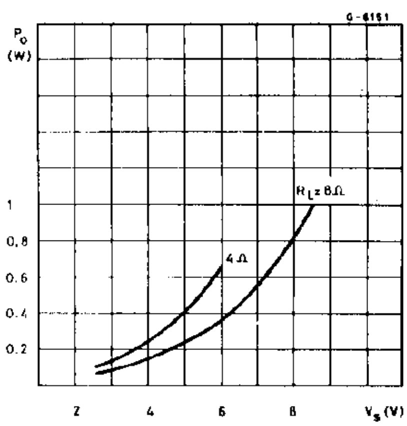


Figure 8 : Distorsion versus Output Power (Stereo)

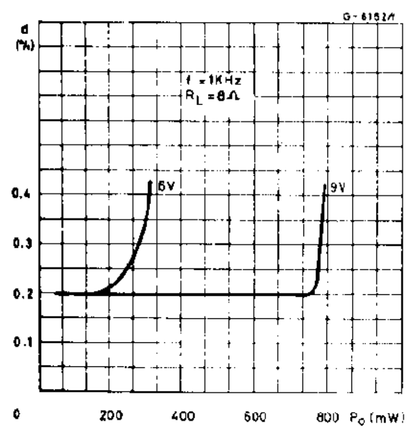


Figure 9 : Distorsion versus Output Power (Stereo)

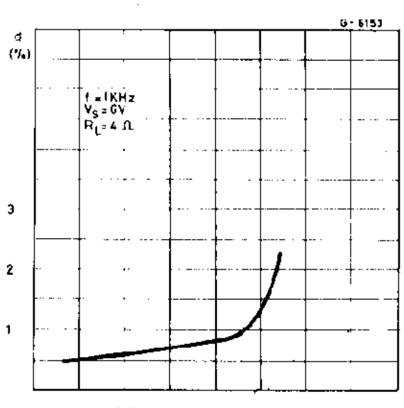


Figure 10 : Output Power versus Supply Voltage (Bridge)

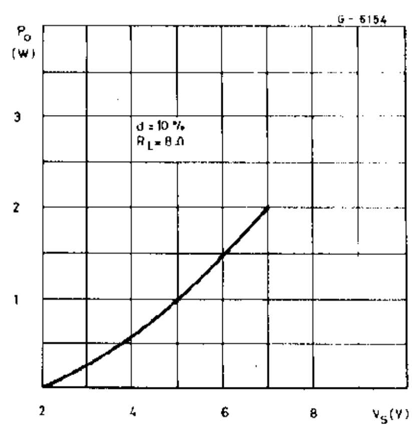


Figure 11 : Distorsion versus Output Power (Bridge)

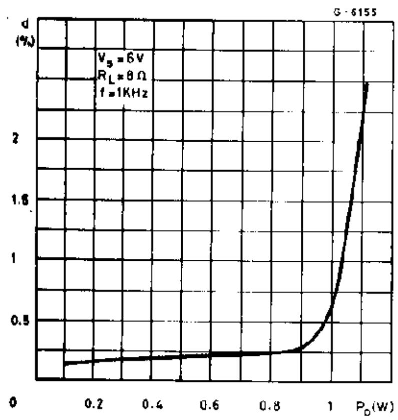


Figure 12 : Total Power Dissipation versus Output Power (Bridge)

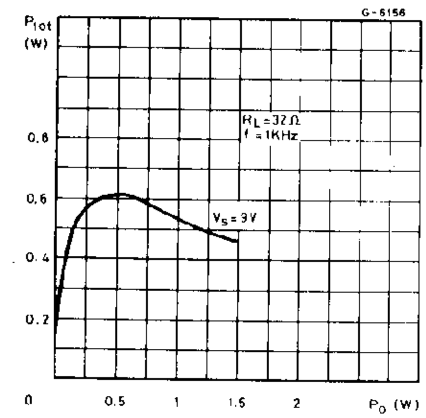


Figure 13 : Total Power Dissipation versus Output Power (Bridge)

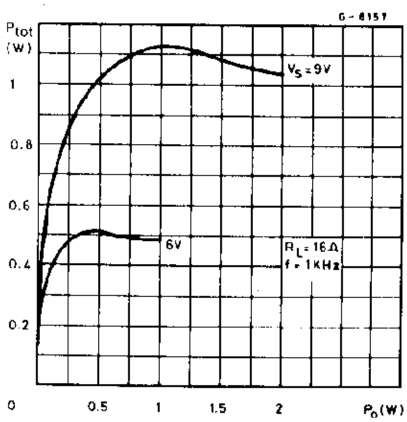


Figure 14 : Total Power Dissipation versus Output Power (Bridge)

