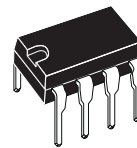




# TDA2822M

## DUAL LOW-VOLTAGE POWER AMPLIFIER

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



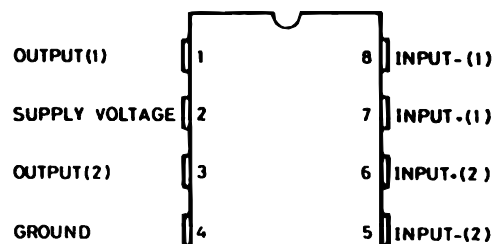
MINIDIP

ORDERING NUMBER : TDA2822M

### DESCRIPTION

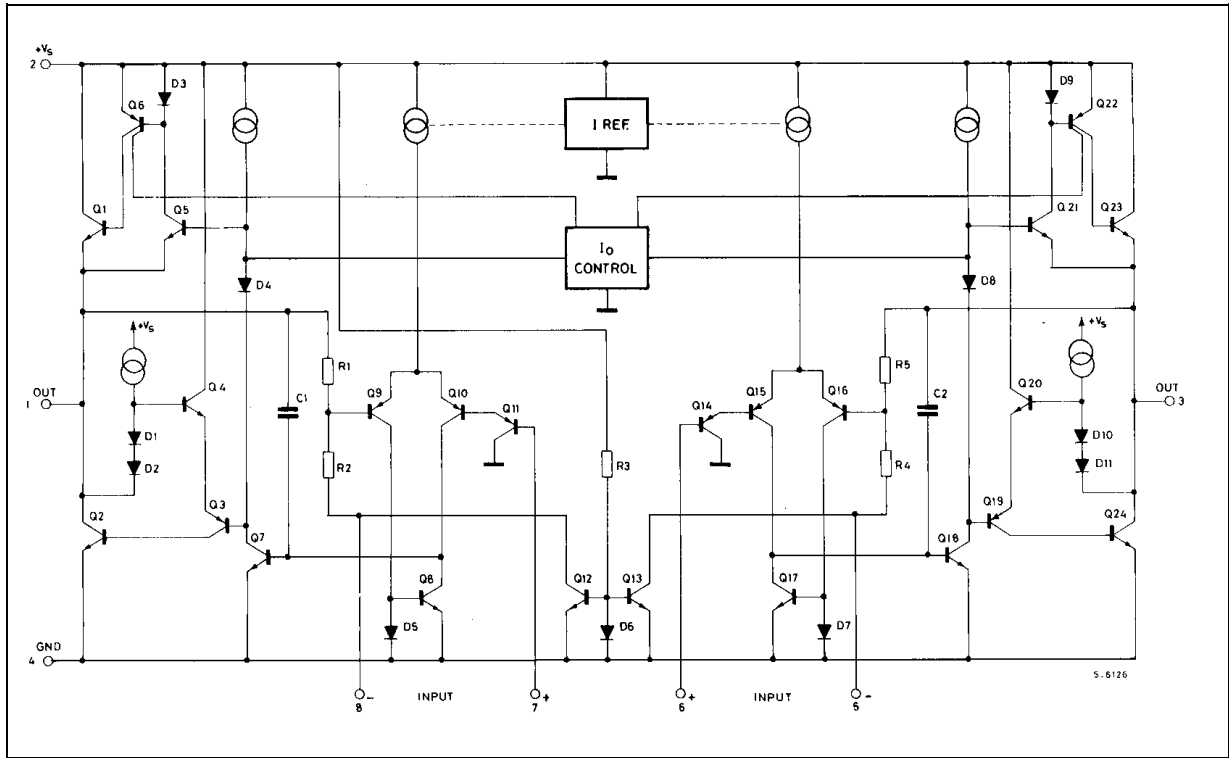
The TDA2822M is a monolithic integrated circuit in 8 lead Minidip package. It is intended for use as dual audio power amplifier in portable cassette players and radios.

### PIN CONNECTION (Top view)



S-6125

**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 $T_{amb} = 50\text{ }^\circ\text{C}$ at $T_{case} = 50\text{ }^\circ\text{C}$	1 1.4	W W
$T_{stg}, T_j$	Storage and Junction Temperature	- 40, + 150	$^\circ\text{C}$

