



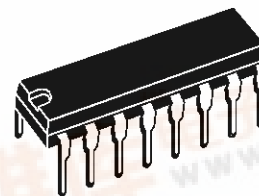
TDA2822

DUAL POWER AMPLIFIER

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

DESCRIPTION

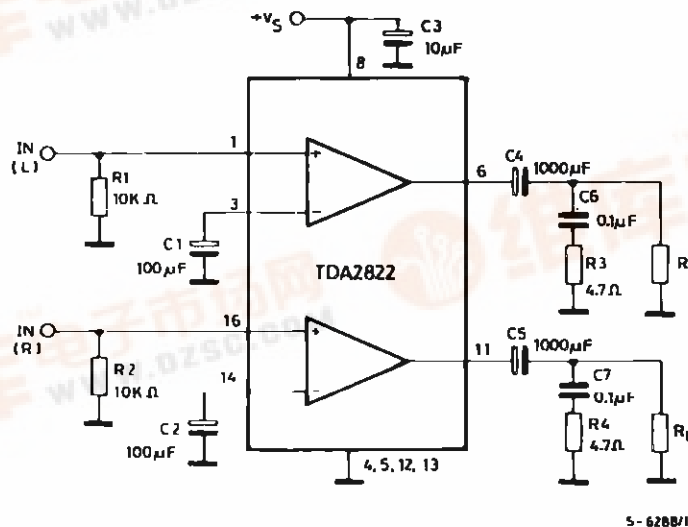
The TDA2822 is a monolithic integrated circuit in 12+2+2 powerdip, intended for use as dual audio power amplifier in portable radios and TS sets.



POWERDIP
(Plastic 12+2+2)

ORDERING NUMBER : TDA2822

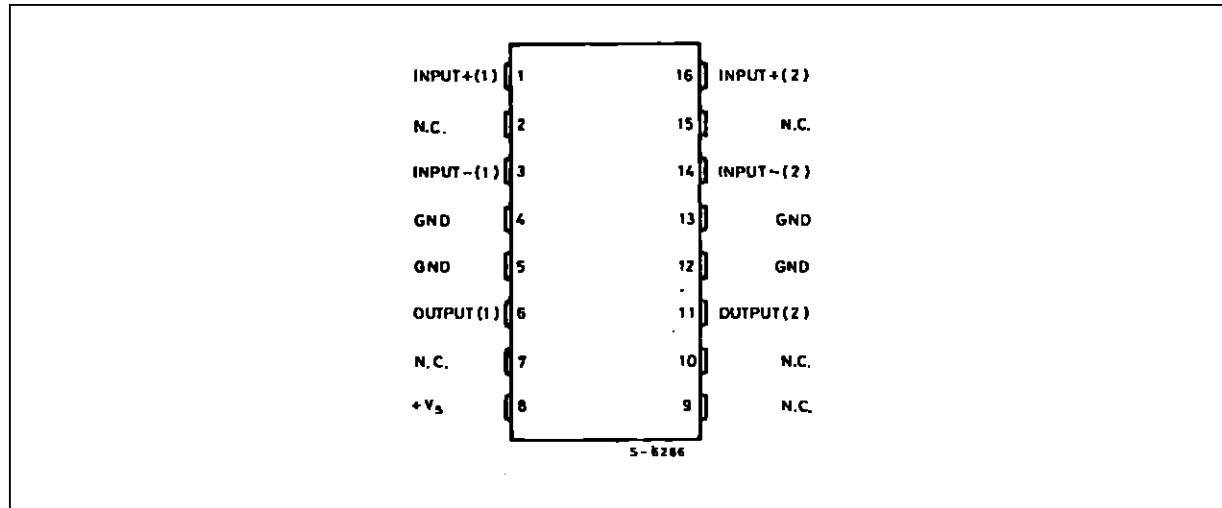
TYPICAL APPLICATION CIRCUIT (STEREO)



