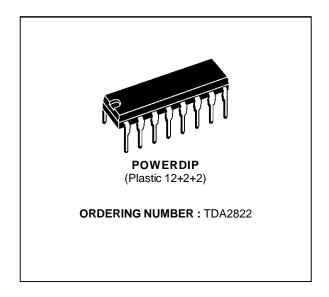


## **TDA2822**

### **DUAL POWER AMPLIFIER**

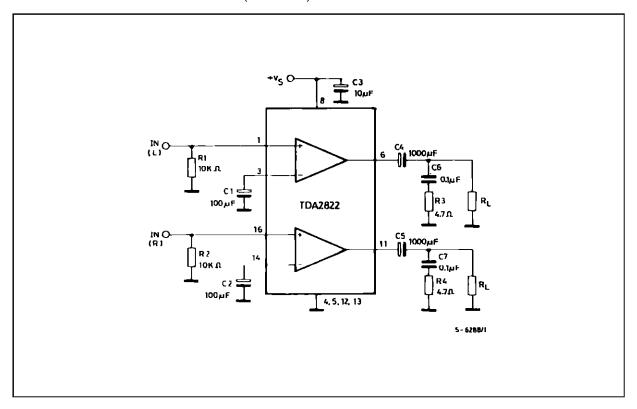
- SUPPLY VOLTAGE DOWN TO 3 V
- LOW CROSSOVER DISTORSION
- LOW QUIESCENT CURRENT
- BRIDGE OR STEREO CONFIGURATION



#### **DESCRIPTION**

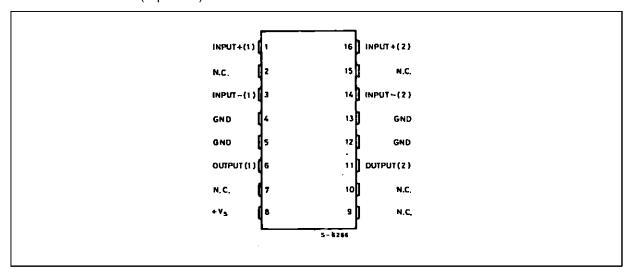
The TDA2822 is a monolithic integrated circuit in 12+2+2 powerdip, intended for use as dual audio power amplifier in portable radios and TS sets.

#### **TYPICAL APPLICATION CIRCUIT (STEREO)**

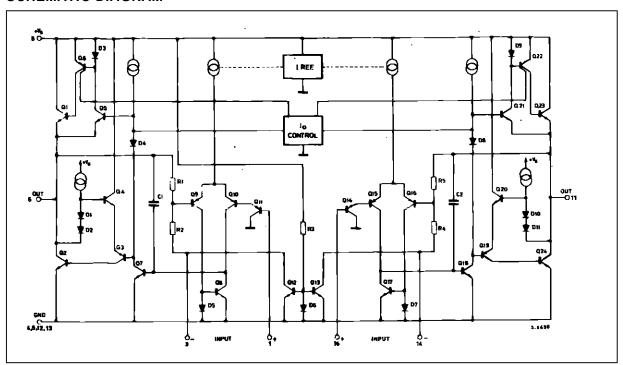


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#### PIN CONNECTION (top view)



#### **SCHEMATIC DIAGRAM**



#### **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
Vs	Supply Voltage	15	V
lo	Output Peak Current	1.5	Α
P <sub>tot</sub>	Total Power Dissipation at $T_{amb}$ = 50 °C at $T_{case}$ = 70 °C	1.25 4	W W
T <sub>stg</sub> , T <sub>j</sub>	Storage and Junction Temperature	- 40 to 150	°C



#### THERMAL DATA

Symbol	Parameter	Value	Unit
R <sub>th j-amb</sub>	Thermal Resistance Junction-ambient Max	80	°C/W
R <sub>th j-case</sub>	Thermal Resistance Junction-pins Max	20	°C/W

# **ELECTRICAL CHARACTERISTICS** (Vs = 6 V, $T_{amb}$ = 25 °C, unless otherwise specified) STEREO (test circuit of fig. 1)

