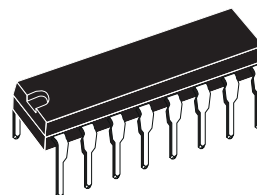


## DUAL POWER AMPLIFIER

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



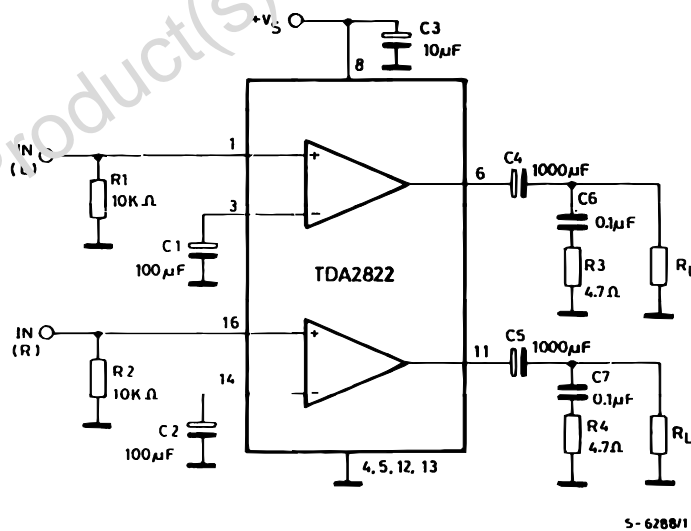
**POWERDIP**  
(Plastic 12+2+2)

ORDERING NUMBER : TL 42322

### DESCRIPTION

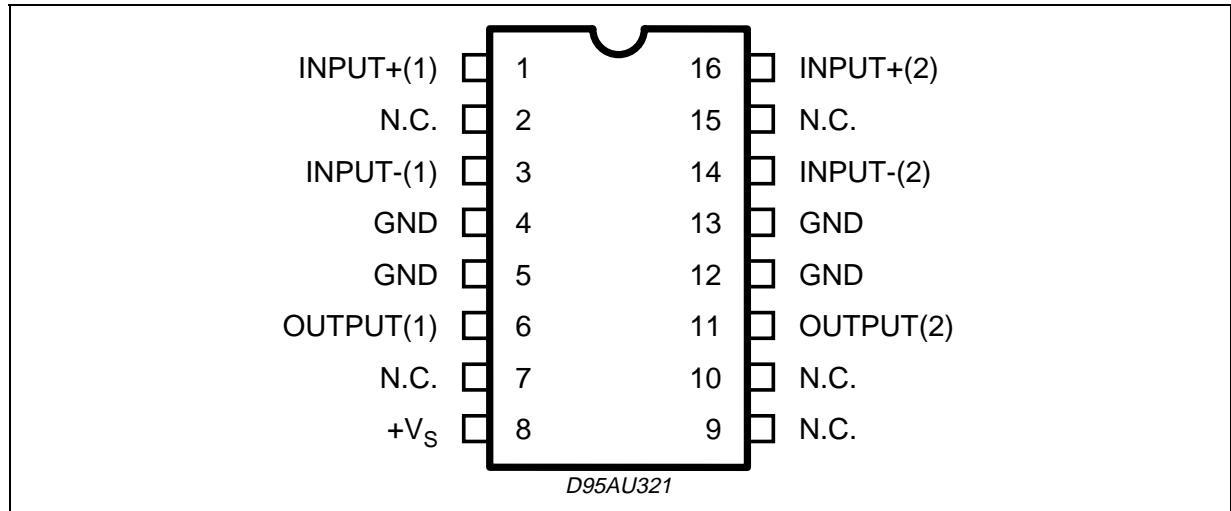
The TDA2822 is a monolithic integrated circuit in 12+2+2 powerdip, intended for use as dual audio power amplifier in portable radios and TS sets.