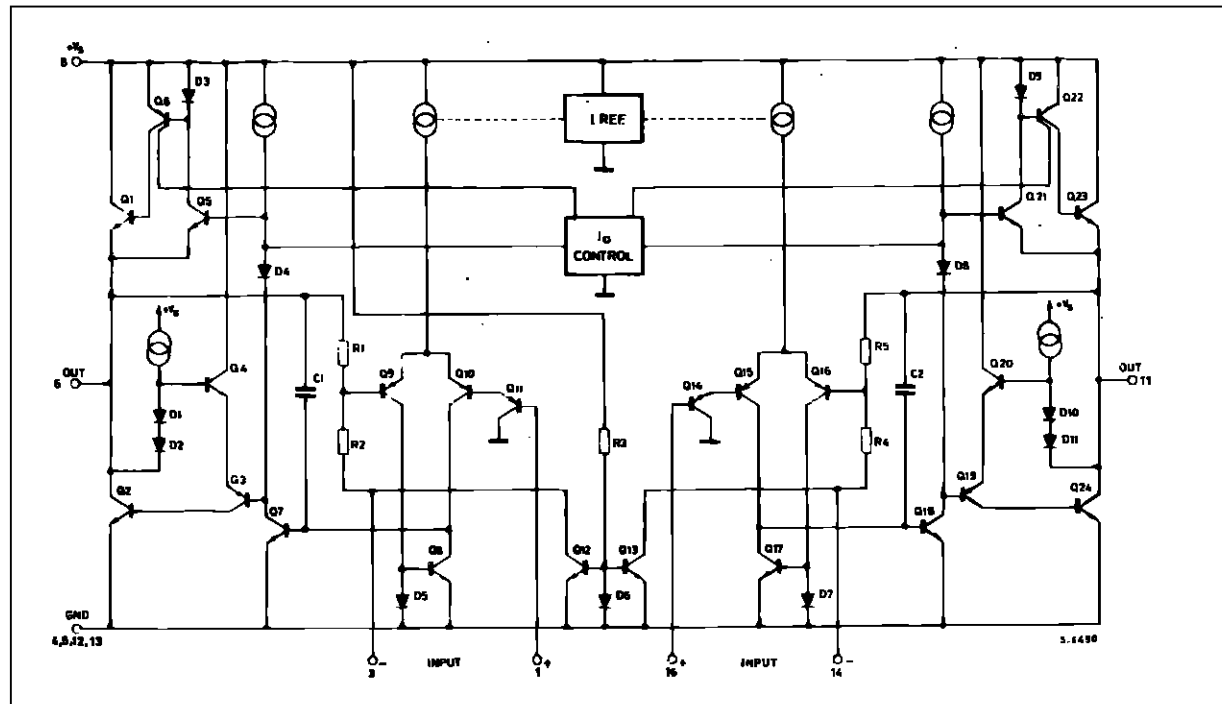
S-6288/1

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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 °C at T _{case} = 70 °C	1.25 4	W
T _{stg} , T _j	Storage and Junction Temperature	- 40 to 150	°C



THERMAL DATA

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

ELECTRICAL CHARACTERISTICS ($V_s = 6\text{ V}$, $T_{amb} = 25\text{ }^{\circ}C$, 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 Ω
e_N	Total Input Noise	$R_s = 10\text{ k}\Omega$ $B = 22\text{ Hz to }22\text{ kHz}$ Curve A		2.5 2		μV μV
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

BRIDGE (test circuit of fig. 2)

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 Ω
e_N	Total Input Noise	$R_s = 10\text{ k}\Omega$ $B = 22\text{ Hz to }22\text{ kHz}$ Curve A		3 2.5		μV μV
SVR	Supply Voltage Rejection	$f = 100\text{ Hz}$		40		dB



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Figure 1 : Test Circuit (stereo).

