



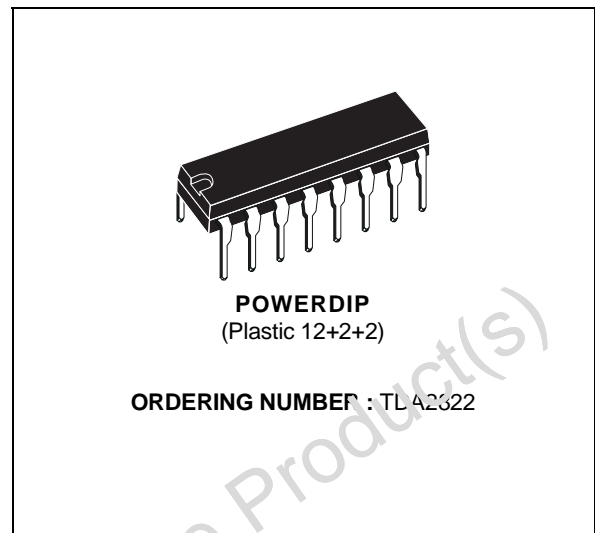
# TDA2822

## DUAL POWER AMPLIFIER

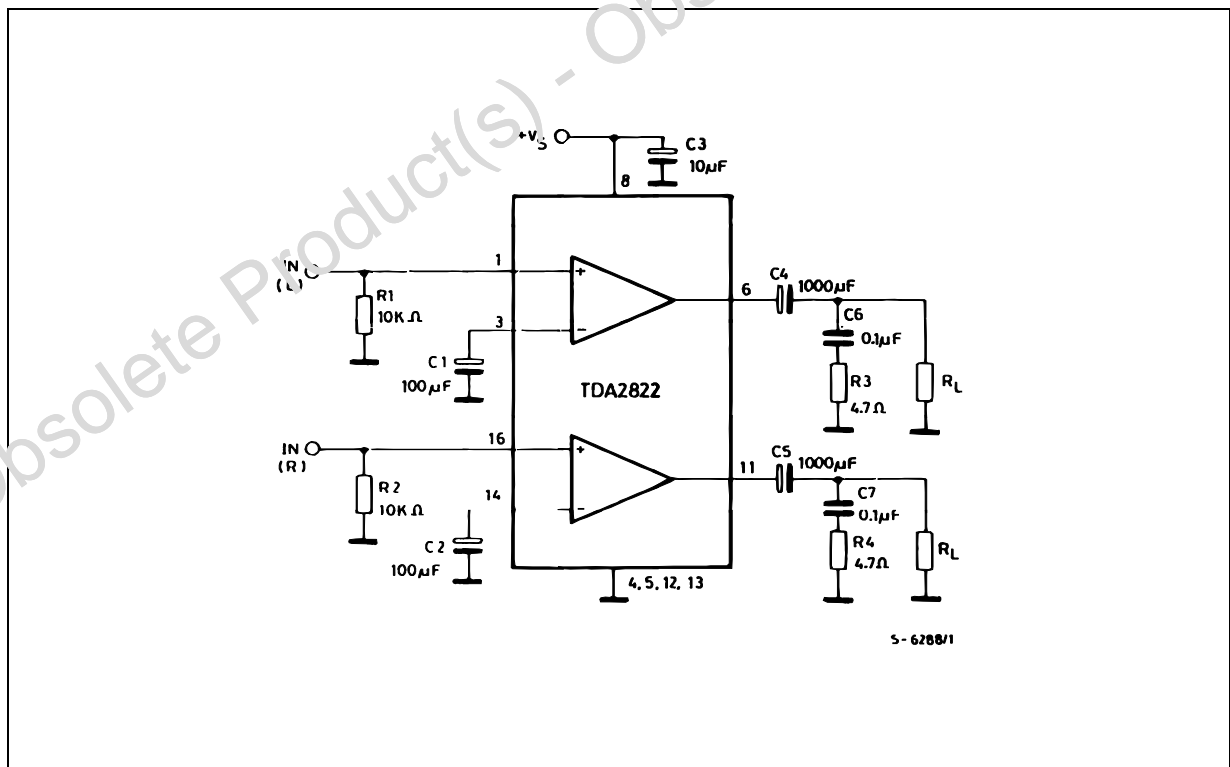
- SUPPLY VOLTAGE DOWN TO 3 V
- LOW CROSSOVER DISTORSION
- LOW QUIESCENT CURRENT
- BRIDGE OR STEREO CONFIGURATION