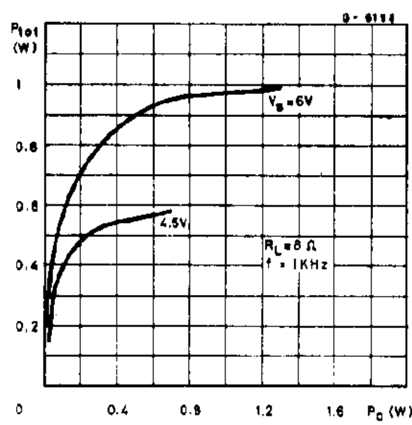


Figure 15 : Total Power Dissipation versus Output Power (Bridge)

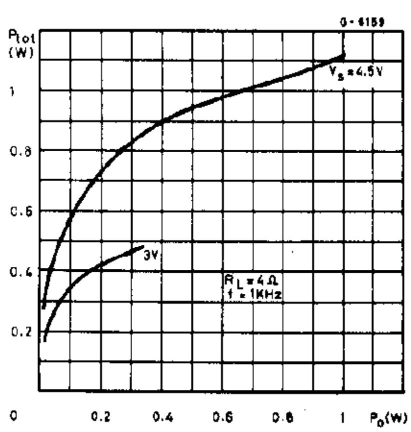


Figure 16 : Typical Application in Portable Players