Symbol	Parameter	Test Condition	Min.	Тур.	Max.	Unit
Vs	Supply Voltage		3		15	V
Vc	Quiescent Output Voltage	$V_s = 9 V$ $V_s = 6 V$		4 2.7		V V
I <sub>d</sub>	Quiescent Drain Current			6	12	mA
l <sub>b</sub>	Input Bias Current			100		nA
Po	Output Power (each channel)	$\begin{array}{lll} d = 10 \ \% & f = 1 \ \text{kHz} \\ V_s = 9 \ V & R_L = 4 \ \Omega \\ V_s = 6 \ V & R_L = 4 \ \Omega \\ V_s = 4.5 \ V & R_L = 4 \ \Omega \end{array}$	1.3 0.45	1.7 0.65 0.32		W W W
Gv	Closed Loop Voltage Gain	f = 1  kHz	36	39	41	dB
Ri	Input Resistance	f = 1  kHz	100			kΩ
<sup>e</sup> N	Total Input Noise	$R_s = 10 \text{ k}\Omega$ B = 22  Hz to  22  kHz Curve A		2.5 2		μV μV
SVR	Supply Voltage Rejection	f = 100 Hz	24	30		dB
CS	Channel Separation	$R_g = 10 \text{ k}\Omega \text{ f} = 1 \text{ kHz}$		50		dB

#### BRIDGE (test circuit of fig. 2)

Vs	Supply Voltage		3		15	V
$I_d$	Quiescent Drain Current	R <sub>L</sub> = ∞		6	12	mA
Vos	Output Offset Voltage	$R_L = 8 \Omega$		10	60	mV
I <sub>b</sub>	Input Bias Current			100		nA
Po	Output Power	$ d = 10 \%  f = 1 \text{ kHz} $ $ V_s = 9 \text{ V}  R_L = 8 \Omega $ $ V_s = 6 \text{ V}  R_L = 8 \Omega $ $ V_s = 4.5 \text{ V}  R_L = 4 \Omega $	2.7 0.9	3.2 1.35 1		W W W
d	Distortion (f = 1 kHz)	$R_L = 8 \Omega$ $P_o = 0.5 W$		0.2		%
G <sub>v</sub>	Closed Loop Voltage Gain	f = 1 kHz		39		dB
Ri	Input Resistance	f = 1 kHz	100			kΩ
<sup>e</sup> N	Total Input Noise	$R_s$ = 10 k $\Omega$ B = 22 Hz to 22 kHz Curve A		3 2.5		μV μV
SVR	Supply Voltage Rejection	f = 100 Hz		40		dB

Figure 1: Test Circuit (stereo).

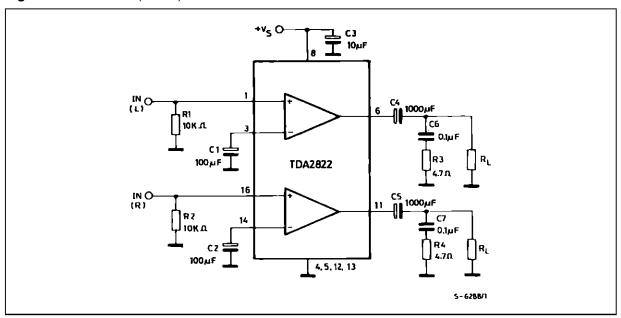


Figure 2: P.C. Board and Components Layout of the Circuit of Figure 1 (1:1 scale).

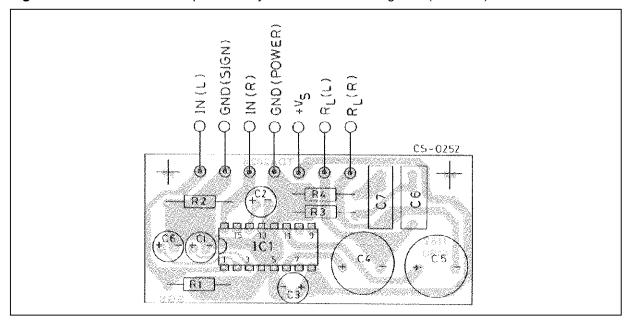


Figure 3: Test Circuit (bridge).