### TYPICAL APPLICATION CIRCUIT (STEREO)

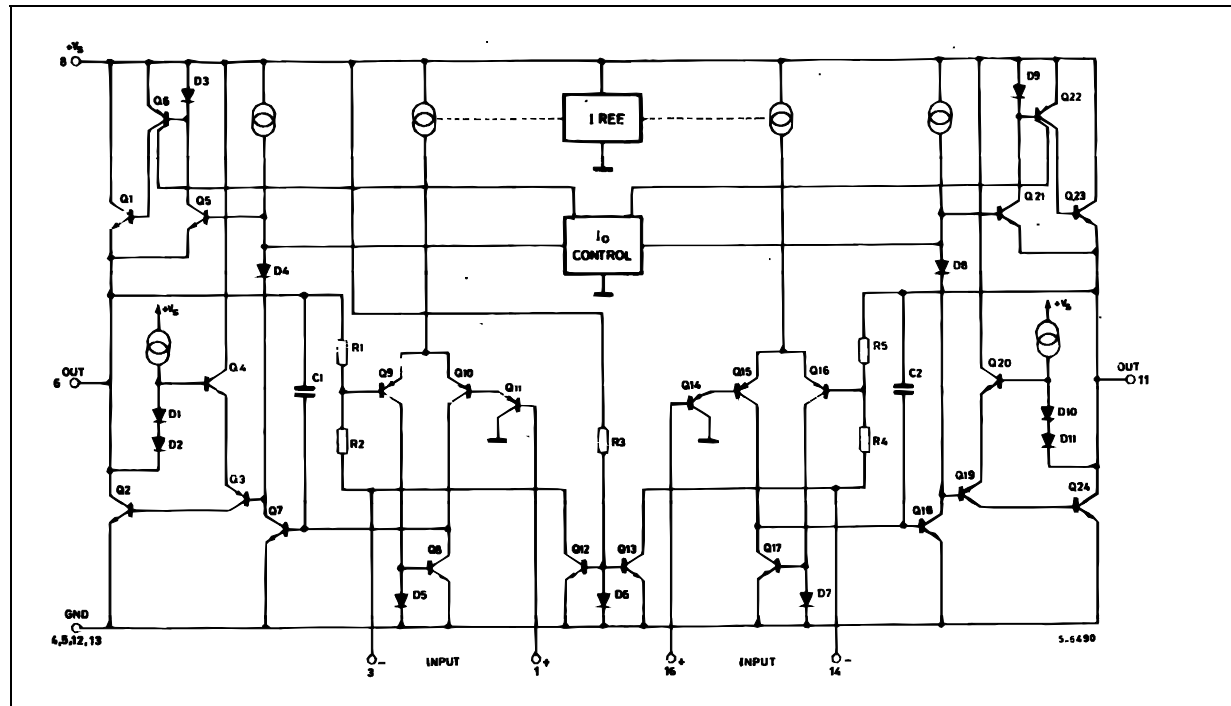


## TDA2822

### PIN CONNECTION (top view)



### SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_s$	Supply Voltage	15	V
$I_o$	Output Peak Current	1.5	A
$P_{tot}$	Total Power Dissipation at $T_{amb} = 50\text{ }^{\circ}\text{C}$ at $T_{case} = 70\text{ }^{\circ}\text{C}$	1.25 4	W W
$T_{stg}, T_j$	Storage and Junction Temperature	- 40 to 150	$^{\circ}\text{C}$

## THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	80	$^{\circ}\text{C/W}$
$R_{th\ j-case}$	Thermal Resistance Junction-pins	20	$^{\circ}\text{C/W}$