**THERMAL DATA**

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

**ELECTRICAL CHARACTERISTICS** ( $V_S = 6V$ ,  $T_{amb} = 25^\circ C$ , unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>STEREO</b> (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
$\Delta G_v$	Channel Balance				$\pm 1$	dB
$R_i$	Input Resistance	$f = 1kHz$	100			k $\Omega$
$e_N$	Total Input Noise	$R_s = 10k\Omega$ B = Curve A B = 22Hz to 22kHz		2 2.5		$\mu V$ $\mu V$
SVR	Supply Voltage Rejection	$f = 100Hz$ , $C_1 = C_2 = 100\mu F$	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)	$R_L = 8\Omega$			$\pm 50$	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			k $\Omega$
$e_N$	Total Input Noise	$R_s = 10k\Omega$ B = Curve A B = 22Hz to 22kHz		2.5 3		$\mu V$ $\mu V$
SVR	Supply Voltage Rejection	$f = 100Hz$		40		dB

Figure 1 : Test Circuit (Stereo)

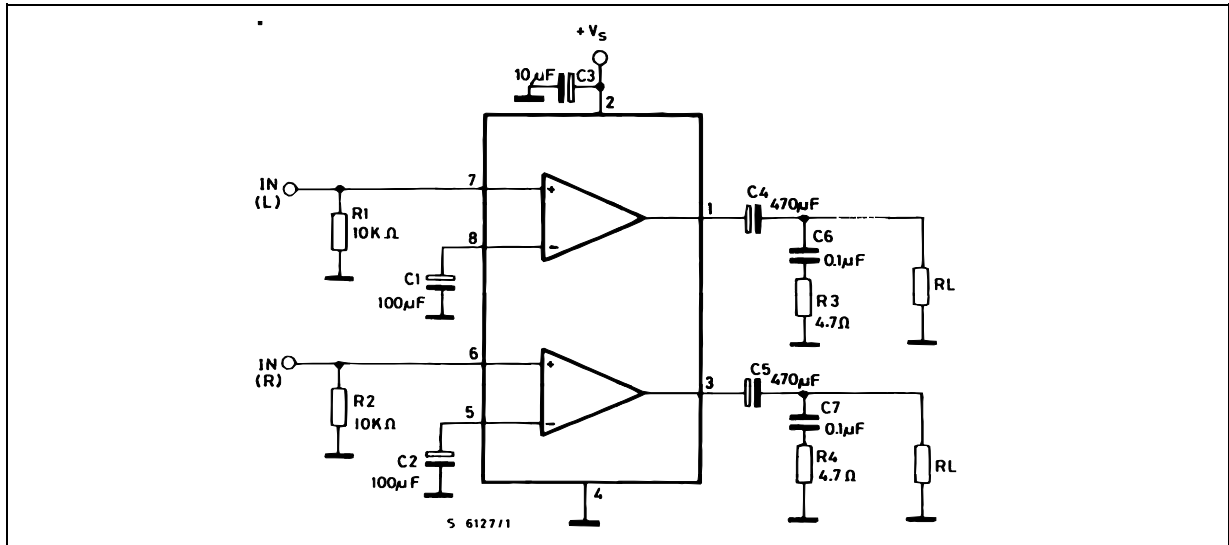


Figure 2 : Test Circuit (Bridge)

