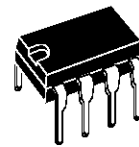# SGS-THOMSON MICROELECTRONICS

TDA2822M

DUAL LOW-VOLTAGE POWER AMPLIFIER

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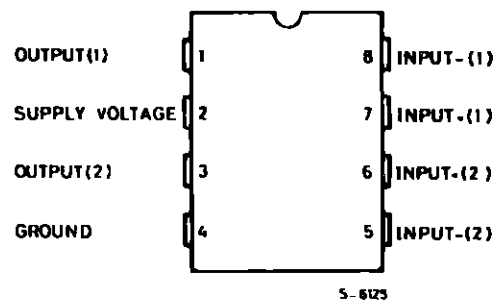- BRIDGE OR STEREO CONFIGURATION

MINIDIP

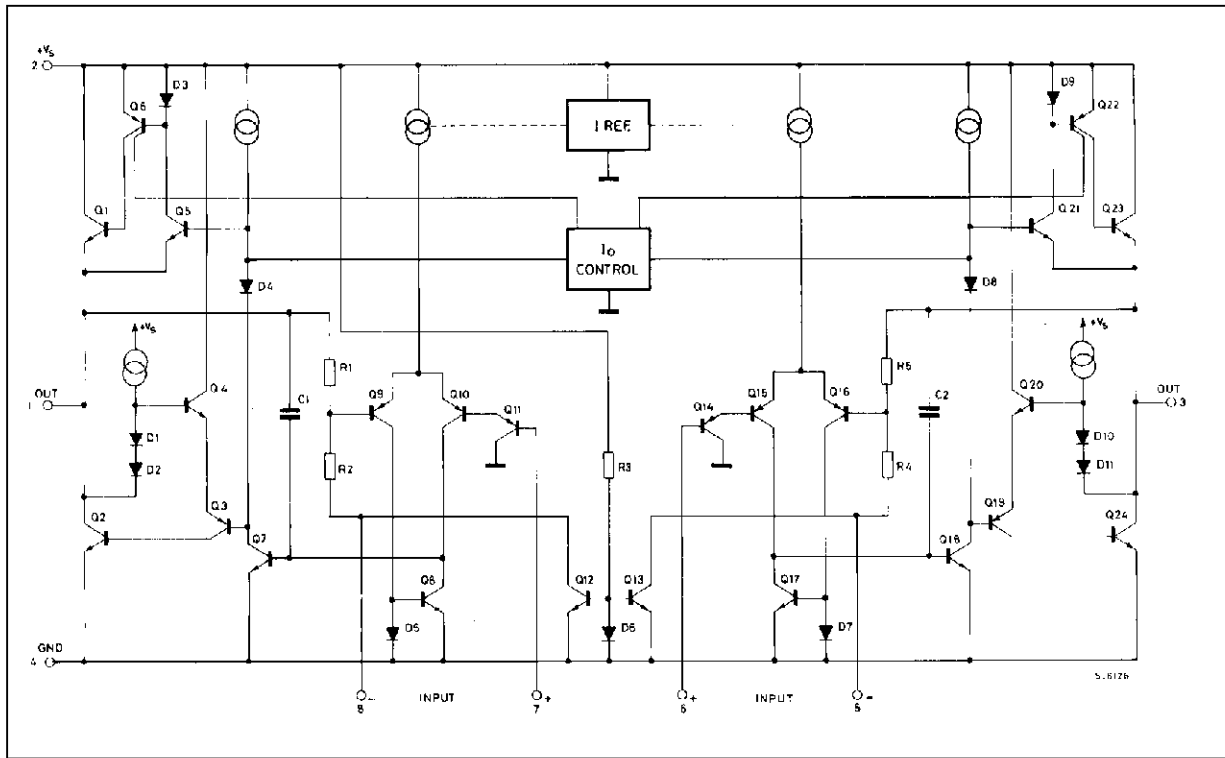**ORDERING NUMBER :** TDA2822M

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)

OUTPUT(1)	1	8 INPUT-(1)
SUPPLY VOLTAGE	2	7 INPUT-(1)
OUTPUT(2)	3	6 INPUT-(2)
GROUND	4	5 INPUT-(2)

S-6123

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 ($V_S = 6V$, $T_{amb} = 25^oC$, unless otherwise specified)