### 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.

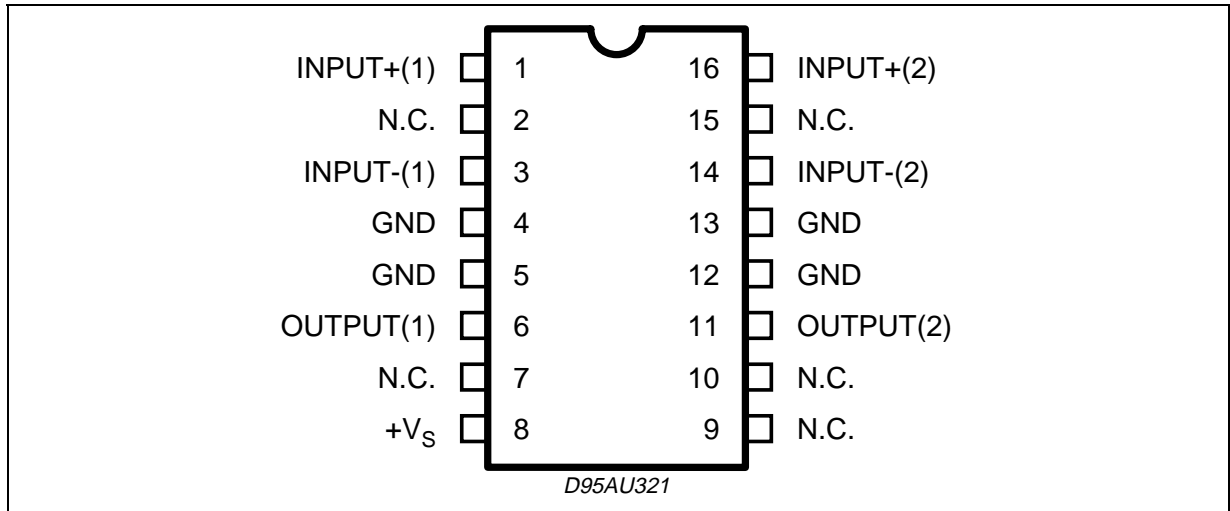


### TYPICAL APPLICATION CIRCUIT (STEREO)

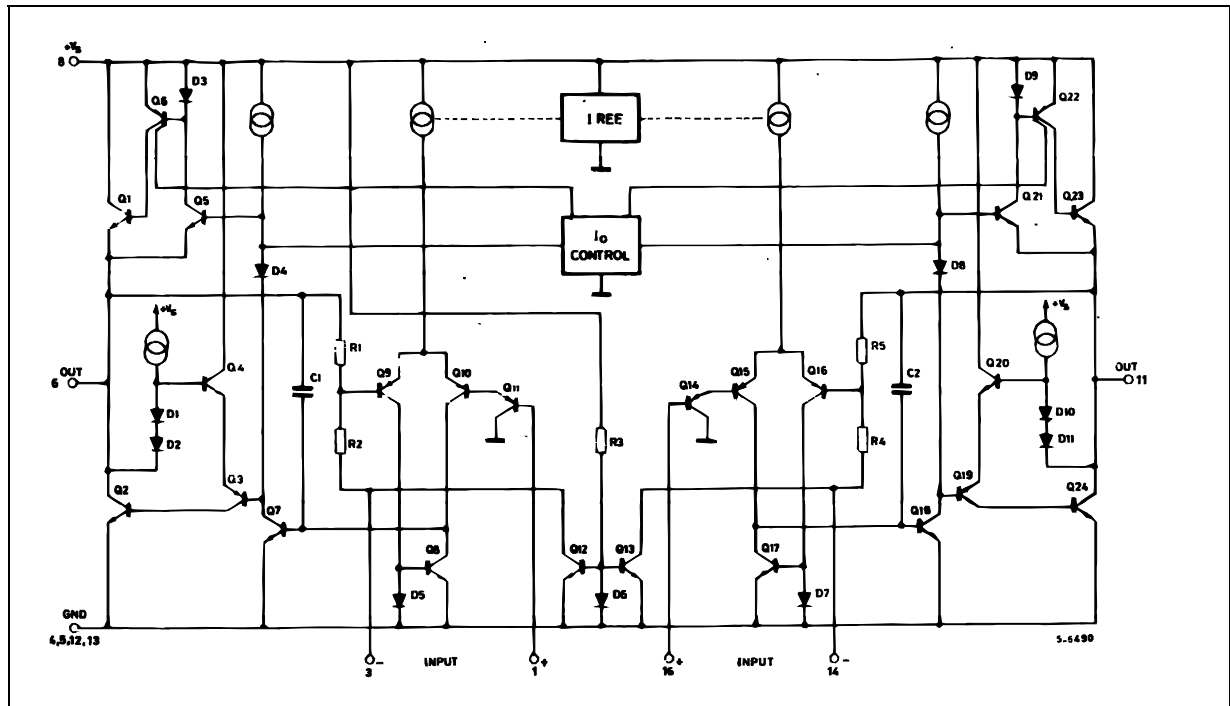


# TDA2822

## 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	Max	80 °C/W
$R_{th\ j-case}$	Thermal Resistance Junction-pins	Max	20 °C/W

**ELECTRICAL CHARACTERISTICS** ( $V_s = 6\text{ V}$ ,  $T_{amb} = 25\text{ °C}$ , 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			k $\Omega$
$^eN$	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			k $\Omega$
$^eN$	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).