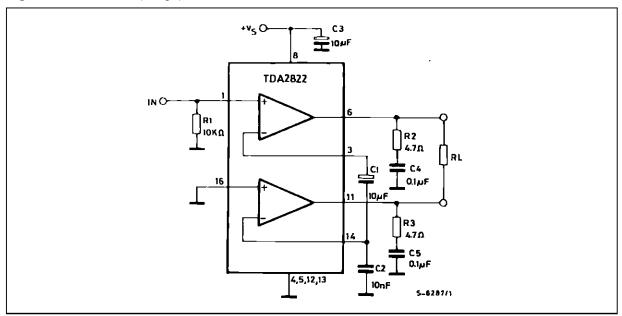
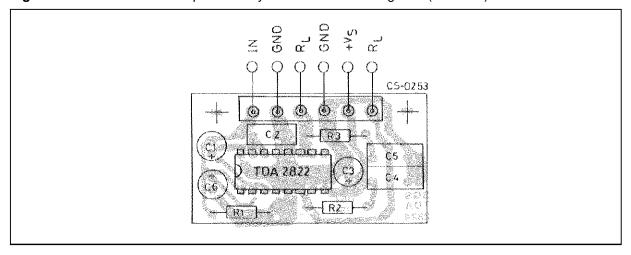
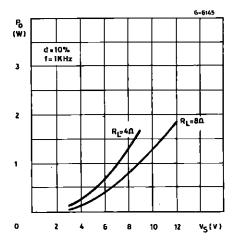


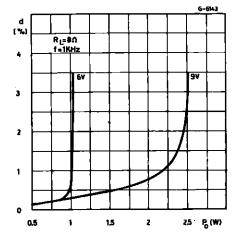
Figure 4: P.C. Board and Components Layout of the Circuit of Figure 3 (1:1 scale).



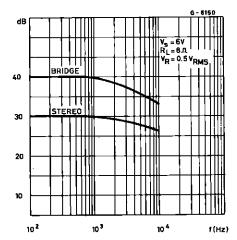
**Figure 5 :** Output Power vs. Supply Voltage (Stereo).



**Figure 7 :** Distorsion vs. Output Power (Bridge).



**Figure 9 :** Supply Voltage Rejection vs. Frequency.



**Figure 6 :** Output Power vs. Supply Voltage (Bridge).

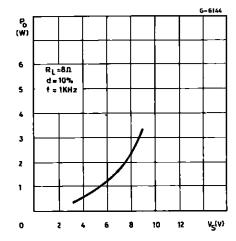


Figure 8: Distorsion vs. Output Power (Bridge).

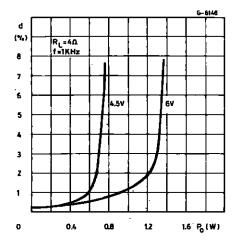
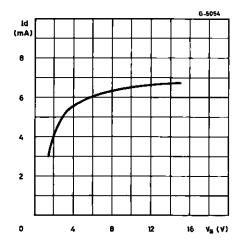
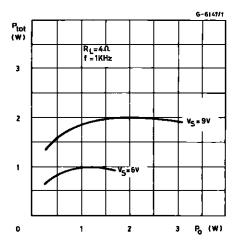


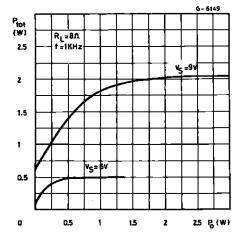
Figure 10: Quiescent Current vs. Supply Voltage.



**Figure 11 :** Total Power Dissipation vs. Output Power (Stereo).



**Figure 13 :** Total Power Dissipation vs. Output Power (Bridge).



**Figure 12 :** Total Power Dissipation vs. Output Power (Bridge).

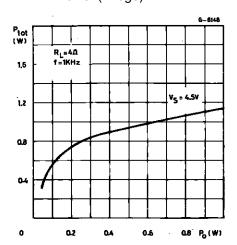
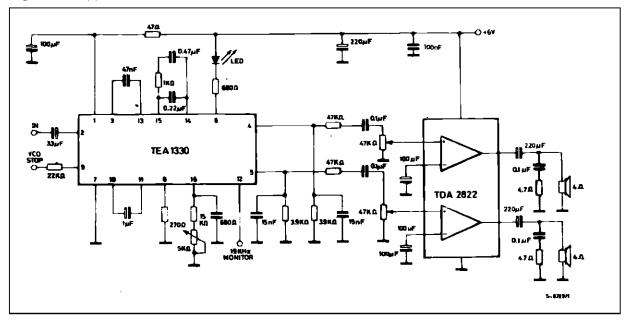


Figure 14: Application Circuit for Portable Radios.