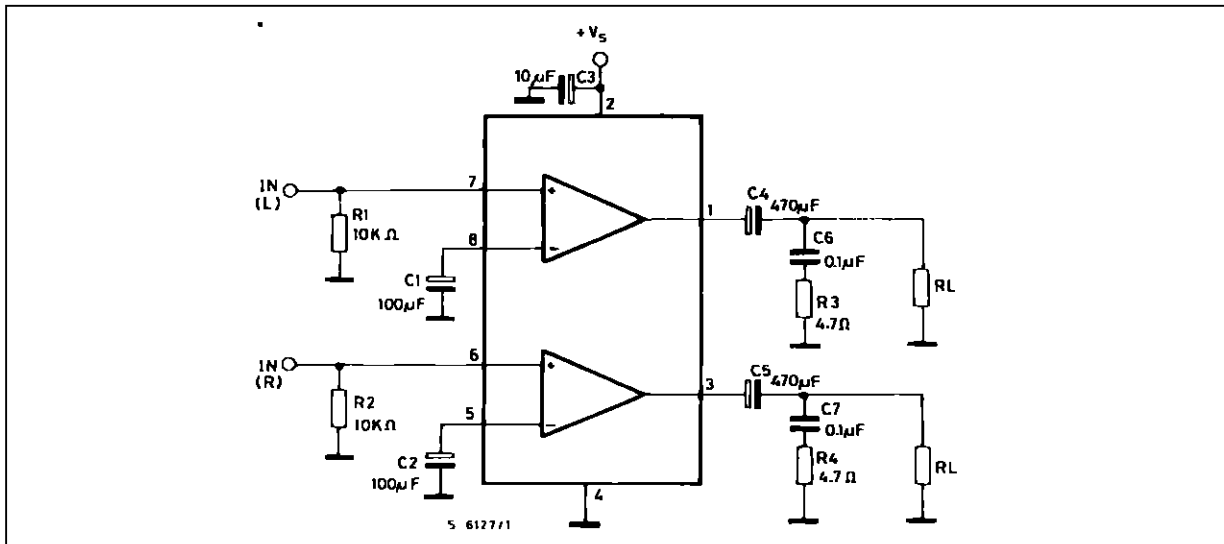| Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
STEREO (test circuit of Figure 1)						
V_s	Supply Voltage		1.8		15	V
V_o	Quiescent Output Voltage	$V_s = 3V$		2.7 1.2		V V
I_d	Quiescent Drain Current			6	9	mA
I_b	Input Bias Current			100		nA

P_o	Output Power (each channel)
	(f = 1kHz, d = 10%)
		$R_L = 32\Omega$ $V_S = 9V$
		                $V_S = 6V$
		                $V_S = 4.5V$
		                $V_S = 3V$
		                $V_S = 2V$
		$R_L = 16\Omega$ $V_S = 6V$
		$R_L = 8\Omega$ $V_S = 9V$
		                $V_S = 6V$
		$R_L = 4\Omega$ $V_S = 6V$
		                $V_S = 4.5V$
		                $V_S = 3V$
			
			90
			
			15
			
			170
			
			300
			450
				300
				120
				60
				20
				5
				220
				1000
				380
				650
				320
				110
						mW

d	Distortion (f = 1kHz)	$R_L = 32\Omega$ $P_o = 40mW$ $R_L = 16\Omega$ $P_o = 75mW$ $R_L = 8\Omega$ $P_o = 150mW$		0.2 0.2 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	$R_s = 10k\Omega$ B = Curve A B = 22Hz to 22kHz		2 2.5		μV 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	$R_L = \infty$		6	9	mA
V_{os}	Output Offset Voltage (between the outputs)	$R_L = 8\Omega$			± 50	mV
I_b	Input Bias Current			100		nA

P_o	Output Power (f = 1kHz, d = 10%)	$R_L = 32\Omega$ $V_S = 9V$
		                $V_S = 6V$
		                $V_S = 4.5V$
		                $V_S = 3V$
		                $V_S = 2V$
		$R_L = 16\Omega$ $V_S = 9V$
		                $V_S = 6V$
		                $V_S = 3V$
		$R_L = 8\Omega$ $V_S = 6V$
		                $V_S = 4.5V$
		                $V_S = 3V$
		$R_L = 4\Omega$ $V_S = 4.5V$
		                $V_S = 3V$
		                $V_S = 2V$
			