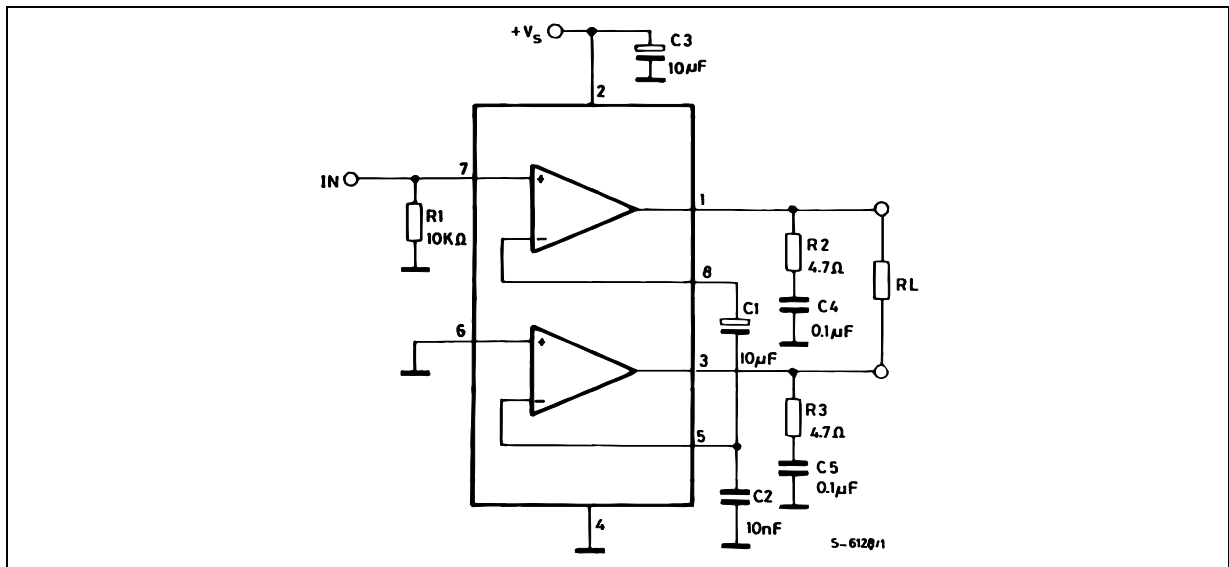


Figure 3 : P.C. Board and Components Layout of the Circuit of Figure 1

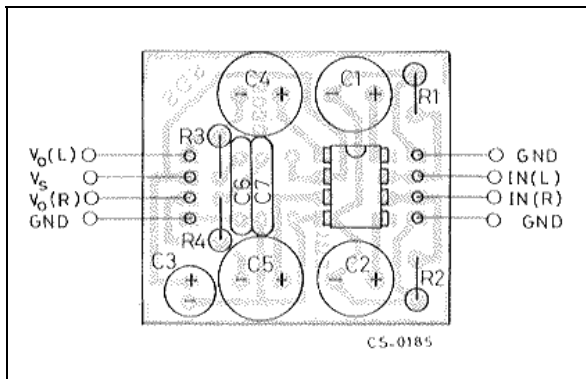
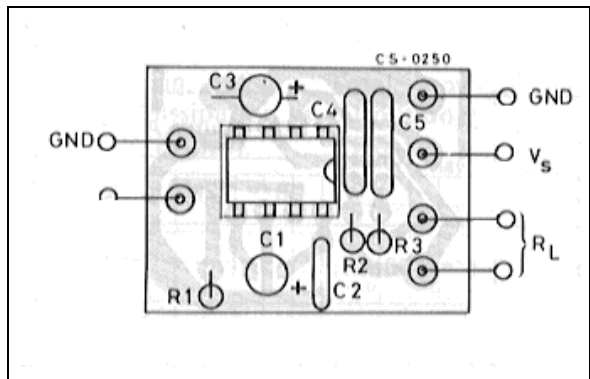
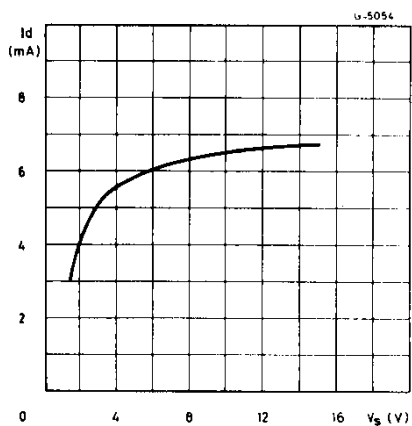


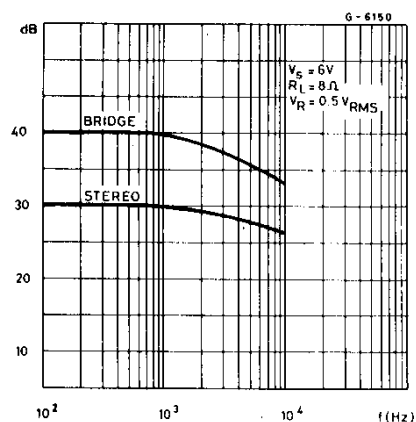
Figure 4 : P.C. Board and Components Layout of the Circuit of Figure 2



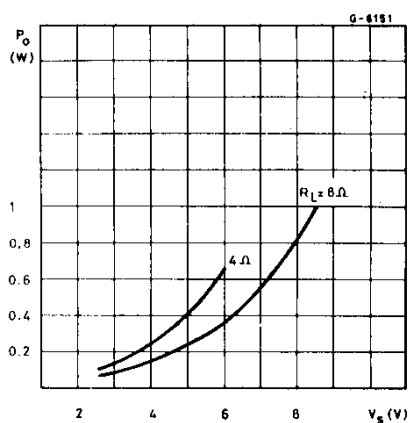
**Figure 5 :** Quiescent Current versus Supply Voltage



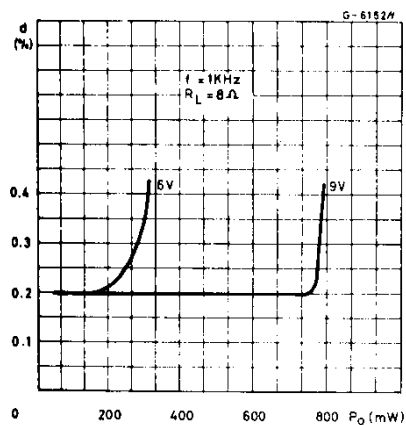
**Figure 6 :** Supply Voltage Rejection versus Frequency



