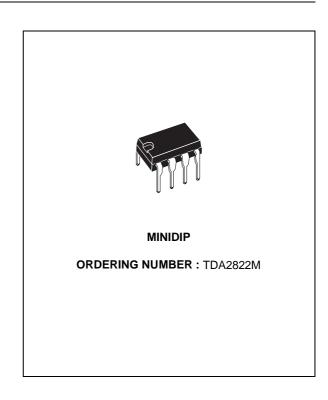




## **DUAL LOW-VOLTAGE POWER AMPLIFIER**

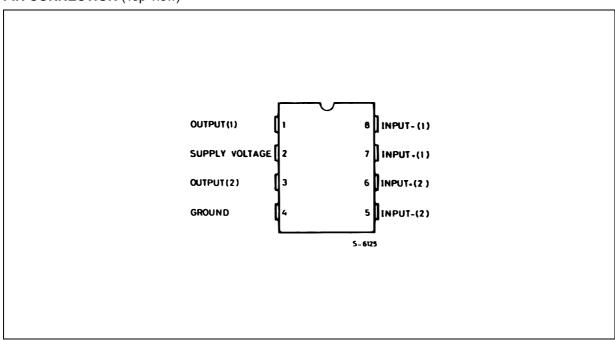
- SUPPLY VOLTAGE DOWN TO 1.8V
- LOW CROSSOVER DISTORSION
- LOW QUIESCENT CURRENT
- BRIDGE OR STEREO CONFIGURATION



#### **DESCRIPTION**

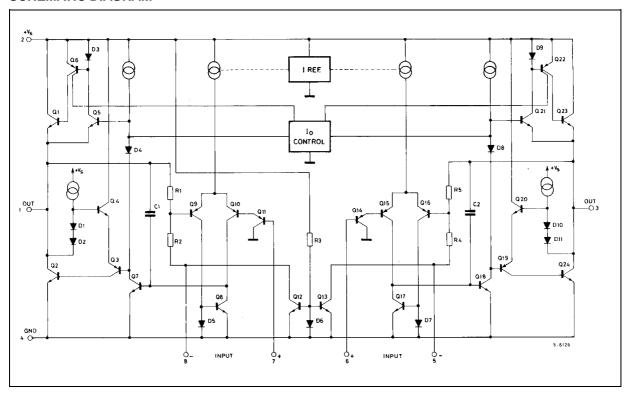
The TDA2822M is a monolithic integrated circuit in 8 lead Minidip package. It is intended for use as dual audio power amplifier in portable cassette players and radios.

#### PIN CONNECTION (Top view)



September 2003

#### **SCHEMATIC DIAGRAM**



### **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
Vs	Supply Voltage	15	٧
Io	Peak Output Current	1	Α
P <sub>tot</sub>	Total Power Dissipation at T <sub>amb</sub> = 50 °C at T <sub>case</sub> = 50 °C	1 1.4	W
$T_{stg}$ , $T_j$	Storage and Junction Temperature	- 40, <b>+</b> 150	°C

#### THERMAL DATA

Symbol	Parameter	Value	Unit
R <sub>th j-amb</sub>	Thermal Resistance Junction-ambient Ma	ax. 100	°C/W
R <sub>th j-case</sub>	Thermal Resistance Junction-pin (4)	ax. 70	°C/W

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

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
STEREO (	test circuit of Figure 1)					
Vs	Supply Voltage		1.8		15	V
Vo	Quiescent Output Voltage	V <sub>s</sub> = 3V		2.7 1.2		V
I <sub>d</sub>	Quiescent Drain Current			6	9	mΑ
I <sub>b</sub>	Input Bias Current			100		nA
Po	Output Power (each channel) (f = 1kHz, d = 10%)	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	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		% % %
Gv	Closed Loop Voltage Gain	f = 1kHz	36	39	41	dB
$\Delta G_{V}$	Channel Balance				± 1	dB
Ri	Input Resistance	f = 1kHz	100			kΩ
e <sub>N</sub>	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
Cs	Channel Separation	f = 1kHz		50		dB
BRIDGE (t	est circuit of Figure 2)		•	•		•
Vs	Supply Voltage		1.8		15	V
I <sub>d</sub>	Quiescent Drain Current	R <sub>L</sub> = ∞		6	9	mΑ
V <sub>os</sub>	Output Offset Voltage (between the outputs)	$R_L = 8\Omega$			± 50	mV
I <sub>b</sub>	Input Bias Current			100		nA
P <sub>o</sub>	Output Power (f = 1kHz, d = 10%)	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	320 50	1000 400 200 65 8 2000 800 120 1350		mW
d	Distortion	$ \begin{aligned} 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 \\ \end{aligned} $ $ \begin{aligned} P_0 &= 0.5W, \ R_L &= 8\Omega, \ f &= 1kHz \end{aligned} $	200	700 220 1000 350 80		%
G <sub>v</sub>	Closed Loop Voltage Gain	f = 1kHz		39		dB
R <sub>i</sub>	Input Resistance	f = 1kHz	100	- 55		kΩ
e <sub>N</sub>	Total Input Noise	$R_s = 10k\Omega$ B = Curve A B = 22Hz to 22kHz	100	2.5		μV μV
SVR	Supply Voltage Rejection	f = 100Hz		40		dΒ