			320
			
			50
			
			900
			
			200
			
				1000
				400
				200
				65
				8
				2000
				800
				120
				1350
				700
				220
				1000
				350
				80
						mW

d	Distortion	$P_o = 0.5W$, $R_L = 8\Omega$, 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	$R_s = 10k\Omega$ B = Curve A B = 22Hz to 22kHz		2.5 3		μV μV
SVR	Supply Voltage Rejection	f = 100Hz		40		dB
B	Power Bandwidth (–3dB)	$R_L = 8\Omega$, $P_o = 1W$		120		kHz

Figure 1 : Test Circuit (Stereo)

Figure 2 : Test Circuit (Bridge)

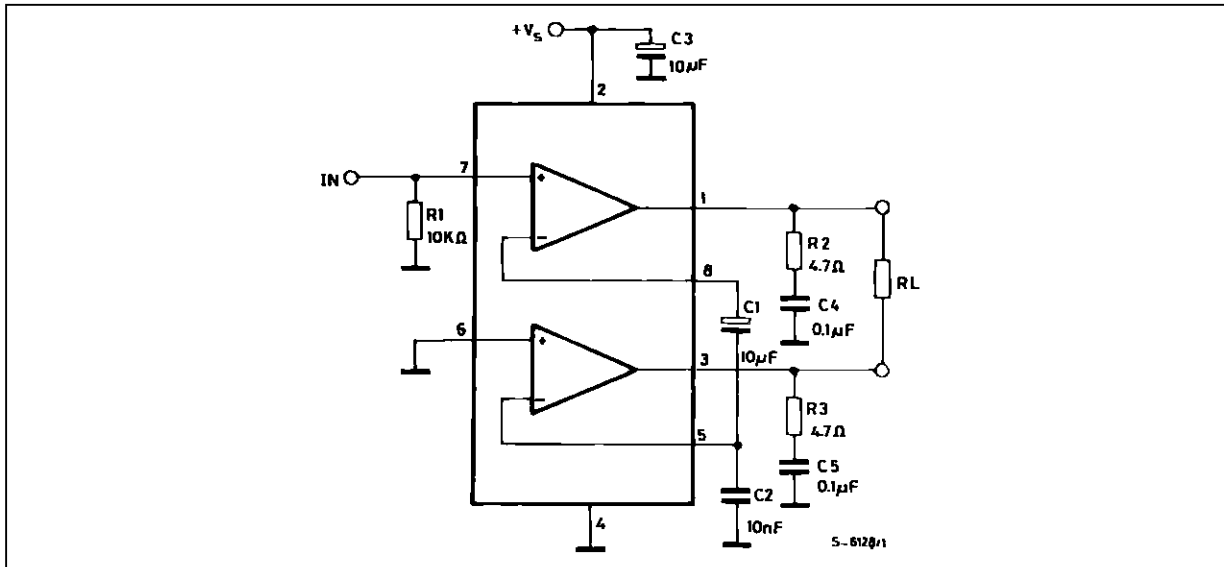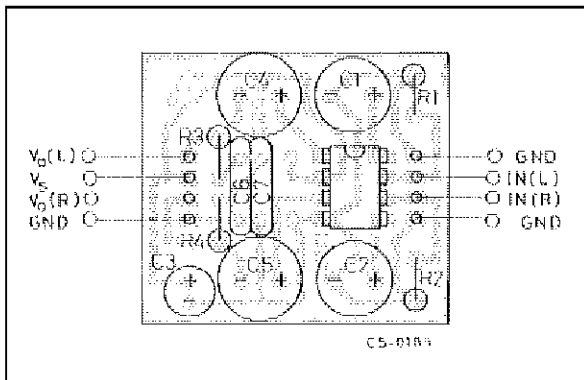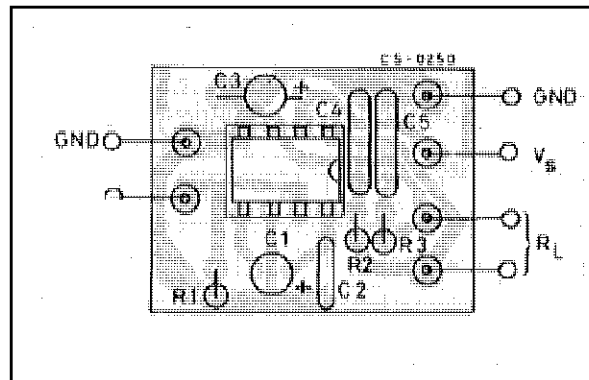**Figure 3 :**   P.C. Board and Components Layout of the Circuit of Figure 1
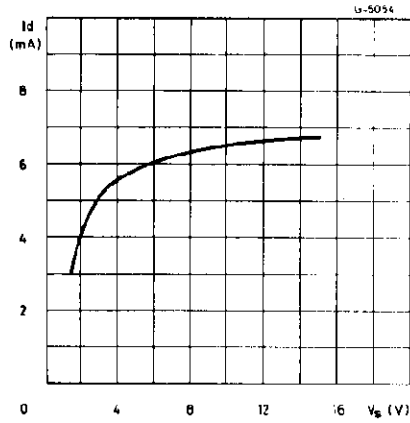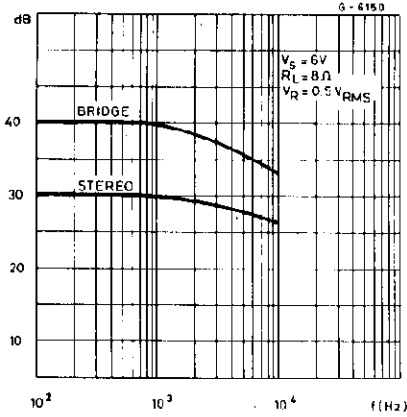