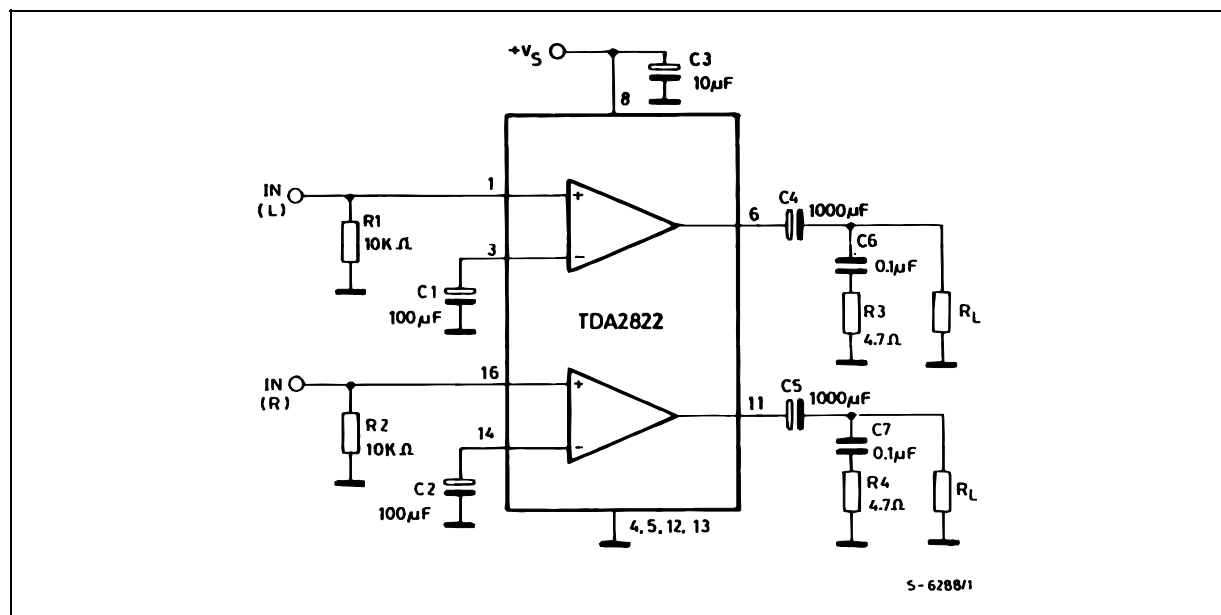
**ELECTRICAL CHARACTERISTICS** ( $V_s = 6\text{ V}$ ,  $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
 STEREO (test circuit of fig. 1)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_s$	Supply Voltage		3		15	V
$V_c$	Quiescent Output Voltage	$V_s = 9\text{ V}$ $V_s = 6\text{ V}$		4 2.7		V V
$I_d$	Quiescent Drain Current			6	12	mA
$I_b$	Input Bias Current			100		nA
$P_o$	Output Power (each channel)	$d = 10\%$ $f = 1\text{ kHz}$ $V_s = 9\text{ V}$ $R_L = 4\ \Omega$ $V_s = 6\text{ V}$ $R_L = 4\ \Omega$ $V_s = 4.5\text{ V}$ $R_L = 4\ \Omega$	1.3 0.45	1.7 0.65 0.32		W W W
$G_v$	Closed Loop Voltage Gain	$f = 1\text{ kHz}$	36	39	41	dB
$R_i$	Input Resistance	$f = 1\text{ kHz}$	100			$\text{k}\Omega$
$e_N$	Total Input Noise	$R_s = 10\text{ k}\Omega$ $B = 22\text{ Hz to }22\text{ kHz}$ Curve A		2.5 2		$\mu\text{V}$ $\mu\text{V}$
SVR	Supply Voltage Rejection	$f = 100\text{ Hz}$	24	30		dB
CS	Channel Separation	$R_g = 10\text{ k}\Omega$ $f = 1\text{ kHz}$		50		dB

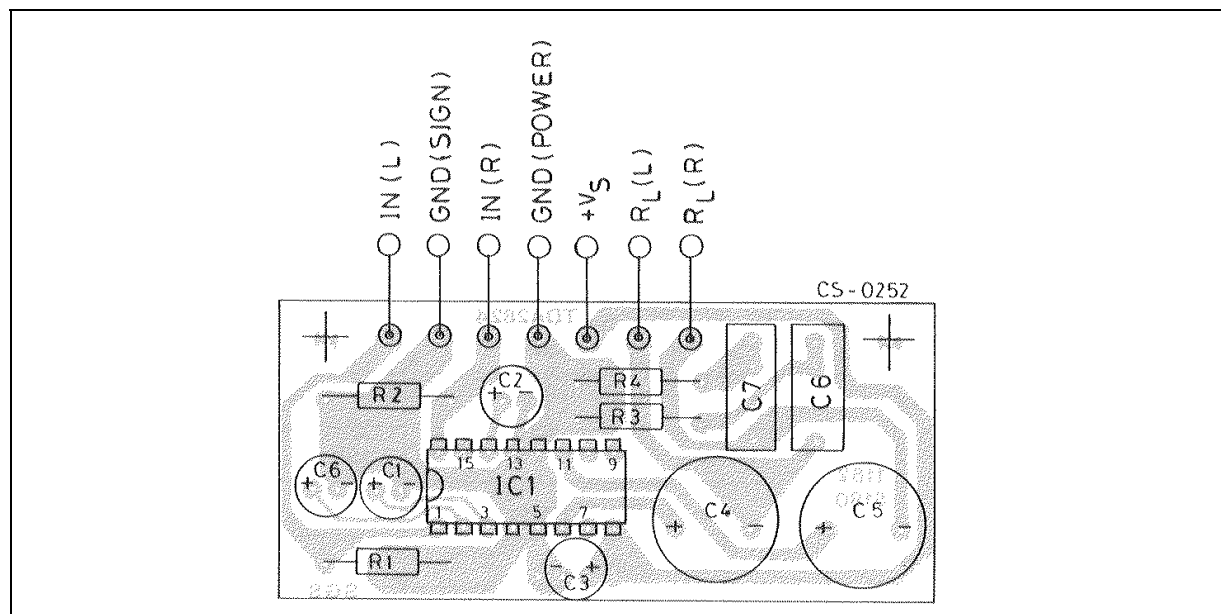
$V_s$	Supply Voltage		3		15	V
$I_d$	Quiescent Drain Current	$R_L = \infty$		6	12	mA
$V_{os}$	Output Offset Voltage	$R_L = 8\ \Omega$		10	60	mV
$I_b$	Input Bias Current			100		nA
$P_o$	Output Power	$d = 10\%$ $f = 1\text{ kHz}$ $V_s = 9\text{ V}$ $R_L = 8\ \Omega$ $V_s = 6\text{ V}$ $R_L = 8\ \Omega$ $V_s = 4.5\text{ V}$ $R_L = 4\ \Omega$	2.7 0.9	3.2 1.35 1		W W W
$d$	Distortion ( $f = 1\text{ kHz}$ )	$R_L = 8\ \Omega$ $P_o = 0.5\text{ W}$		0.2		%
$G_v$	Closed Loop Voltage Gain	$f = 1\text{ kHz}$		39		dB
$R_i$	Input Resistance	$f = 1\text{ kHz}$	100			$\text{k}\Omega$
$e_N$	Total Input Noise	$R_s = 10\text{ k}\Omega$ $B = 22\text{ Hz to }22\text{ kHz}$ Curve A		3 2.5		$\mu\text{V}$ $\mu\text{V}$
SVR	Supply Voltage Rejection	$f = 100\text{ Hz}$		40		dB