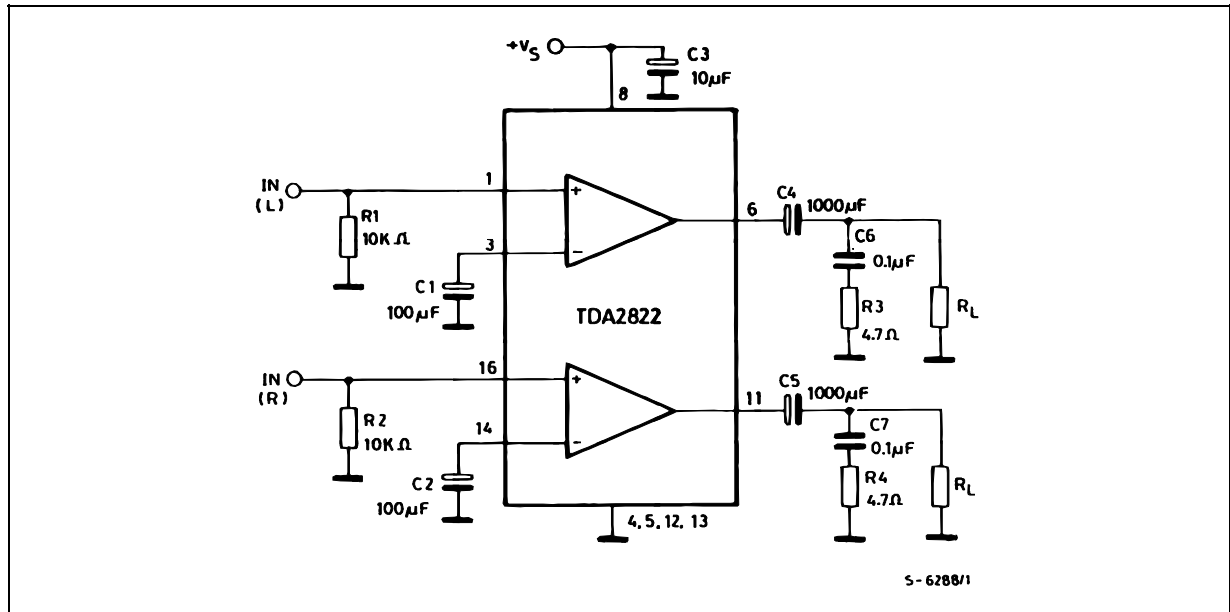


Figure 2 : P.C. Board and Components Layout of the Circuit of Figure 1 (1:1 scale).