Figure 4 :   P.C. Board and Components Layout of the Circuit of Figure 2
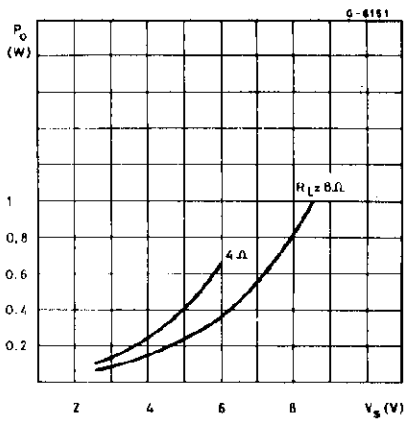
SGS-THOMSON
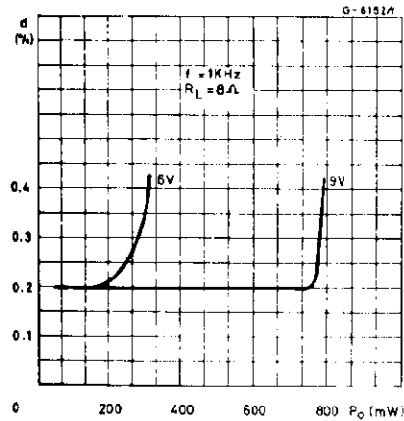**MICROELECTRONICS**

Figure 5 : Quiescent Current versus Supply Voltage
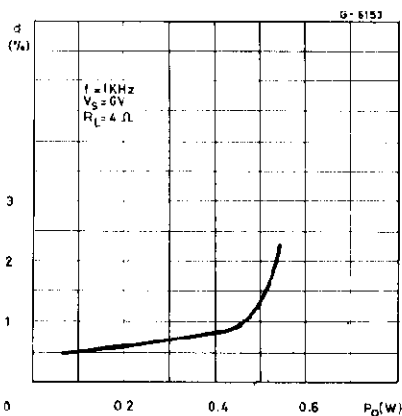

Figure 6 : Supply Voltage Rejection versus Frequency

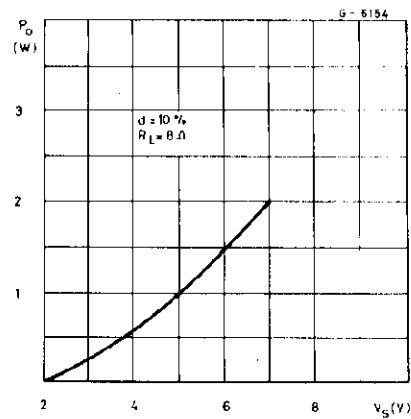**Figure 7 :** Output Power versus Supply Voltage (THD = 10%, f = 1kHz Stereo)
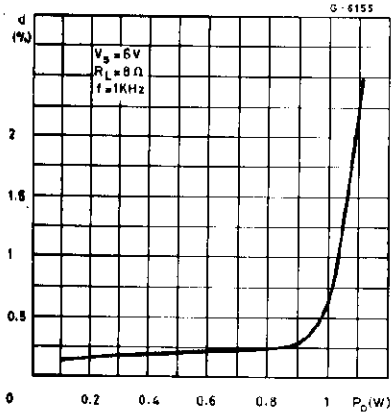