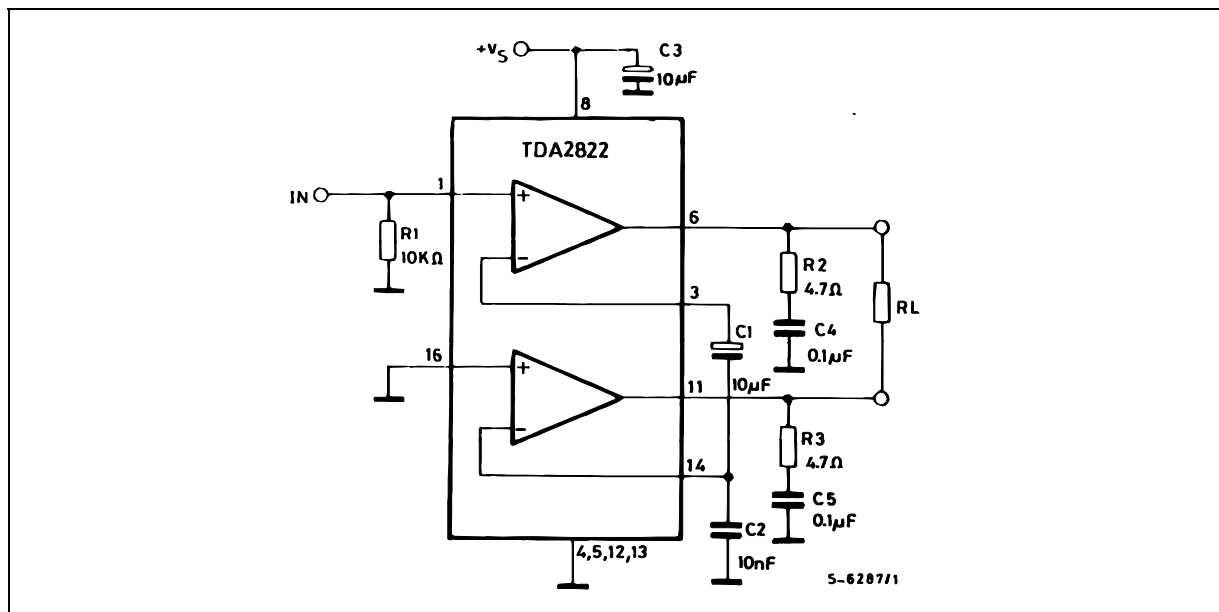
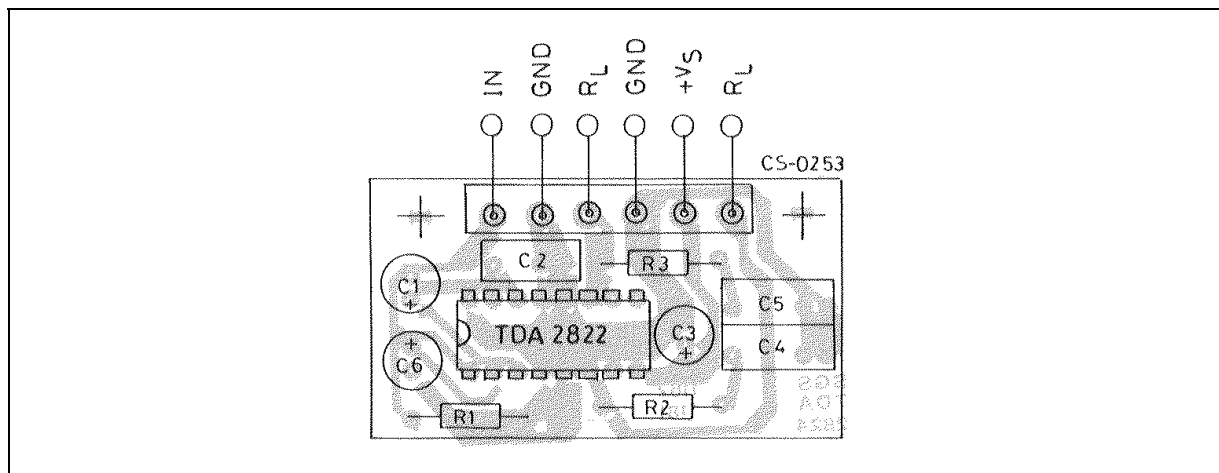
## TDA2822