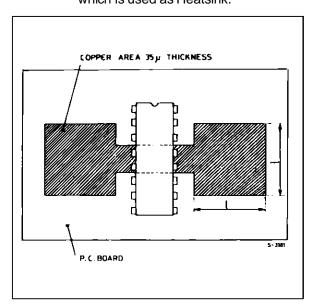


#### MOUNTING INSTRUCTION

The  $R_{th\,j-amb}$  of the TDA2822 can be reduced by soldering the GND pins to a suitable copper area of the printed circuit board (Figure 15) or to an external heatsink (Figure 16).

The diagram of Figure 17 shows the maximum dissipable power  $P_{tot}$  and the  $R_{th\ j-amb}$  as a function of the side " $\partial$ " of two equal square copper areas having a thickness of  $35\,\mu$  (1.4 mils).

Figure 15: Example of P.C. Board Copper Area which is used as Heatsink.



During soldering the pins temperature must not exceed 260  $^{\circ}$ C and the soldering time must not be longer than 12 seconds.

The external heatsink or printed circuit copper area must be connected to electrical ground.

Figure 16: External Heatsink Mounting Example.

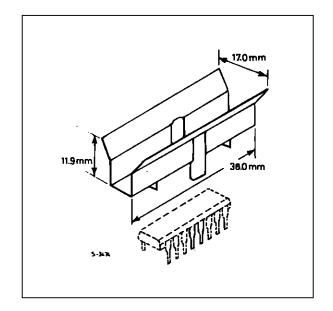


Figure 6: Maximum Dissipable Power and Junction to Ambient Thermal Resistance vs. Side "\u00e3".

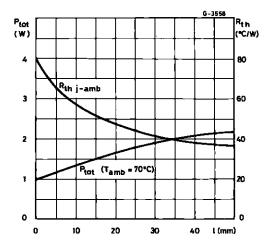
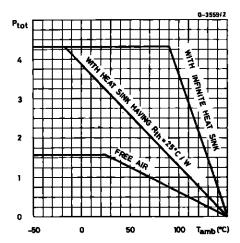
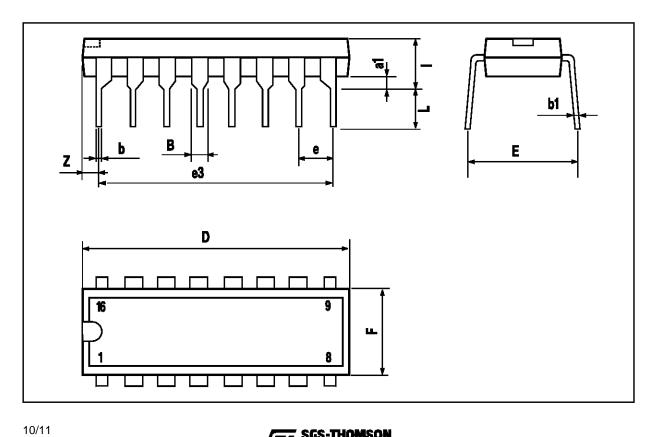


Figure 7: Maximum Allowable Power Dissipation vs. Ambient Temperature.



#### **POWERDIP 16 PACKAGE MECHANICAL DATA**

DIM.	mm			inch			
Diwi.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
a1	0.51			0.020			
В	0.85		1.40	0.033		0.055	
b		0.50			0.020		
b1	0.38		0.50	0.015		0.020	
D			20.0			0.787	
E		8.80			0.346		
е		2.54			0.100		
e3		17.78			0.700		
F			7.10			0.280	
I			5.10			0.201	
L	_	3.30			0.130		
Z			1.27			0.050	



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