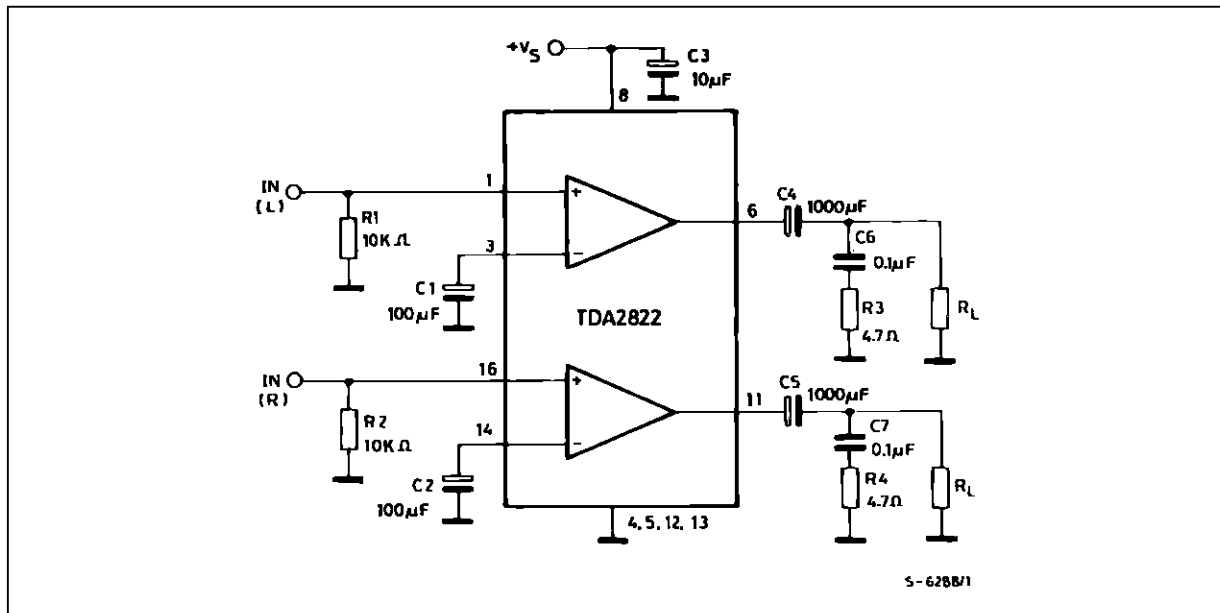


Figure 2 : P.C. Board and Components Layout of the Circuit of Figure 1 (1:1 scale).

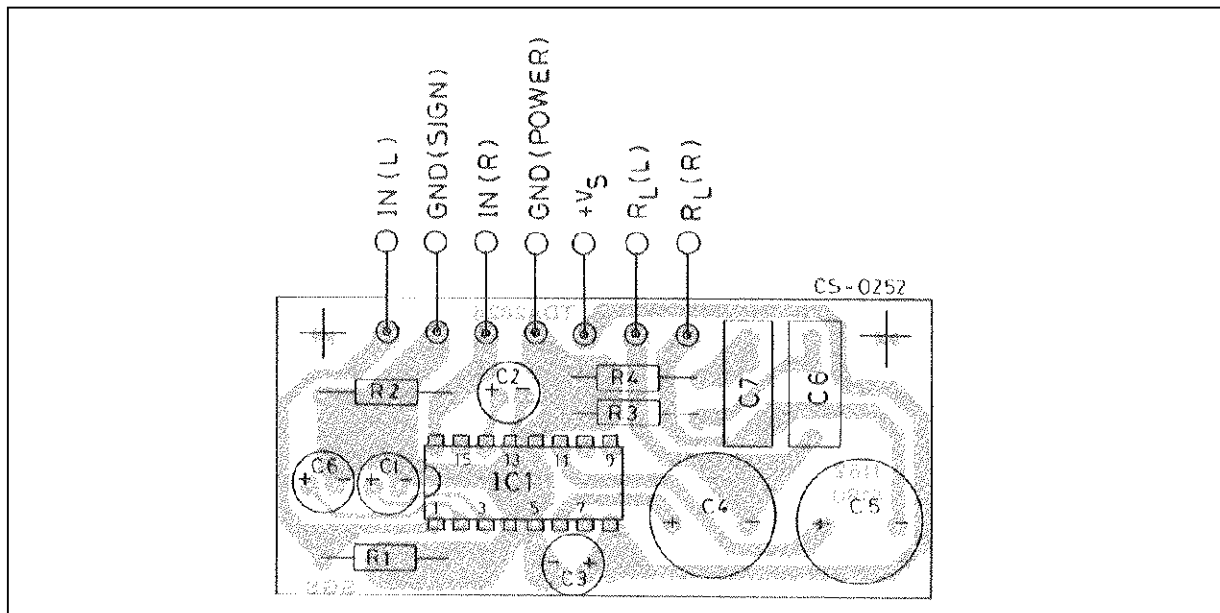


Figure 3 : Test Circuit (bridge).