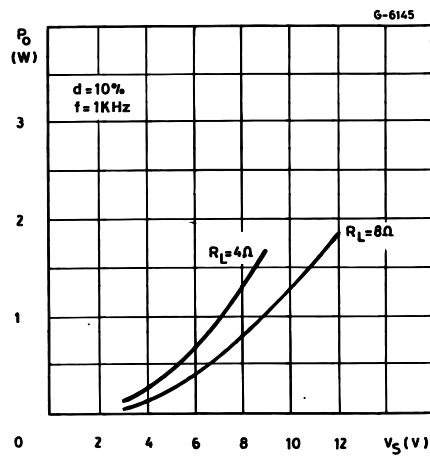
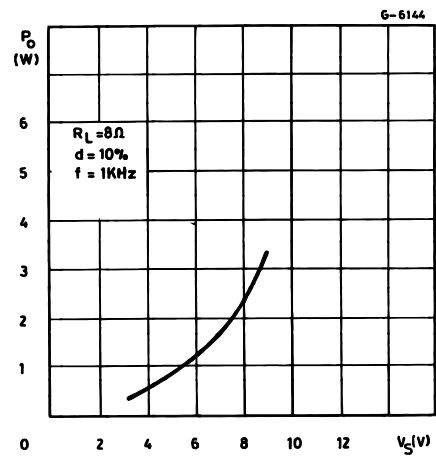
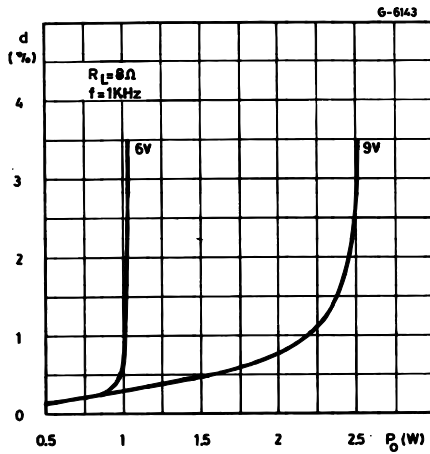
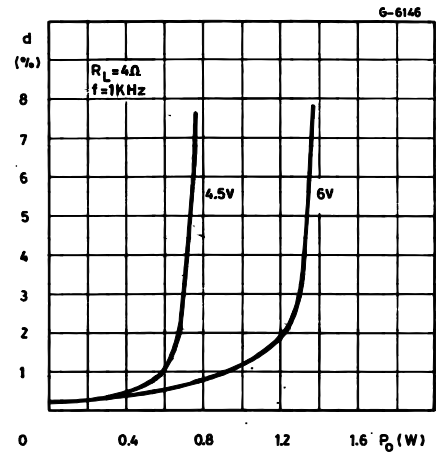
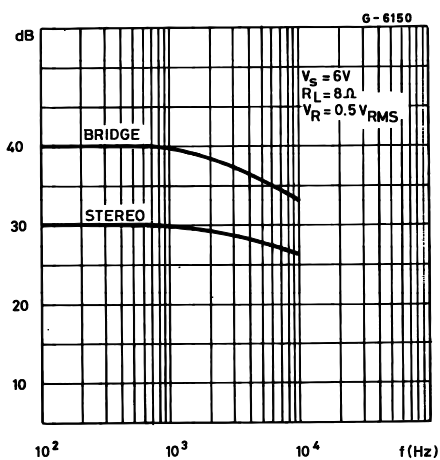
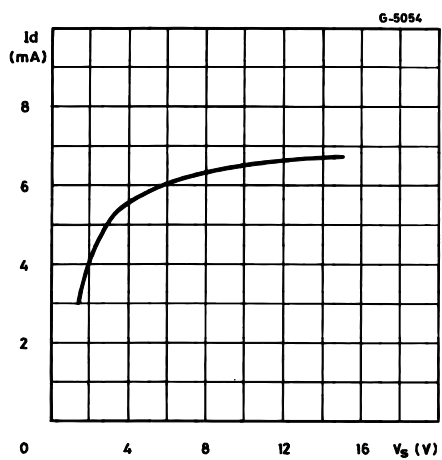
**Figure 1** : Test Circuit (stereo).