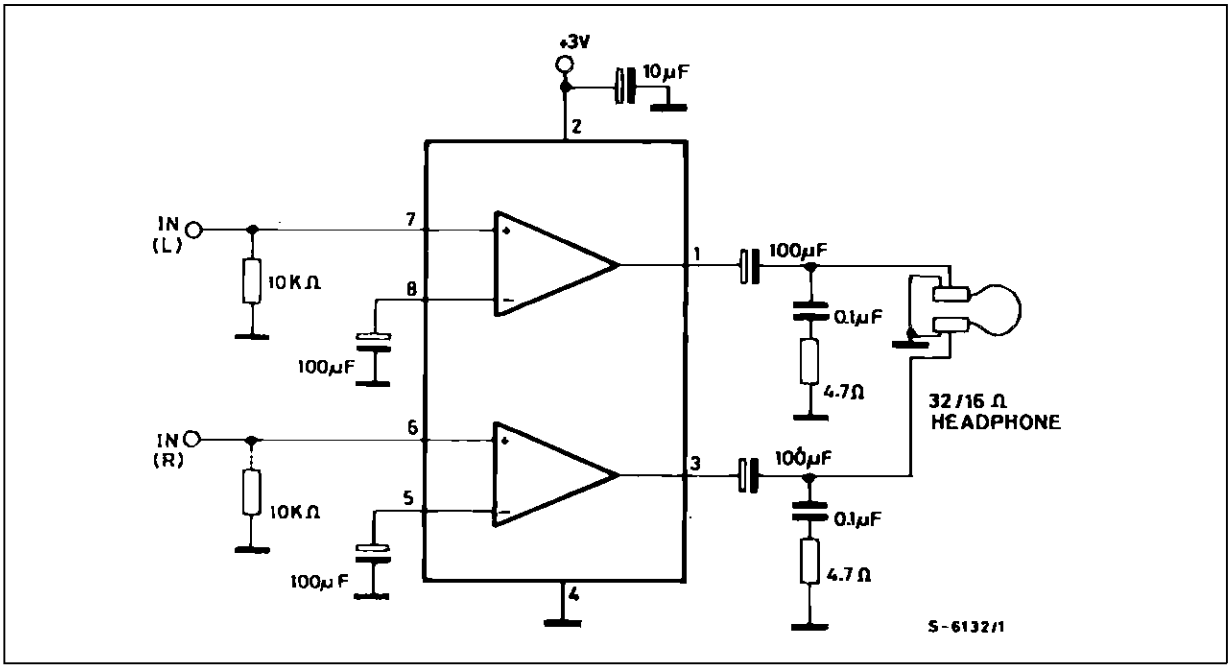


Figure 17 : Application in Portable Radio Receivers

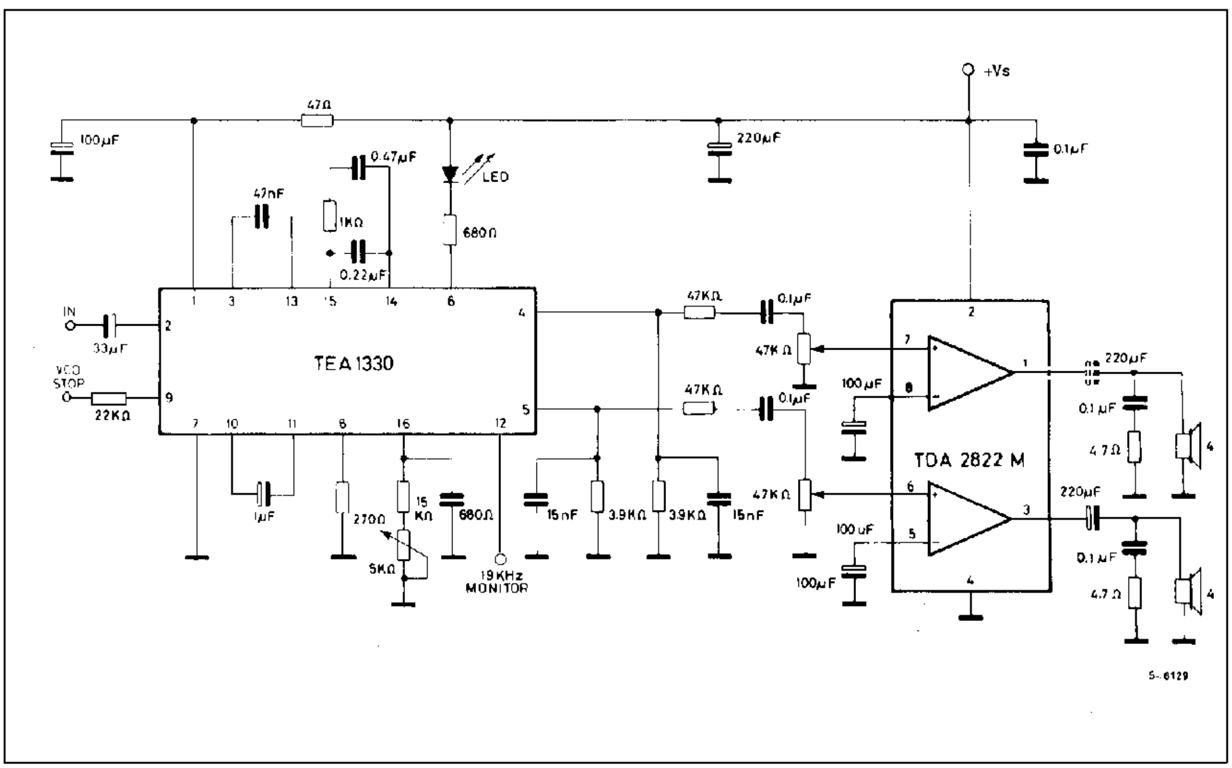
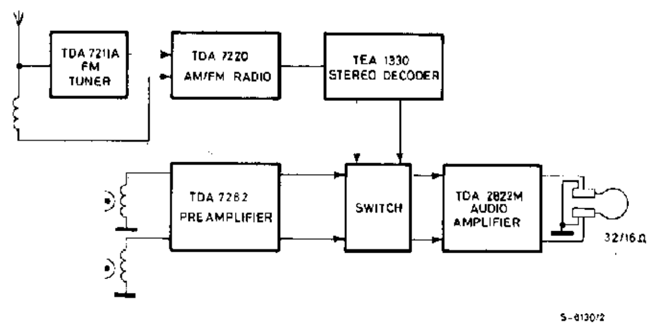
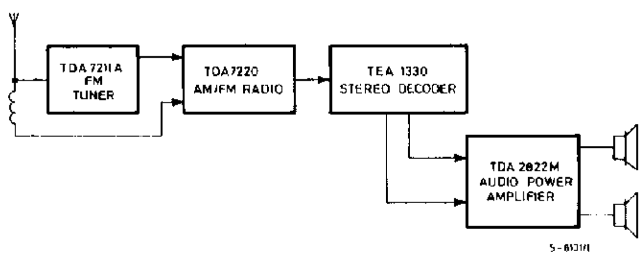