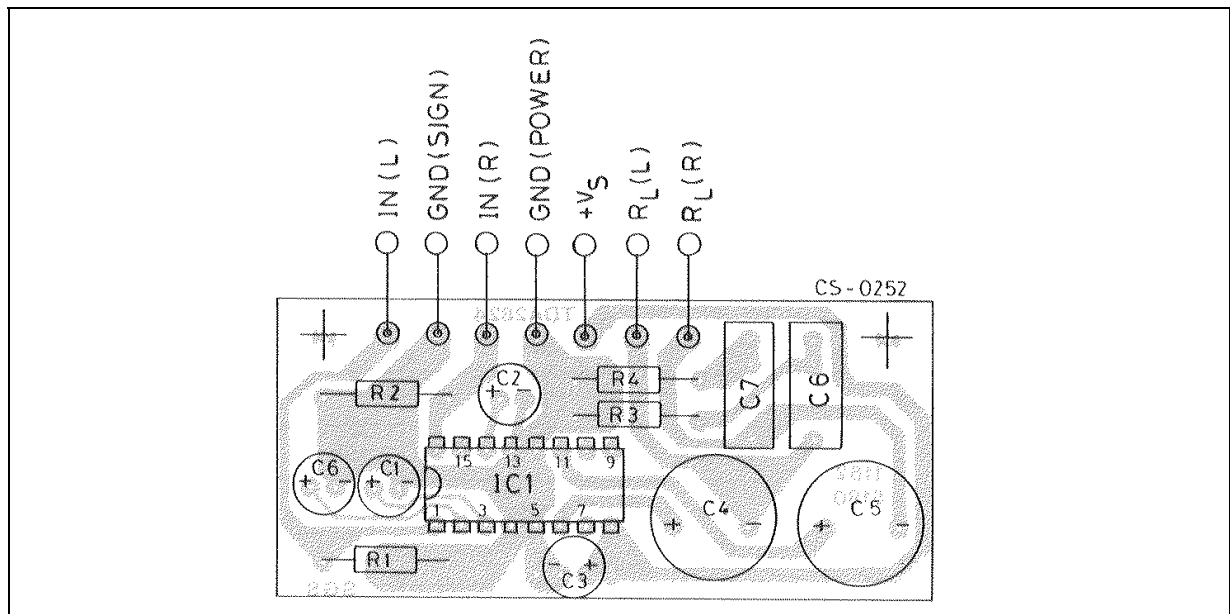


Figure 3 : Test Circuit (bridge).

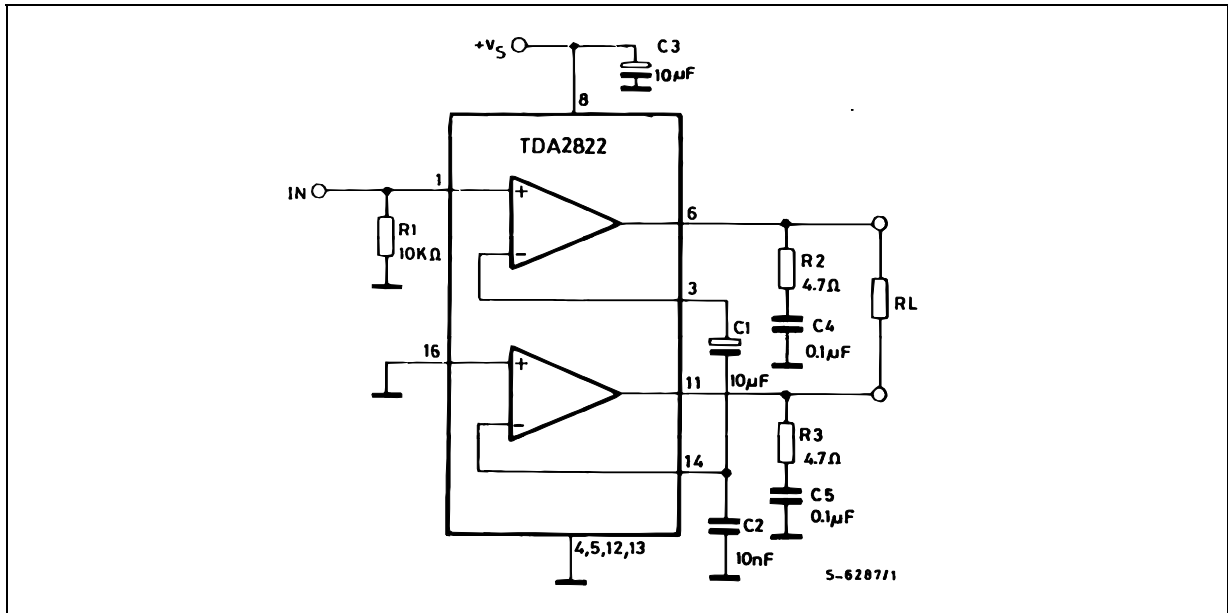


Figure 4 : P.C. Board and Components Layout of the Circuit of Figure 3 (1:1 scale).

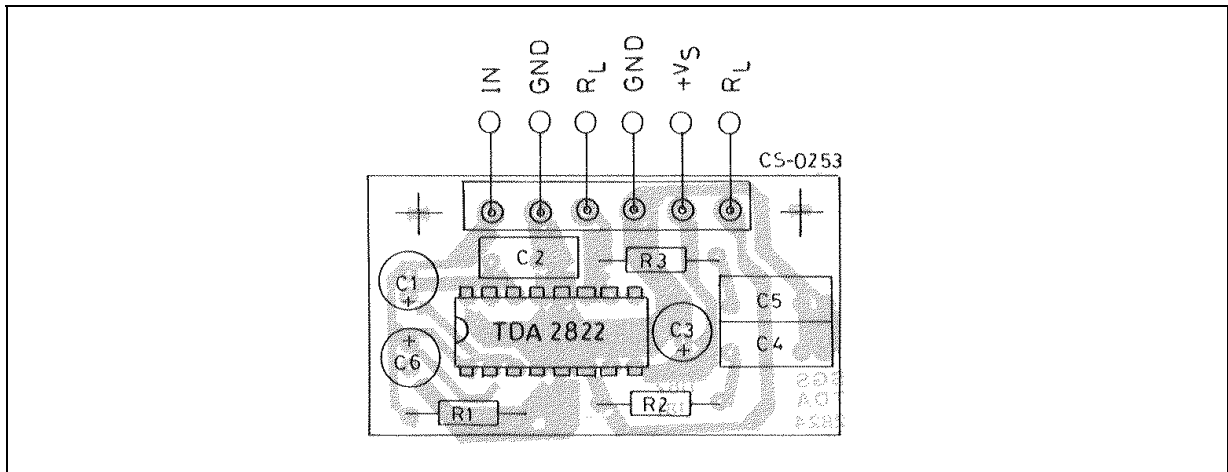


Figure 5 : Output Power vs. Supply Voltage (Stereo).