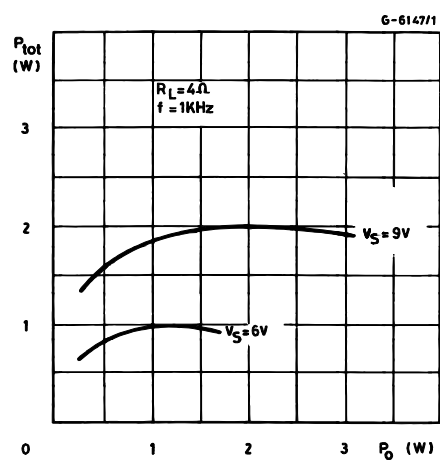
**Figure 2** : P.C. Board and Components Layout of the Circuit of Figure 1 (1:1 scale).



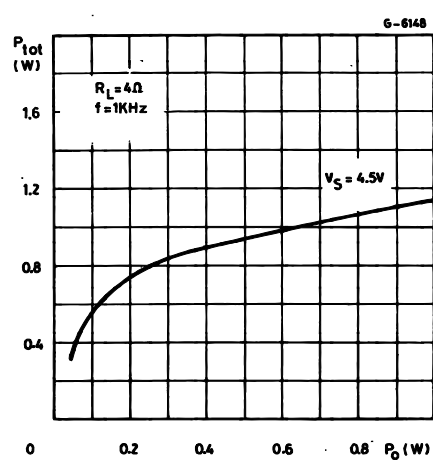
**Figure 3 :** Test Circuit (bridge).**Figure 4 :** P.C. Board and Components Layout of the Circuit of Figure 3 (1:1 scale).

**Figure 5** : Output Power vs. Supply Voltage (Stereo).**Figure 6** : Output Power vs. Supply Voltage (Bridge).**Figure 7** : Distorsion vs. Output Power (Bridge).**Figure 8** : Distorsion vs. Output Power (Bridge).**Figure 9** : Supply Voltage Rejection vs. Frequency.**Figure 10** : Quiescent Current vs. Supply Voltage.

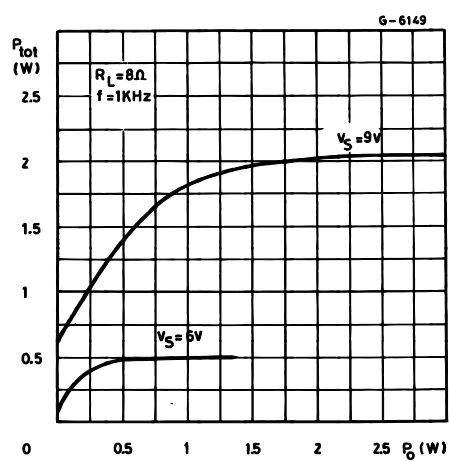
**Figure 11 :** Total Power Dissipation vs. Output Power (Stereo).



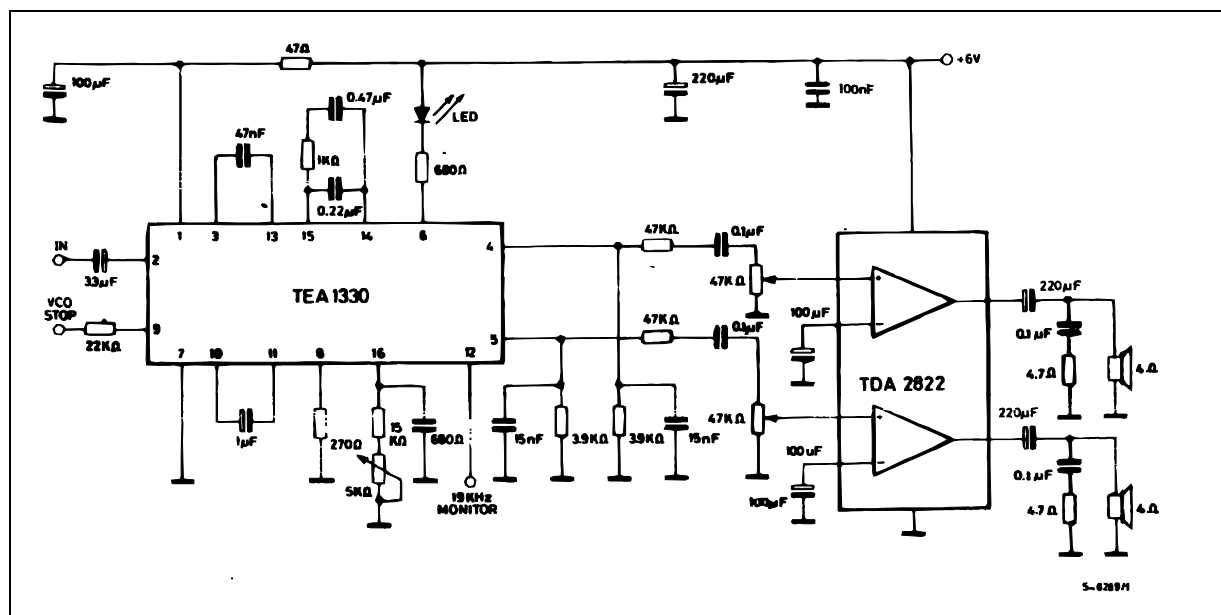
**Figure 12 :** Total Power Dissipation vs. Output Power (Bridge).