Figure 1 : Test Circuit (Stereo)

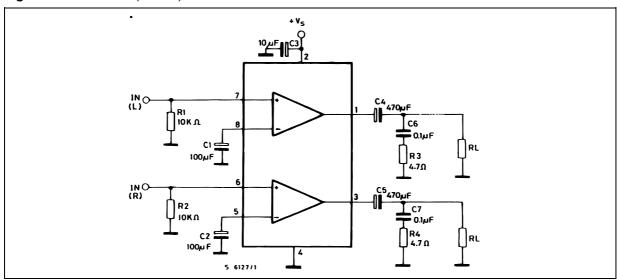
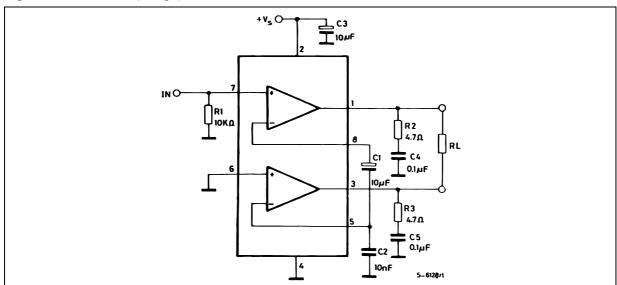
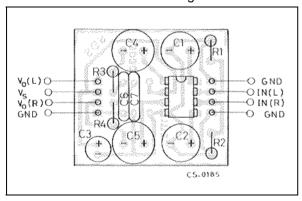


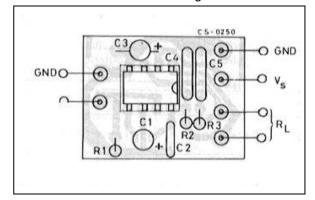
Figure 2 : Test Circuit (Bridge)



**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



4

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

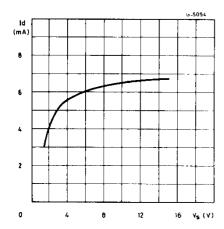
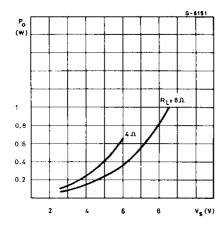
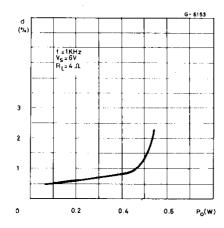


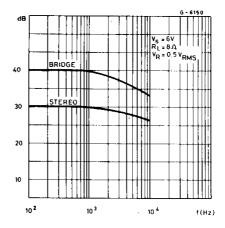
Figure 7 : Output Power versus Supply Voltage (THD = 10%, f = 1kHz Stereo)



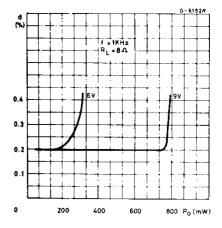
**Figure 9 :** Distorsion versus Output Power (Stereo)



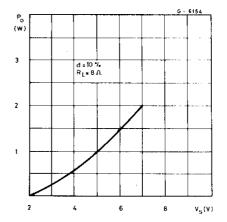
**Figure 6 :** Supply Voltage Rejection versus Frequency



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



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



**Figure 11 :** Distorsion versus Output Power (Bridge)

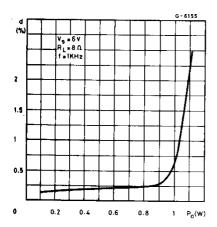
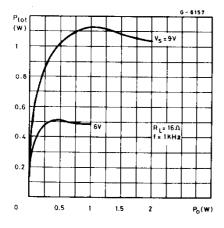
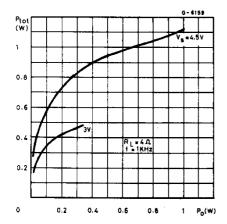


Figure 13: Total Power Dissipation versus Output Power (Bridge)



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



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

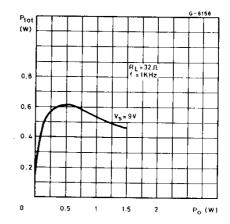


Figure 14: Total Power Dissipation versus Output Power (Bridge)