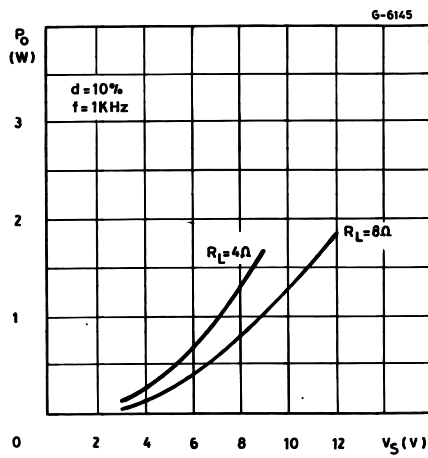


Figure 6 : Output Power vs. Supply Voltage (Bridge).

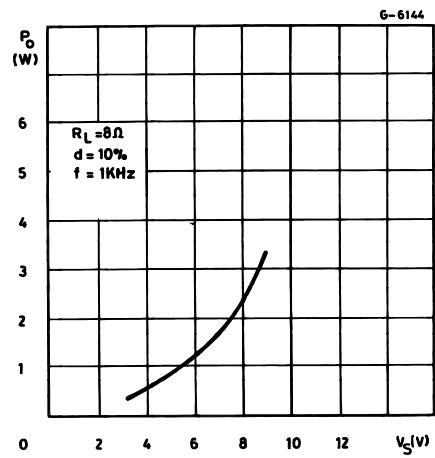


Figure 7 : Distorsion vs. Output Power (Bridge).

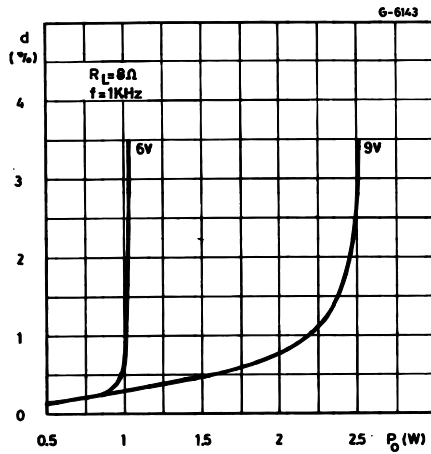


Figure 8 : Distorsion vs. Output Power (Bridge).

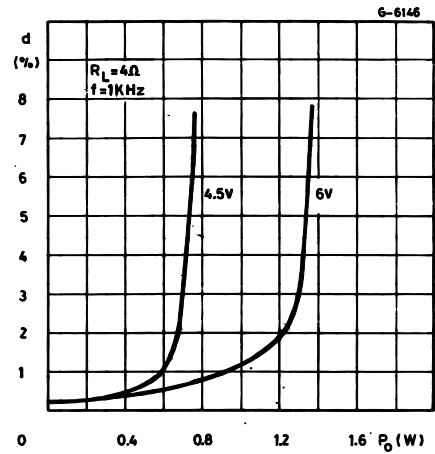


Figure 9 : Supply Voltage Rejection vs. Frequency.

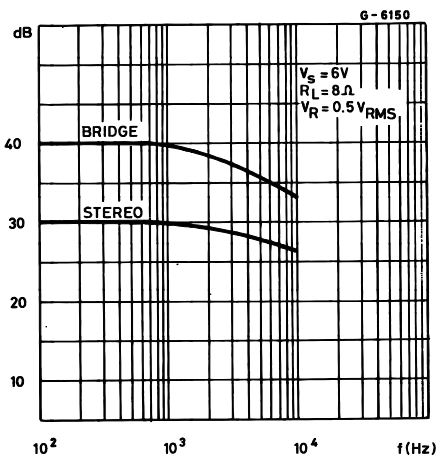
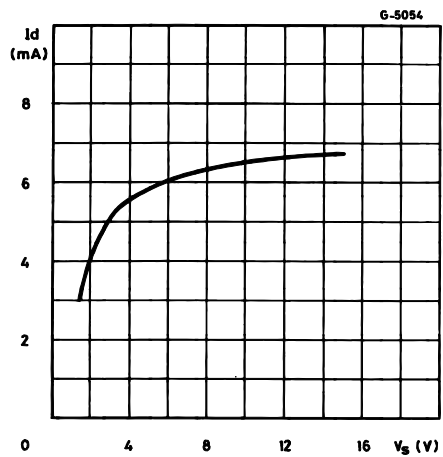
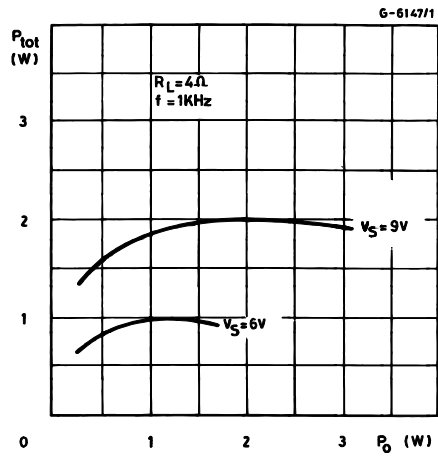