Figure 8 : Distorsion versus Output Power (Stereo)
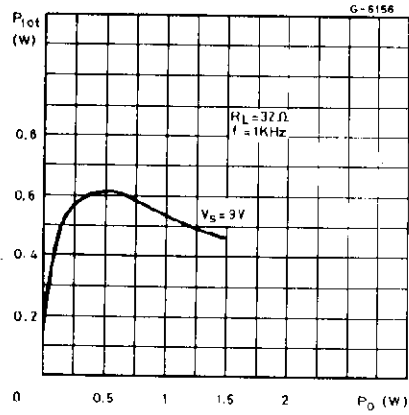

Figure 9 : Distorsion versus Output Power (Stereo)

Figure 10 : Output Power versus Supply Voltage (Bridge)

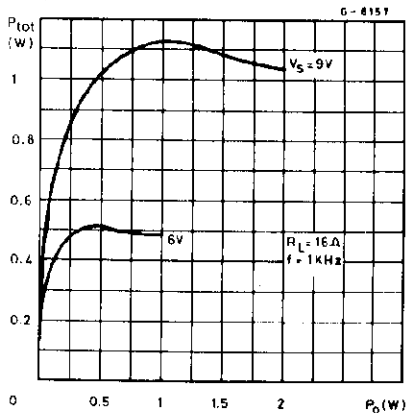**SGS-THOMSON**
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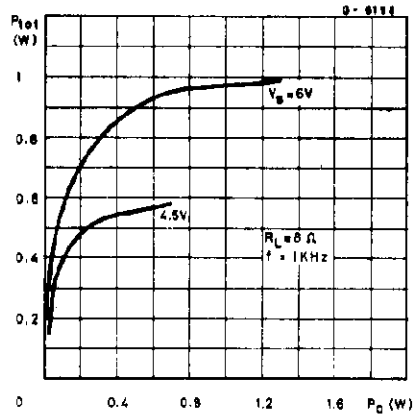**Figure 11 :** Distorsion versus Output Power (Bridge)

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)

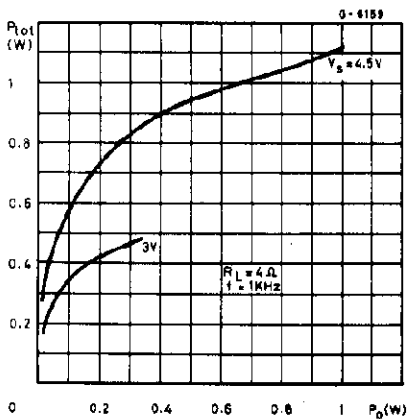**Figure 15 :** Total Power Dissipation versus Output Power (Bridge)