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



**Figure 14 : Application Circuit for Portable Radios.**

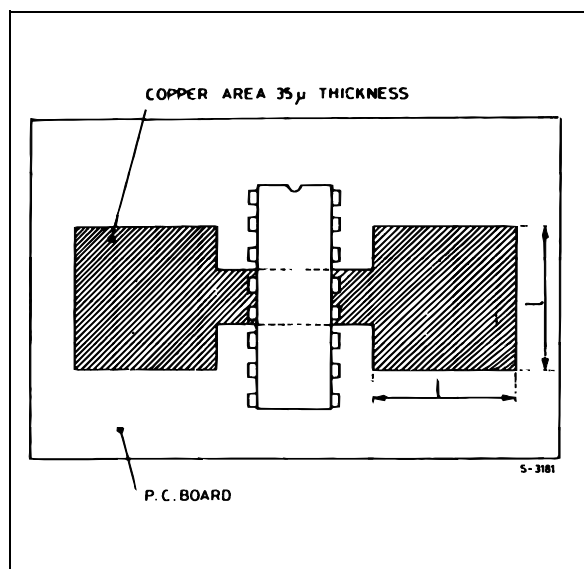


## MOUNTING INSTRUCTION

The  $R_{thj-amb}$  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 dissipated power  $P_{\text{tot}}$  and the  $R_{\text{th j-amb}}$  as a function of the side "a" of two equal square copper areas having a thickness of 35  $\mu$  (1.4 mils).

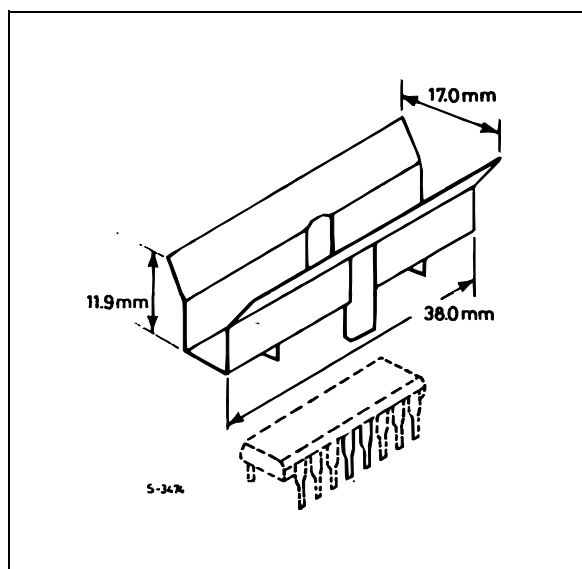
**Figure 15 :** Example of P.C. Board Copper Area which is used as Heatsink.



During soldering the pins temperature must not exceed 260 °C and the soldering time must not be longer than 12 seconds.

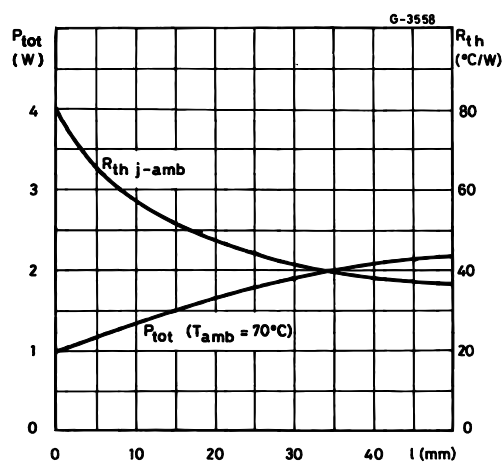
The external heatsink or printed circuit copper area must be connected to electrical ground.