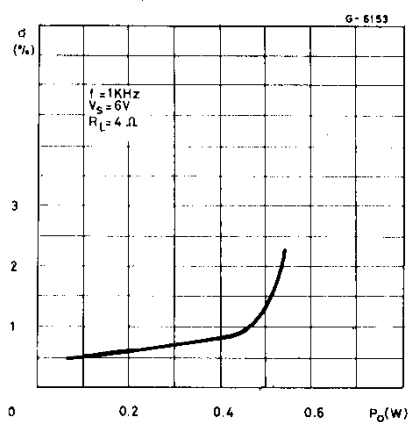
**Figure 7 :** Output Power versus Supply Voltage (THD = 10%,  $f = 1\text{kHz}$  Stereo)



**Figure 8 :** Distorsion versus Output Power (Stereo)



**Figure 9 :** Distorsion versus Output Power (Stereo)



**Figure 10 :** Output Power versus Supply Voltage (Bridge)

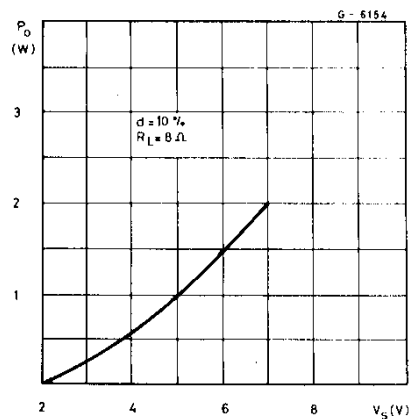


Figure 11 : Distorsion versus Output Power (Bridge)

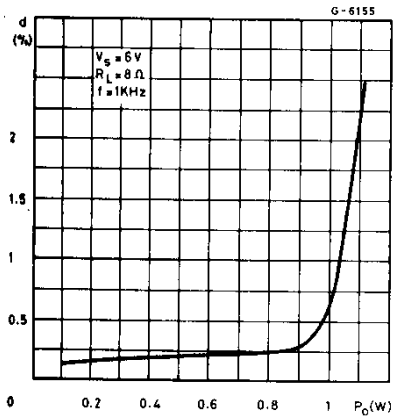


Figure 12 : Total Power Dissipation versus Output Power (Bridge)

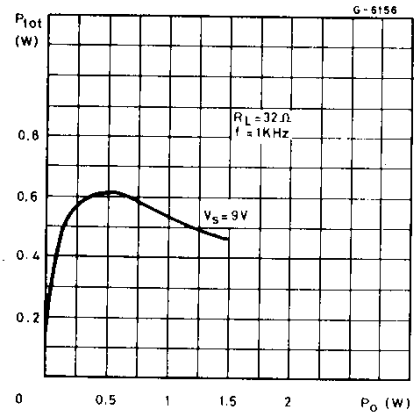


Figure 13 : Total Power Dissipation versus Output Power (Bridge)

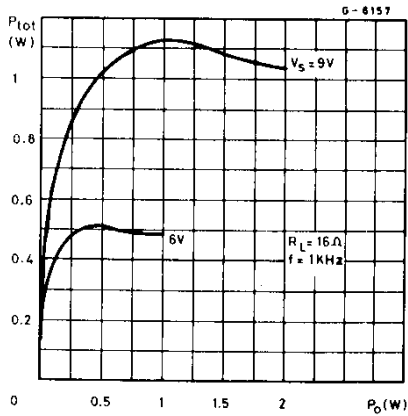


Figure 14 : Total Power Dissipation versus Output Power (Bridge)

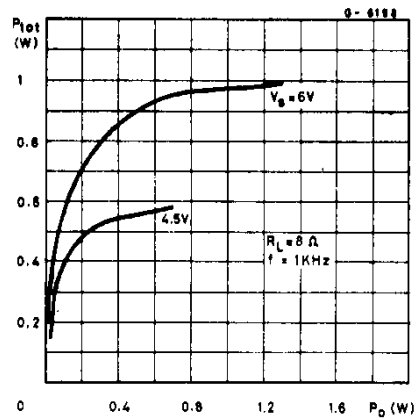


Figure 15 : Total Power Dissipation versus Output Power (Bridge)