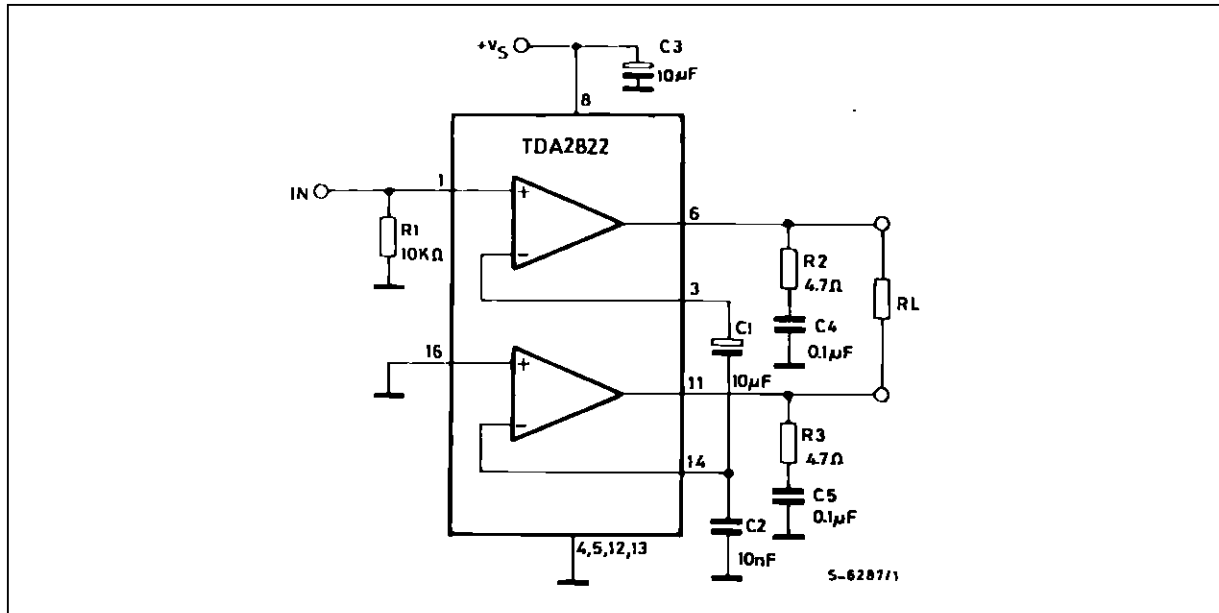
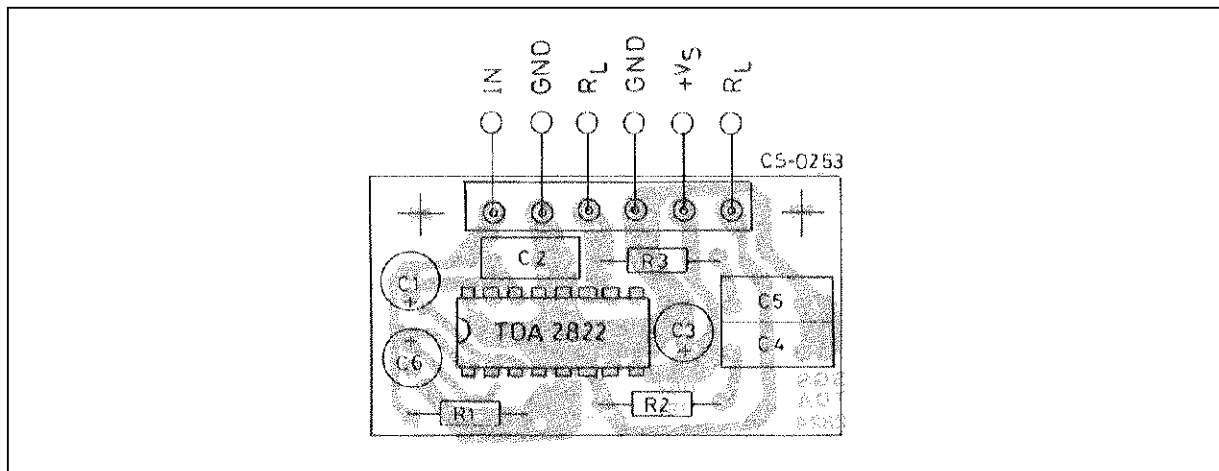


Figure 4 : P.C. Board and Components Layout of the Circuit of Figure 3 (1:1 scale).