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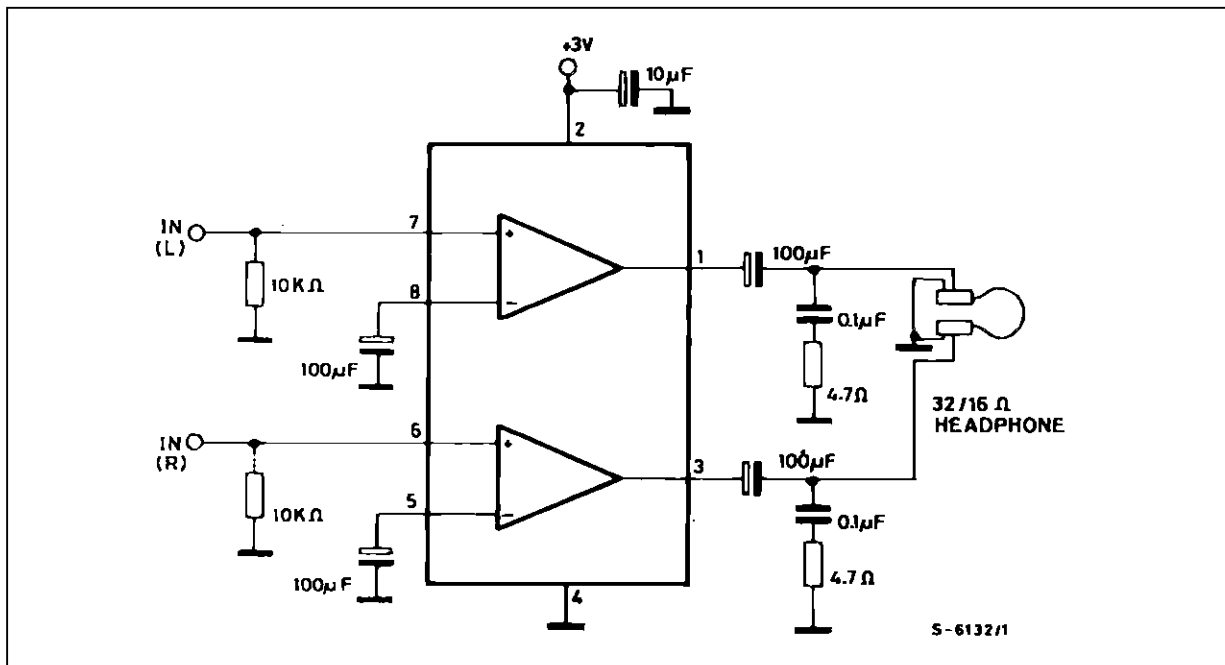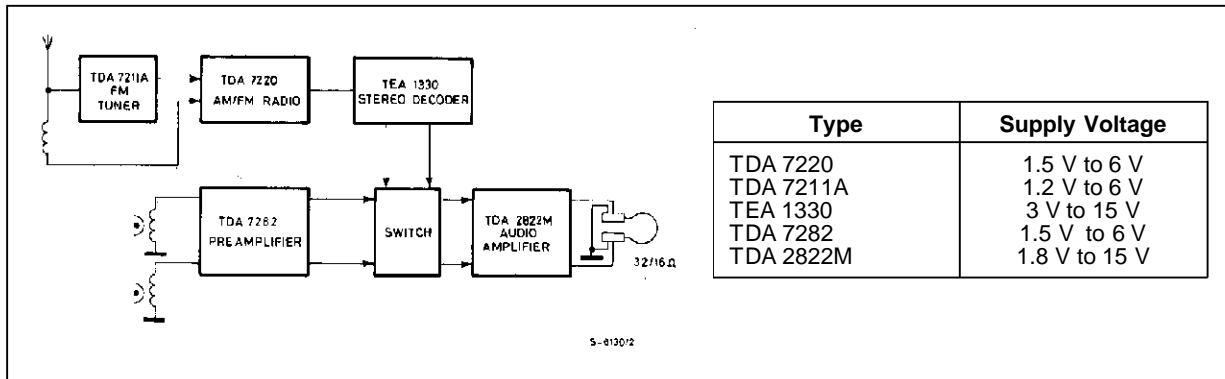**MICROELECTRONICS**

Figure 16 : Typical Application in Portable Players
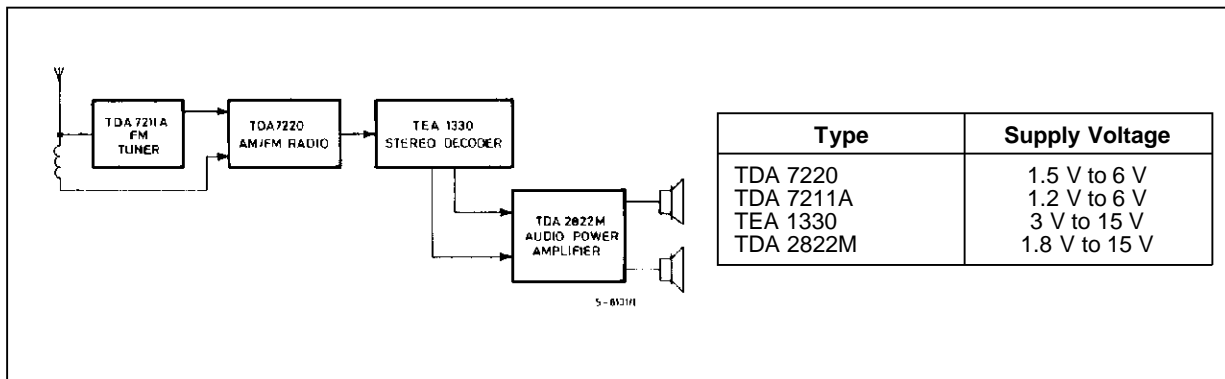