**Figure 16 : External Heatsink Mounting Example.**

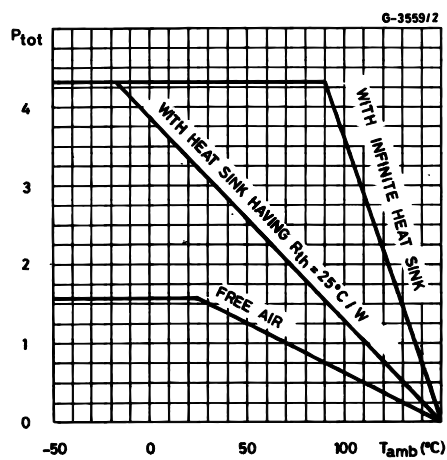




**Figure 6 :** Maximum Dissipable Power and Junction to Ambient Thermal Resistance vs. Side "D".

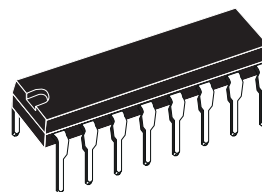


**Figure 7 :** Maximum Allowable Power Dissipation vs. Ambient Temperature.

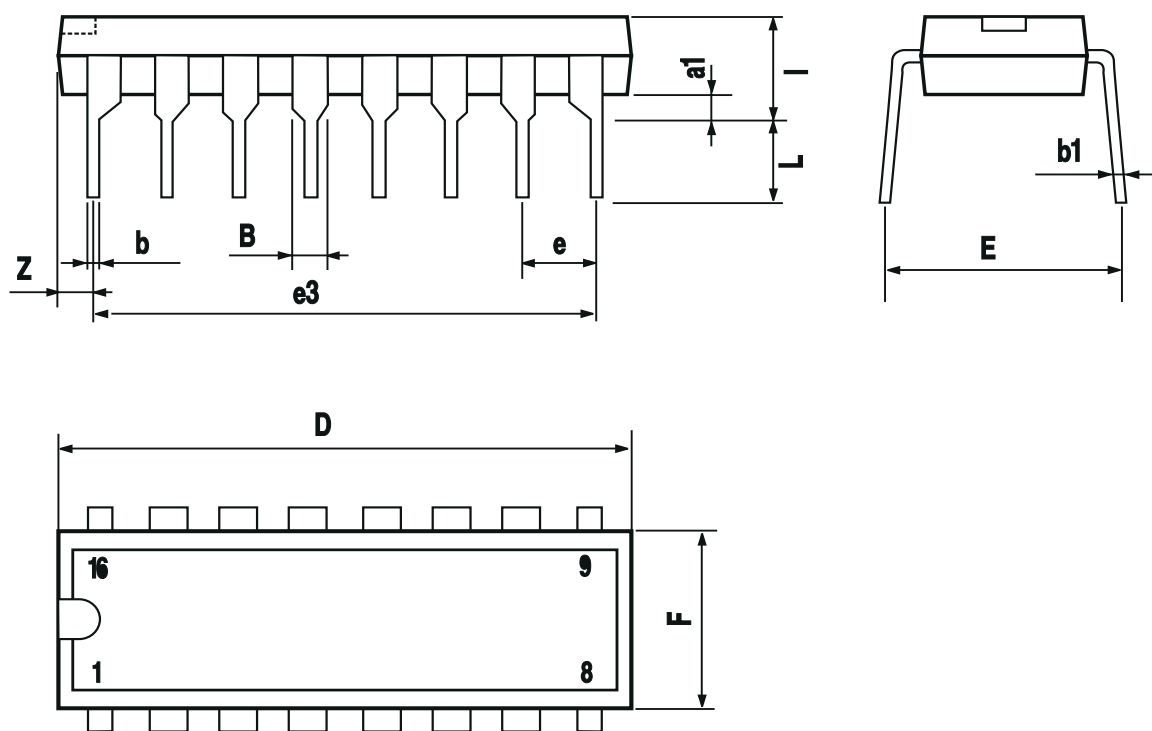


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	0.85		1.40	0.033		0.055
b		0.50			0.020	
b1	0.38		0.50	0.015		0.020
D			20.0			0.787
E		8.80			0.346	
e		2.54			0.100	
e3		17.78			0.700	
F			7.10			0.280
I			5.10			0.201
L		3.30			0.130	
Z			1.27			0.050

## OUTLINE AND MECHANICAL DATA



**Powerdip 16**



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