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

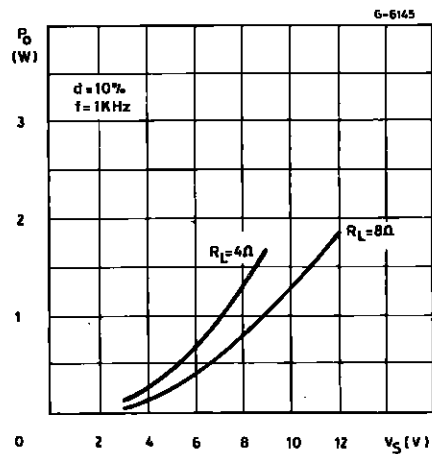


Figure 6 : Output Power vs. Supply Voltage (Bridge).

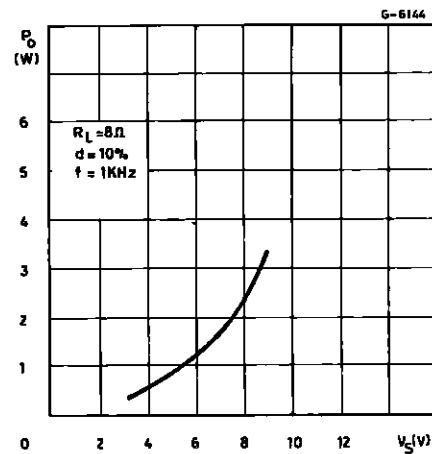


Figure 7 : Distorsion vs. Output Power (Bridge).

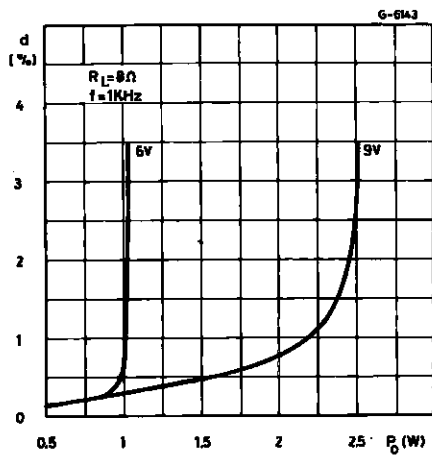


Figure 8 : Distorsion vs. Output Power (Bridge).

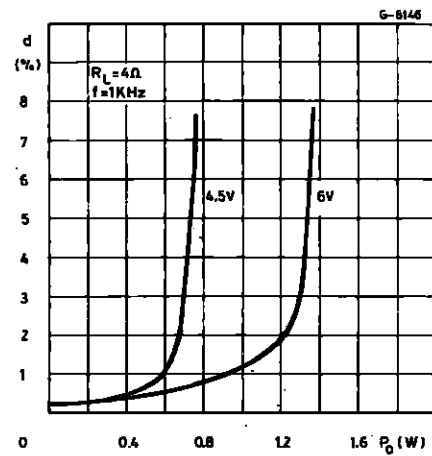


Figure 9 : Supply Voltage Rejection vs. Frequency.

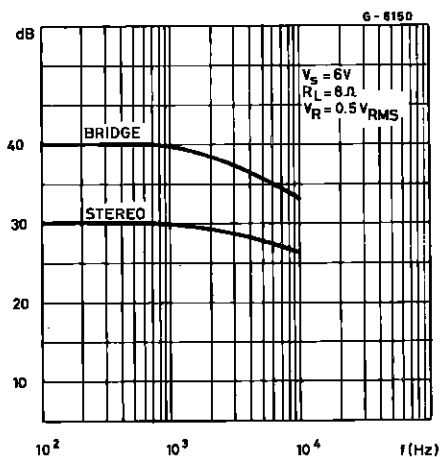


Figure 10 : Quiescent Current vs. Supply Voltage.