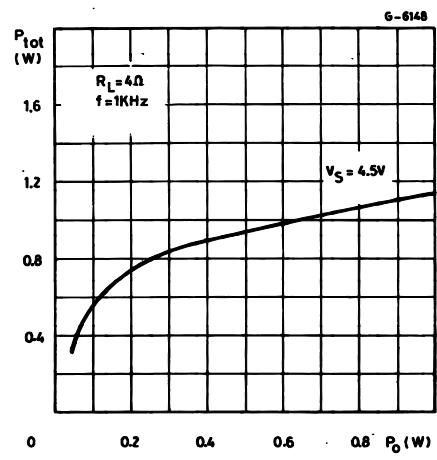
Figure 10 : Quiescent Current vs. Supply Voltage.



**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).

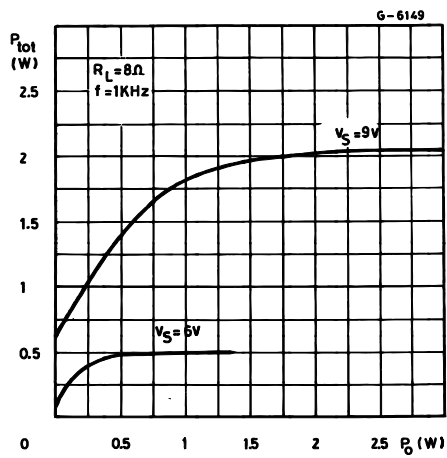
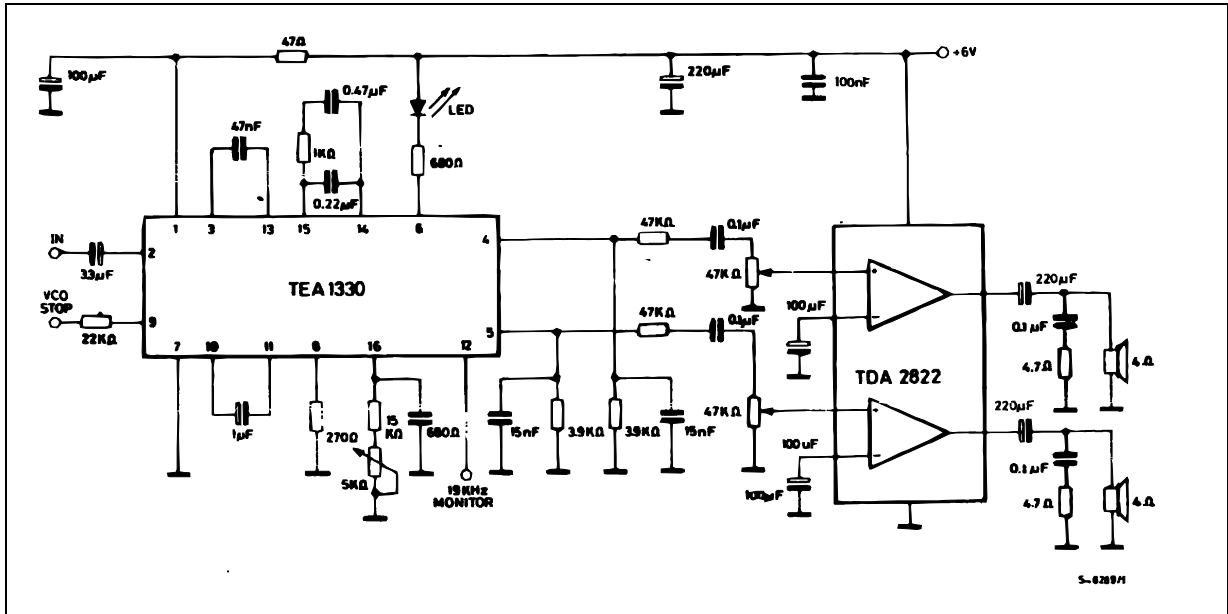


Figure 14 : Application Circuit for Portable Radios.