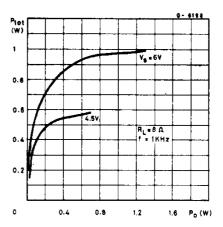


Figure 16: Typical Application in Portable Players

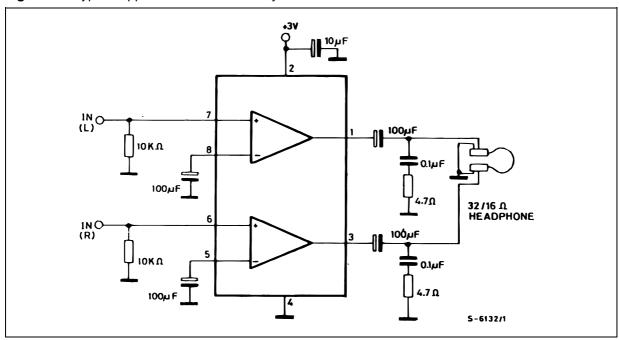


Figure 17: Application in Portable Radio Receivers

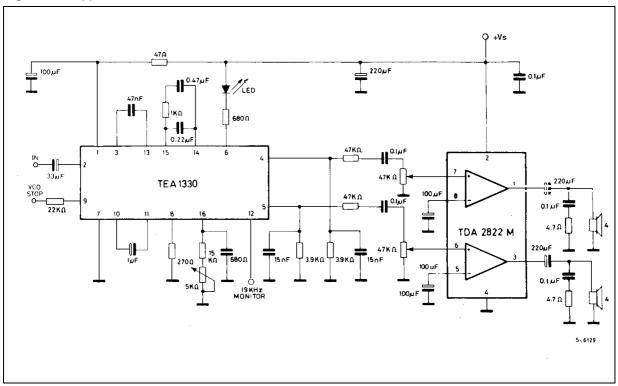


Figure 18: Portable Radio Cassette Players

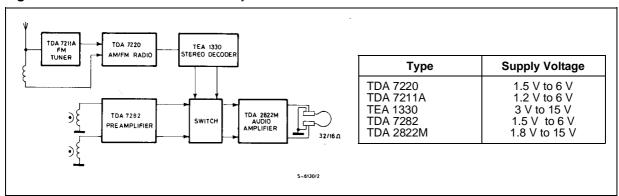


Figure 19: Portable Stereo Radios

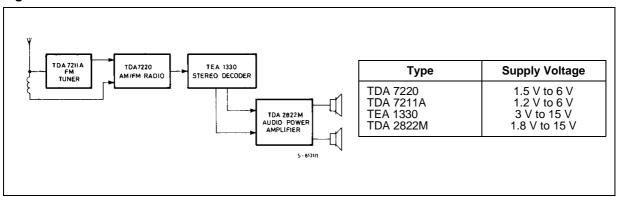
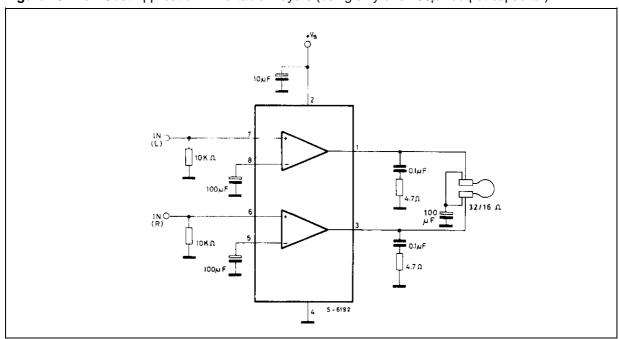


Figure 20 : Low Cost Application in Portable Players (using only one 100μF output capacitor)



4

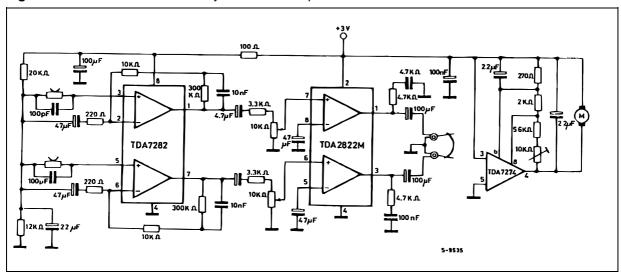
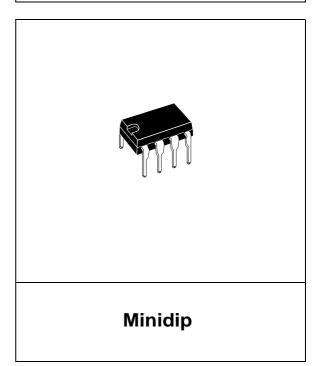
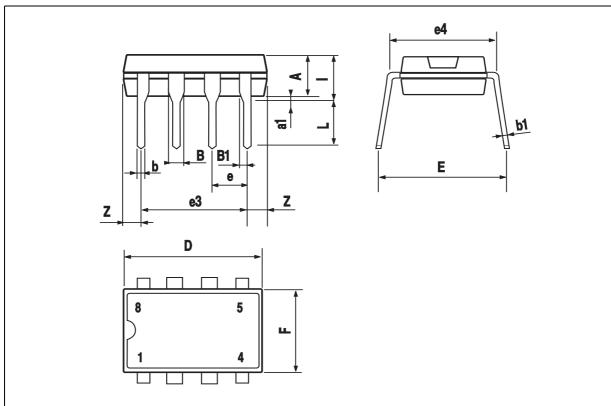


Figure 21: 3V Stereo Cassette Player with Motot Speed Control

DIM.	mm			inch		
DIM.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
Α		3.32			0.131	
a1	0.51			0.020		
В	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
е		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





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