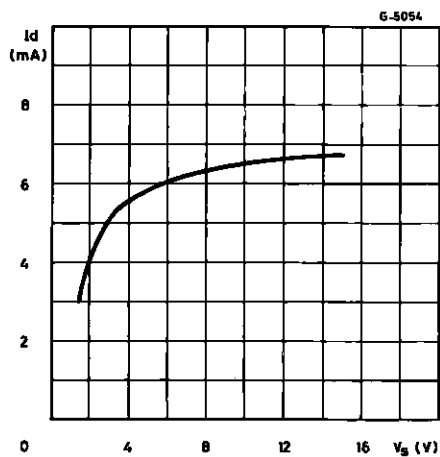


Figure 11 : Total Power Dissipation vs. Output Power (Stereo).

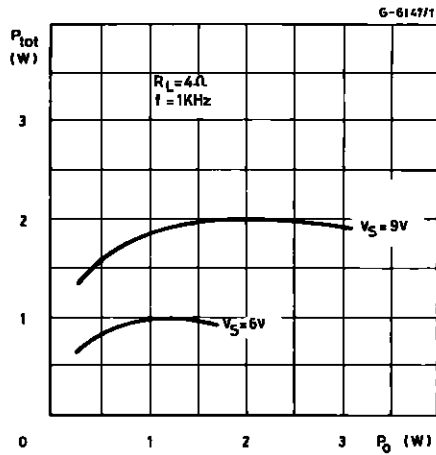


Figure 12 : Total Power Dissipation vs. Output Power (Bridge).

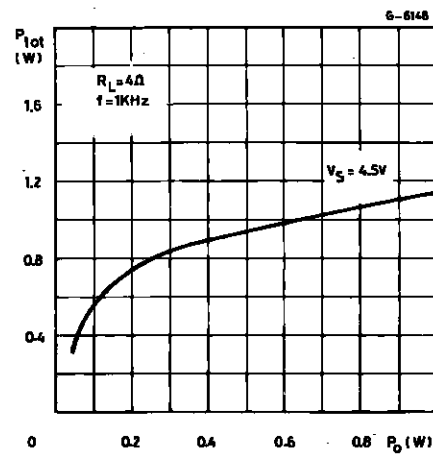
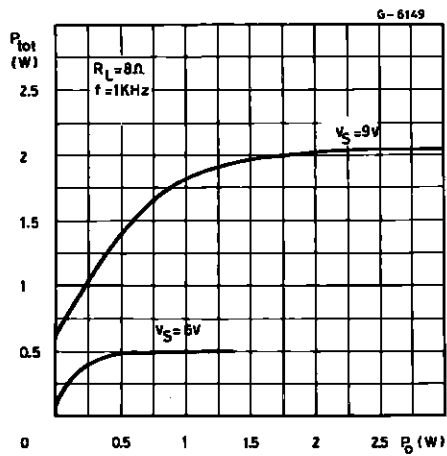
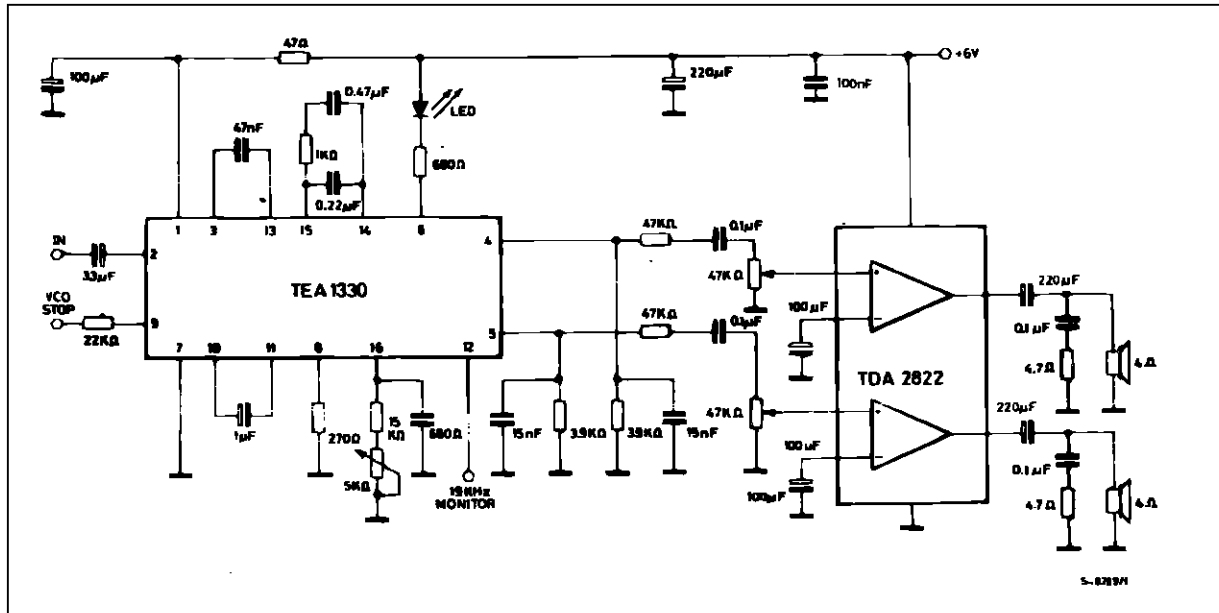