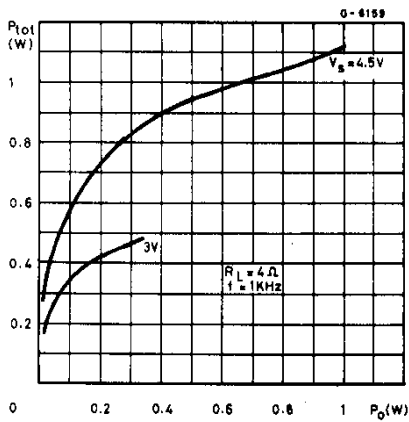


Figure 16 : Typical Application in Portable Players

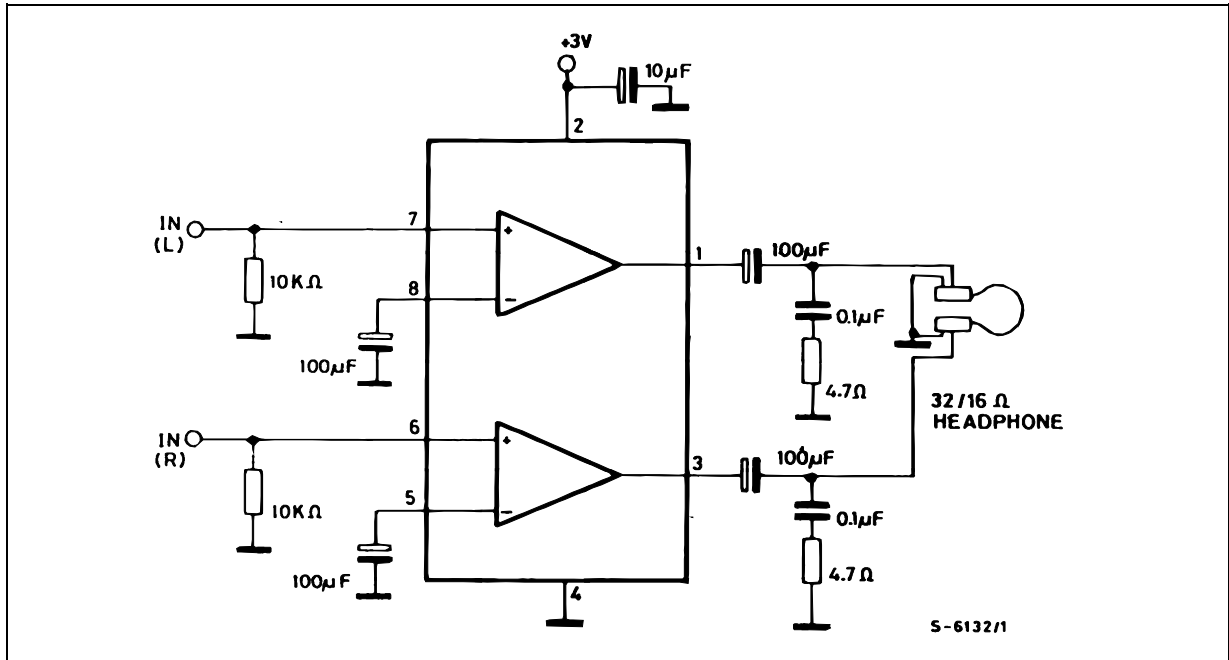
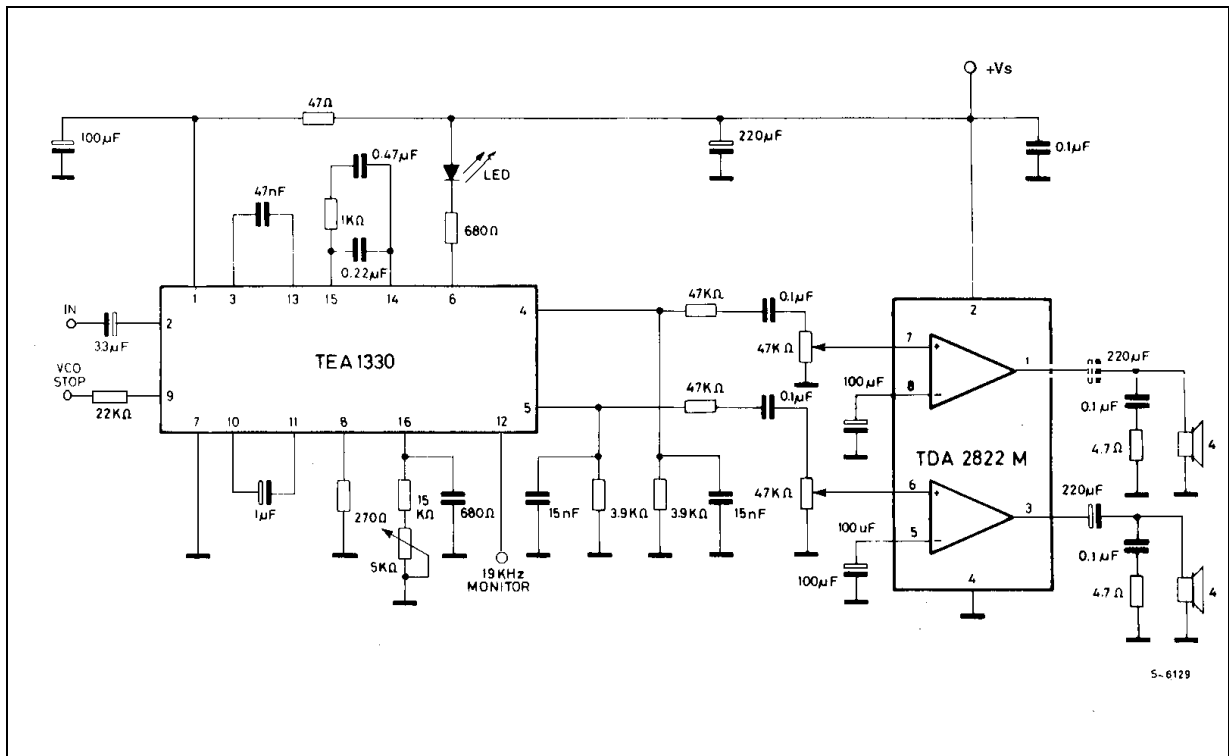
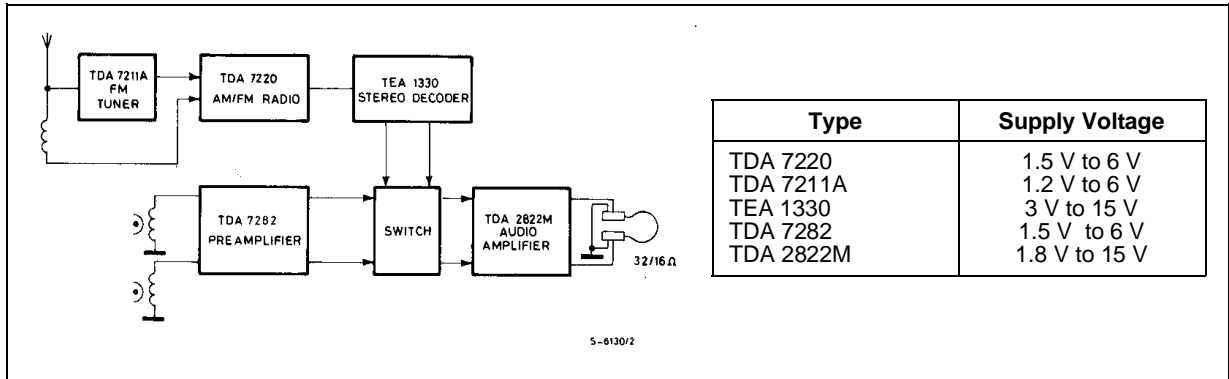