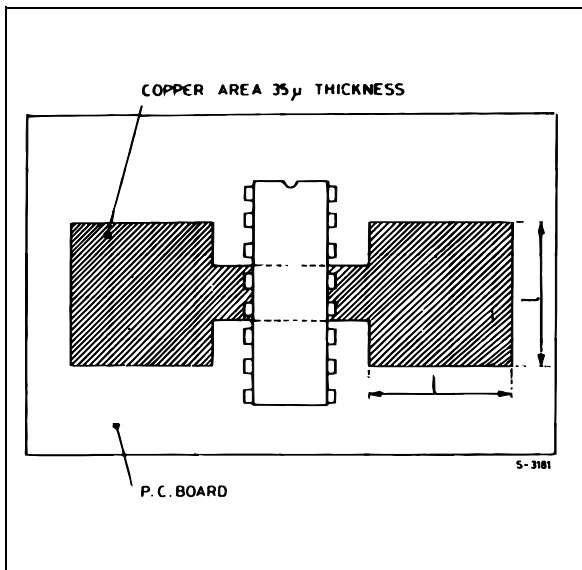


**MOUNTING INSTRUCTION**

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 dissipable power  $P_{tot}$  and the  $R_{thj-amb}$  as a function of the side "d" of two equal square copper areas having a thickness of 35 µ (1.4 mils).

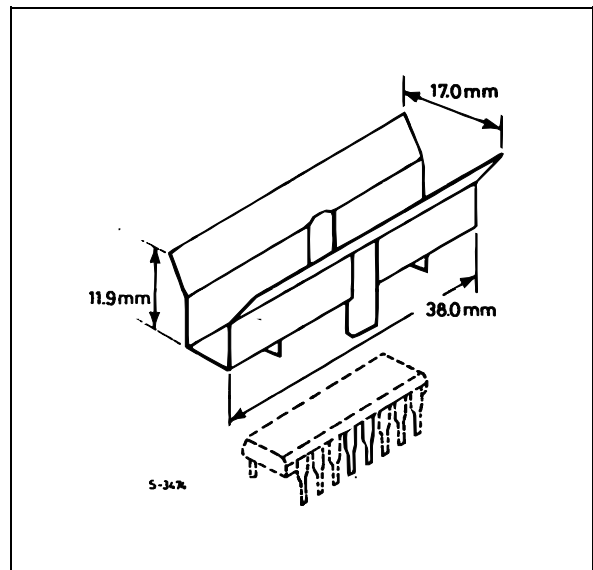
Figure 15 : Example of P.C. Board Copper Area which is used as Heatsink.



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

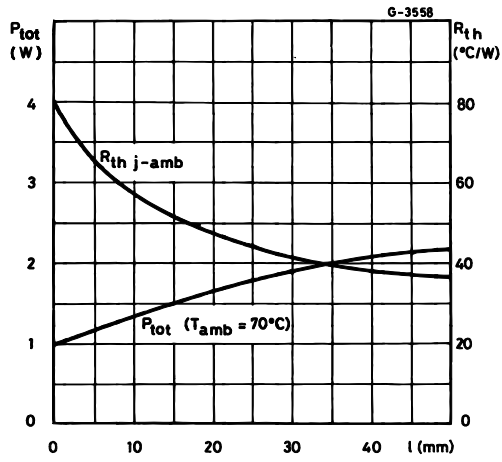
The external heatsink or printed circuit copper area must be connected to electrical ground.

Figure 16 : External Heatsink Mounting Example.