Figure 13 : Total Power Dissipation vs. Output Power (Bridge).



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Figure 14 : Application Circuit for Portable Radios.

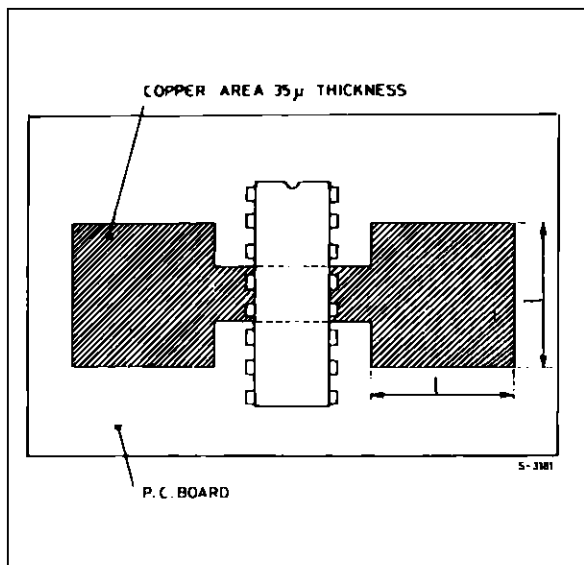


MOUNTING INSTRUCTION

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 "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.

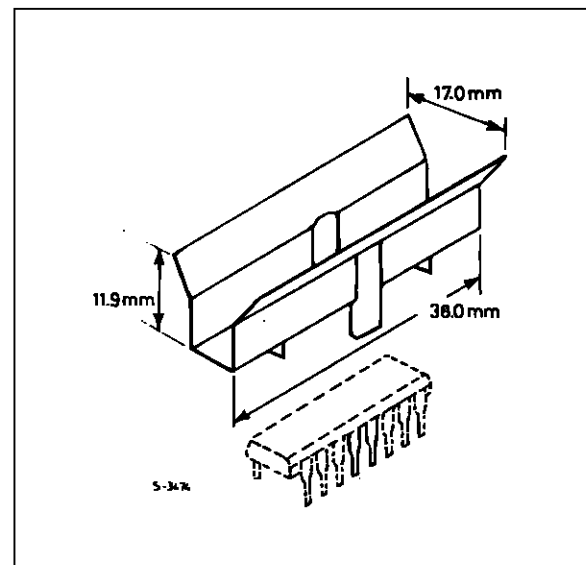


Figure 6 : Maximum Dissippable Power and Junction to Ambient Thermal Resistance vs. Side "D".