Figure 17 : Application in Portable Radio Receivers

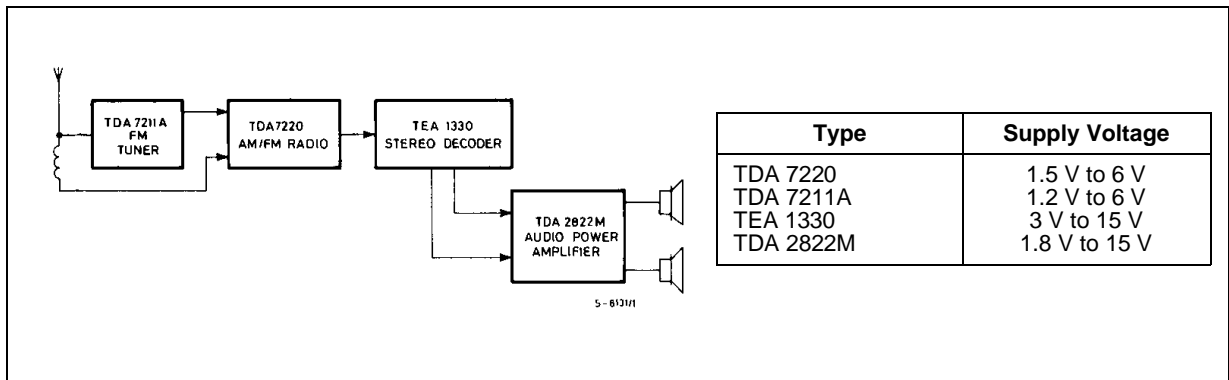


# TDA2822M

**Figure 18 : Portable Radio Cassette Players**



**Figure 19 : Portable Stereo Radios**



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

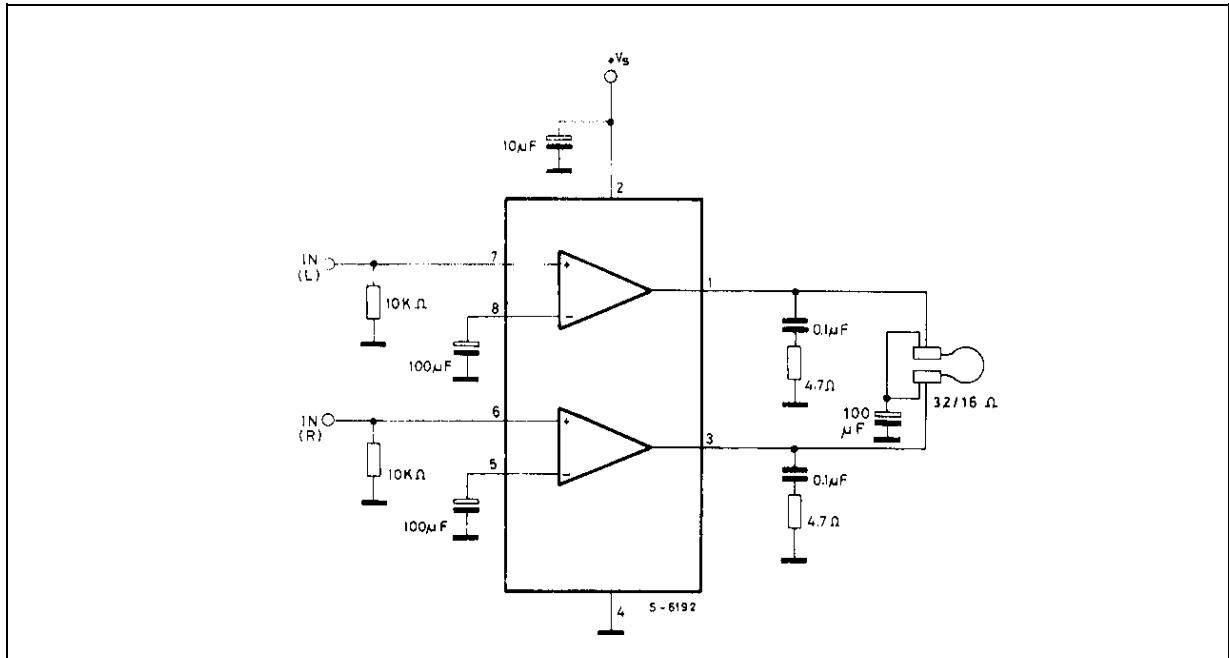
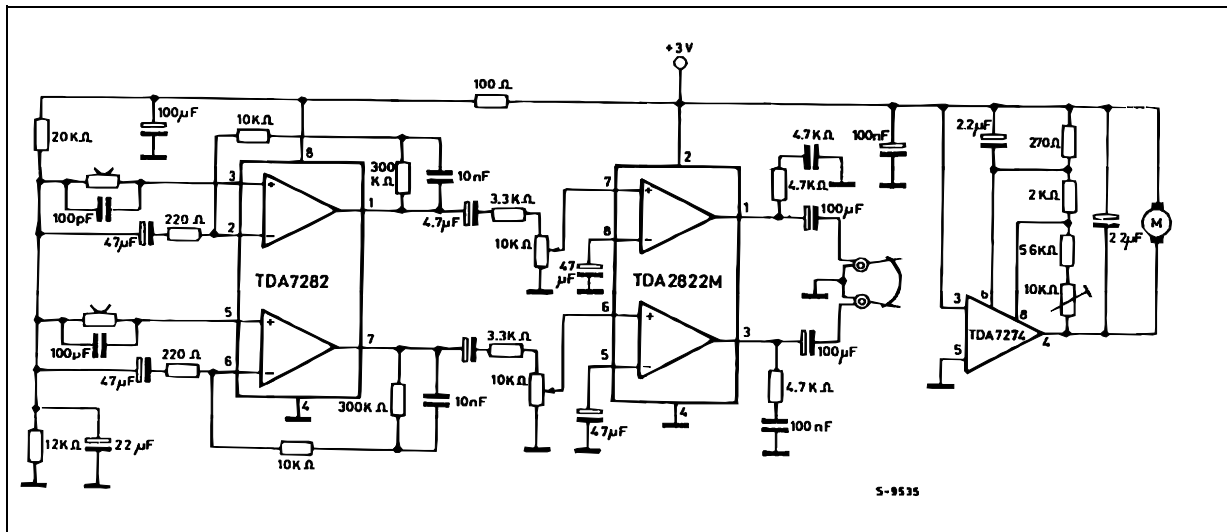