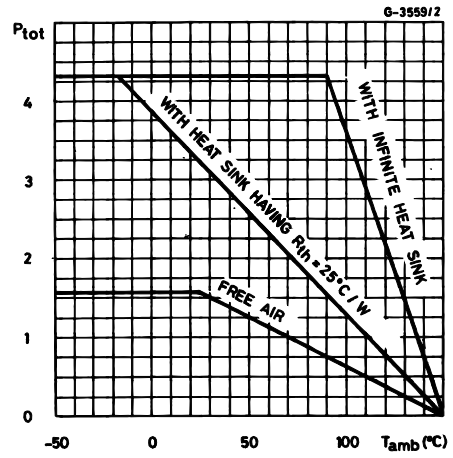




**Figure 6** : Maximum Dissipable Power and Junction to Ambient Thermal Resistance vs. Side "ø".

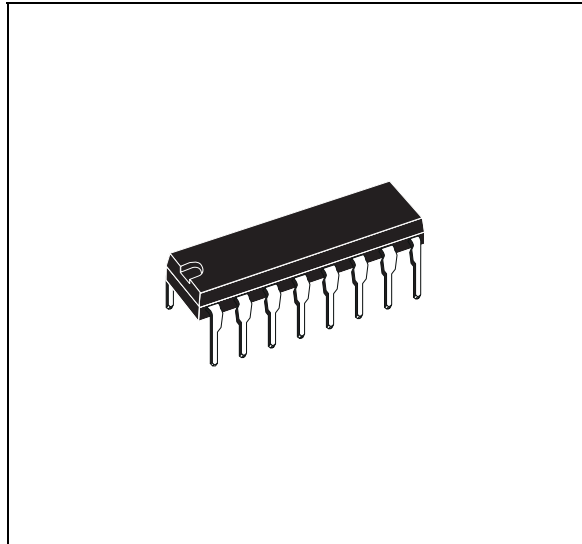


**Figure 7** : Maximum Allowable Power Dissipation vs. Ambient Temperature.

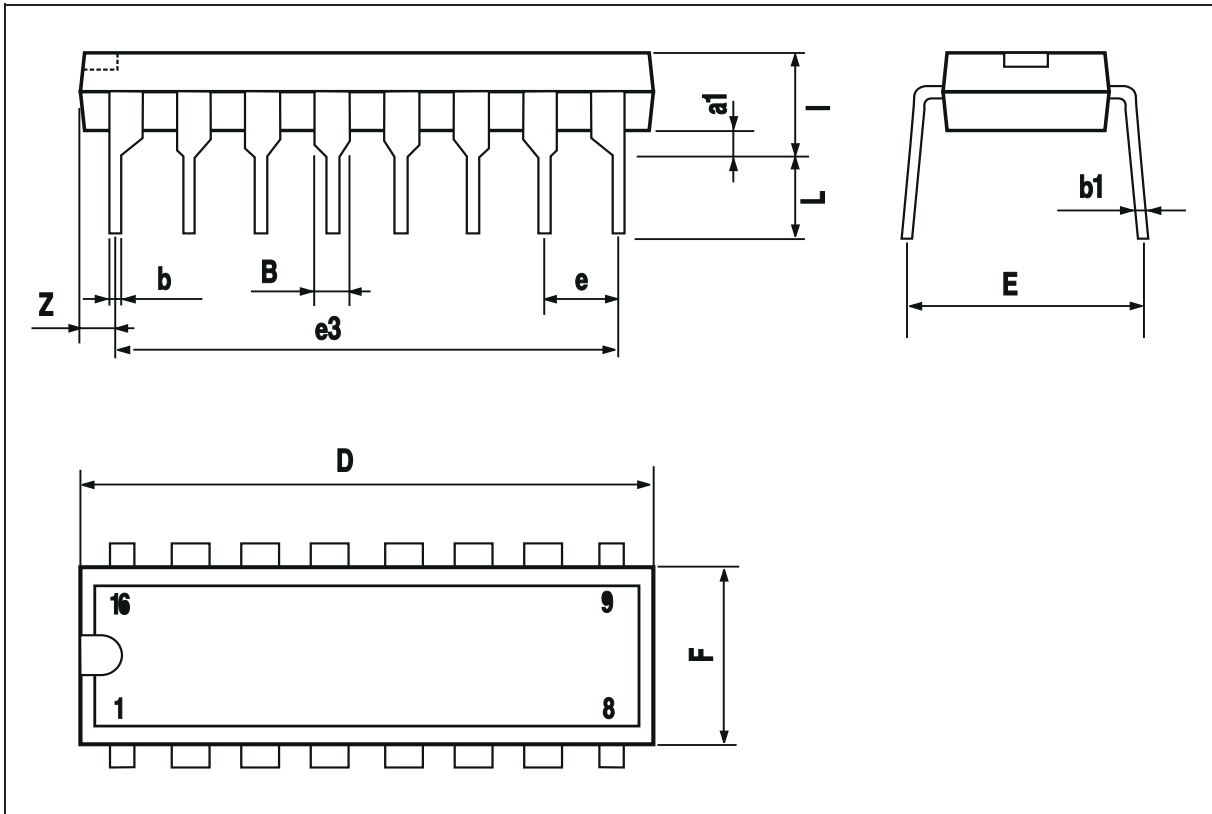


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	0.85		1.40	0.033		0.055
b		0.50			0.020	
b1	0.38		0.50	0.015		0.020
D			20.0			0.787
E		8.80			0.346	
e		2.54			0.100	
e3		17.78			0.700	
F			7.10			0.280
I			5.10			0.201
L		3.30			0.130	
Z			1.27			0.050

**OUTLINE AND MECHANICAL DATA**



**Powerdip 16**



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