Figure 17 : Application in Portable Radio Receivers

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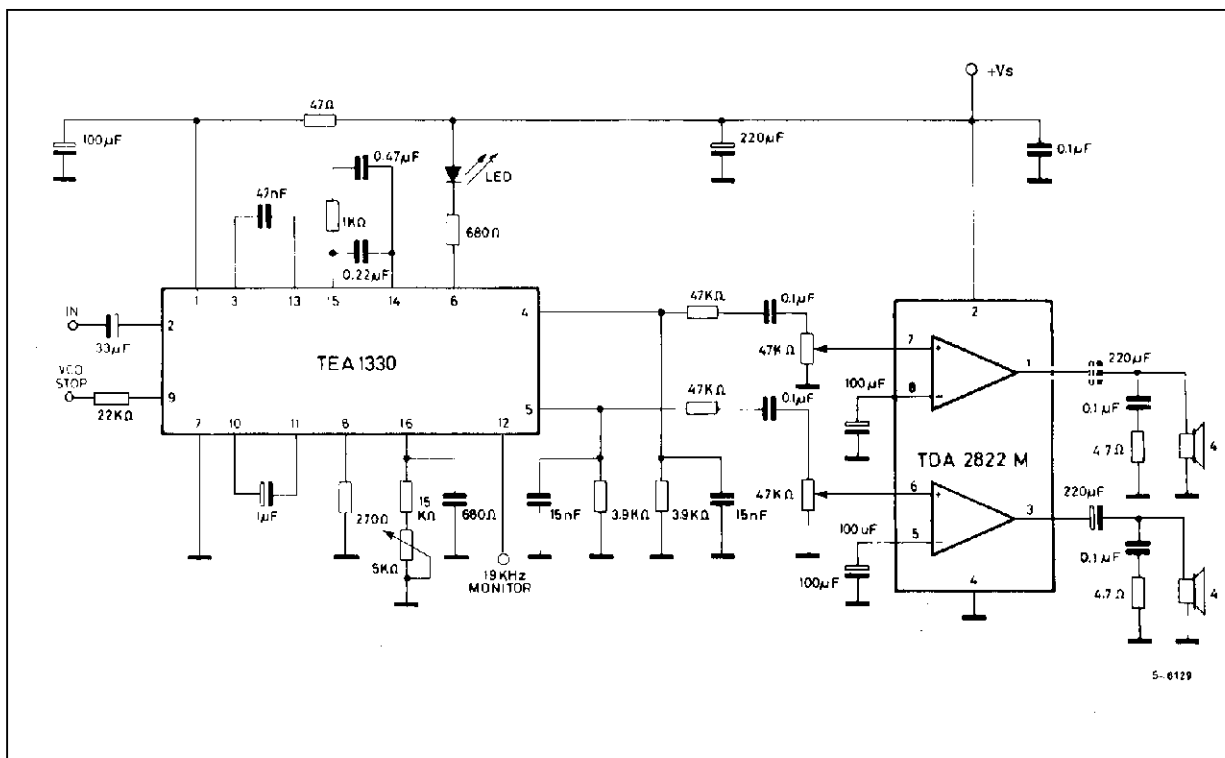
Figure 18 : Portable Radio Cassette Players