Figure 18 : Portable Radio Cassette Players



Type	Supply Voltage
TDA 7220	1.5 V to 6 V
TDA 7211A	1.2 V to 6 V
TEA 1330	3 V to 15 V
TDA 7282	1.5 V to 6 V
TDA 2822M	1.8 V to 15 V

Figure 19 : Portable Stereo Radios



Type	Supply Voltage
TDA 7220	1.5 V to 6 V
TDA 7211A	1.2 V to 6 V
TEA 1330	3 V to 15 V
TDA 2822M	1.8 V to 15 V

Figure 20 : Low Cost Application in Portable Players (using only one 100µF output capacitor)

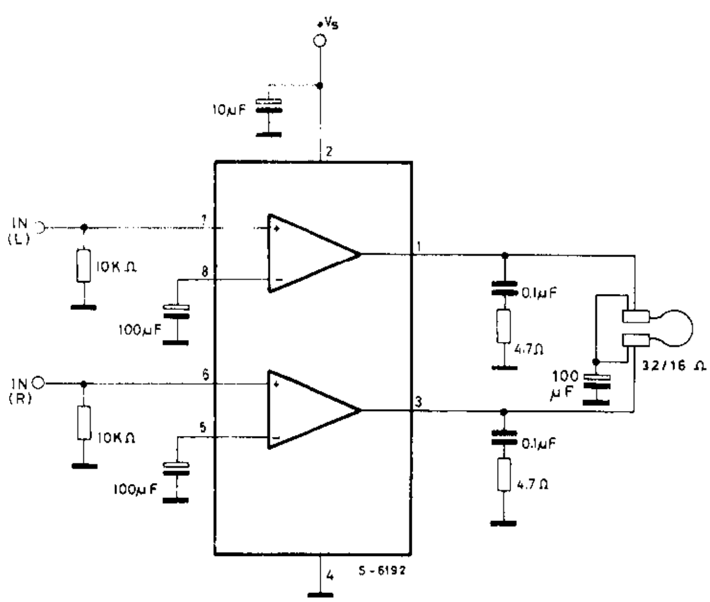
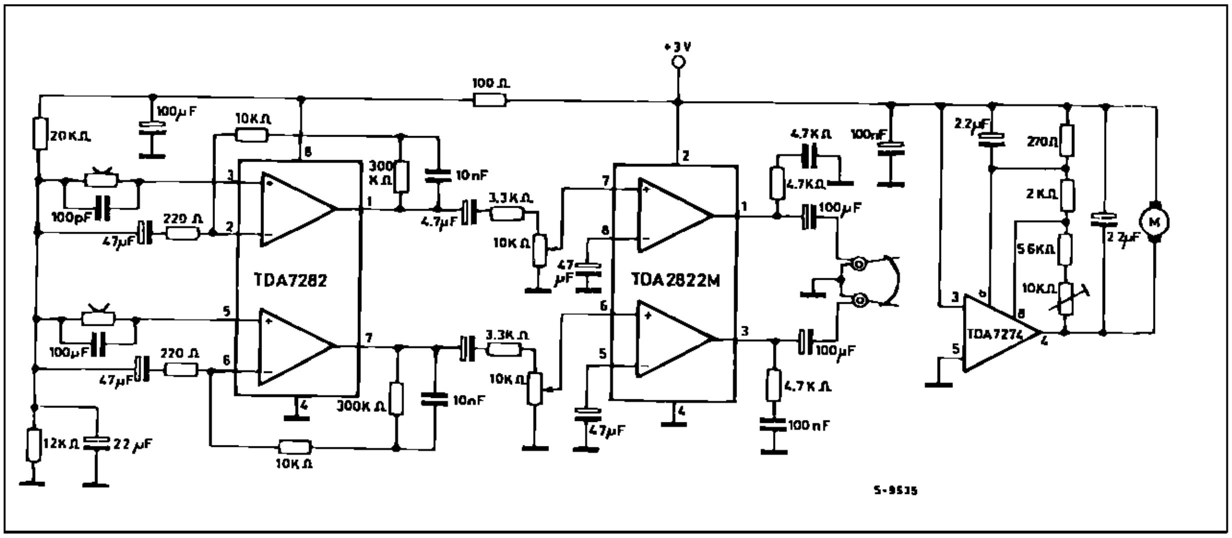


Figure 21 : 3V Stereo Cassette Player with Motot Speed Control



MINIDIP PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0.260
I			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060