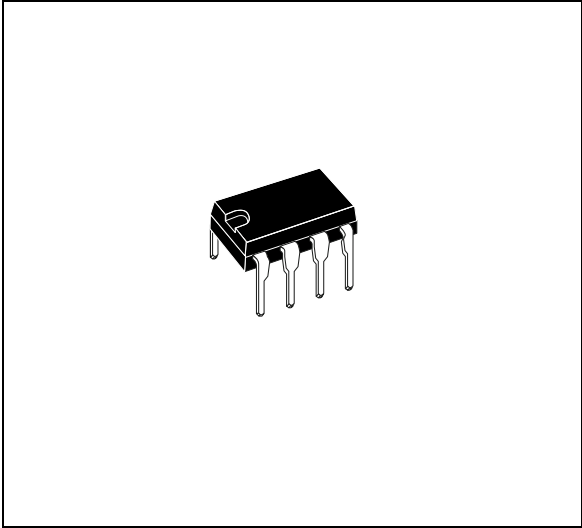


Figure 21 : 3V Stereo Cassette Player with Motot Speed Control

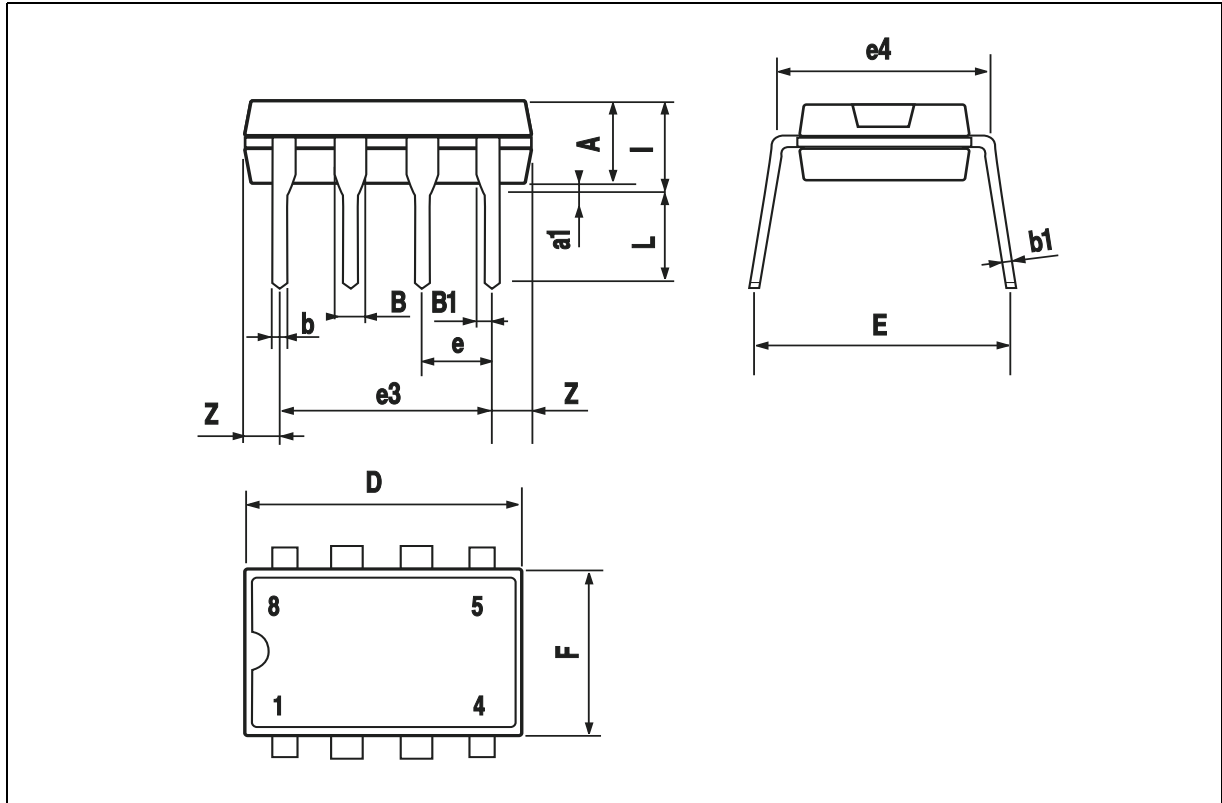


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0.260
I			5.08			0.200
L	3.18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

**OUTLINE AND MECHANICAL DATA**



**Minidip**



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.  
All other names are the property of their respective owners

© 2003 STMicroelectronics - All rights reserved

**STMicroelectronics GROUP OF COMPANIES**

Australia – Belgium - Brazil - Canada - China – Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan -  
Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States  
[www.st.com](http://www.st.com)