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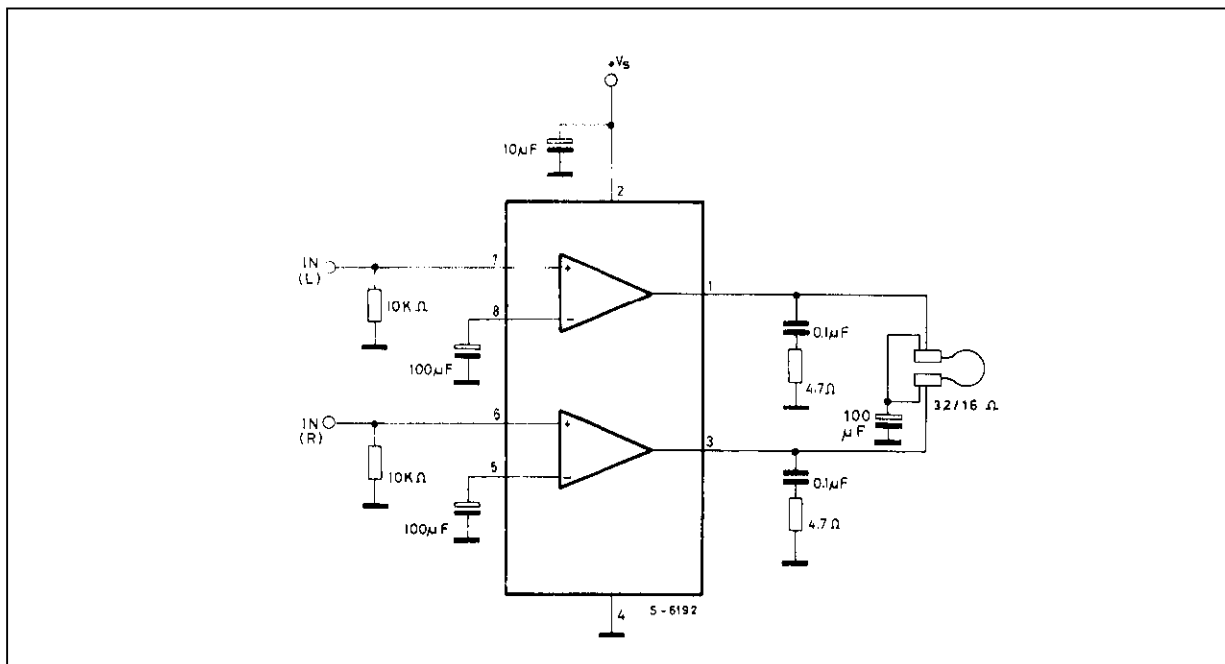
Figure 21 : 3V Stereo Cassette Player with Motot Speed Control

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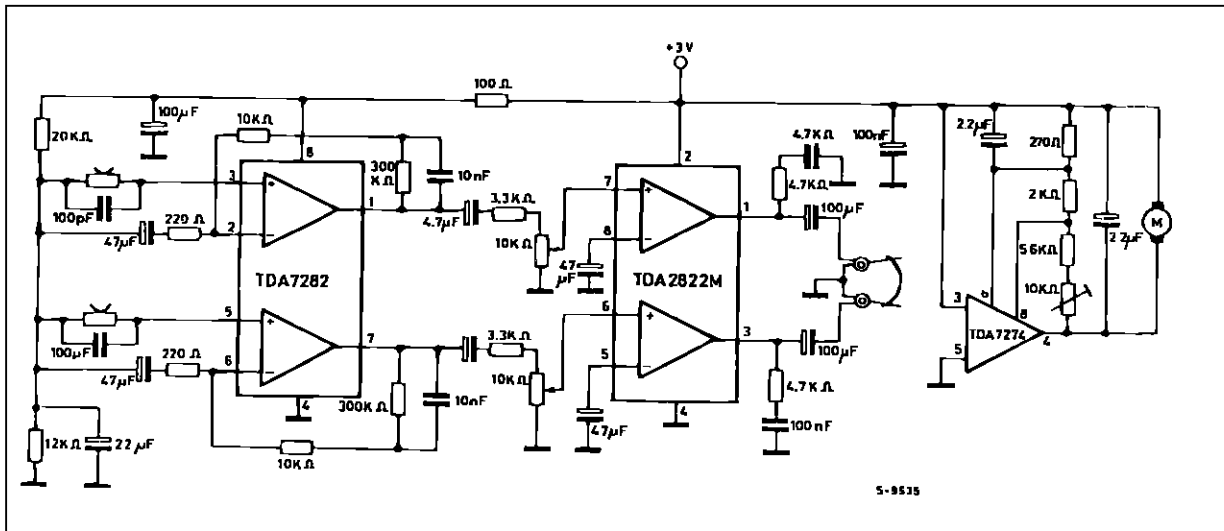
MINIDIP PACKAGE MECHANICAL DATA

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

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