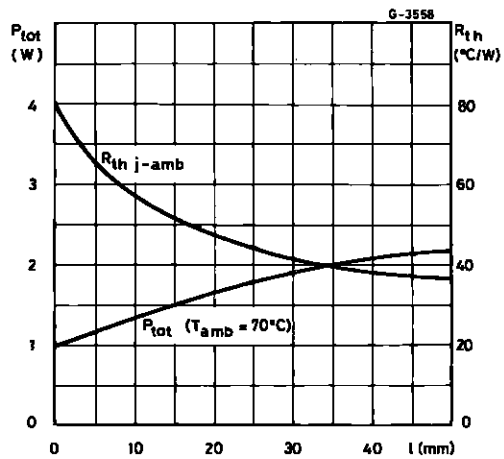
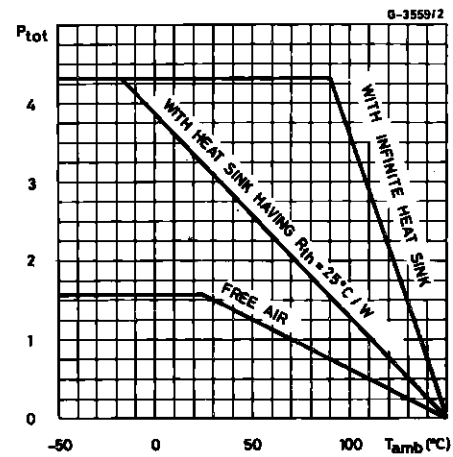


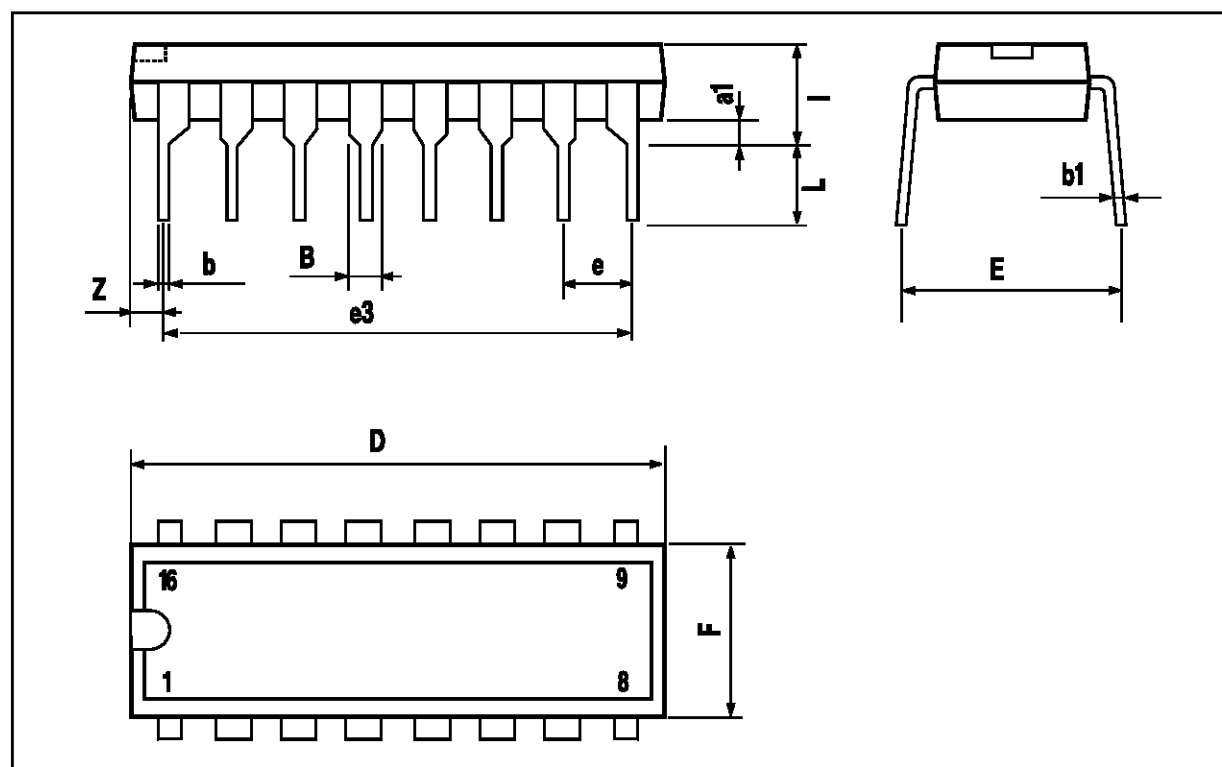
Figure 7 : Maximum Allowable Power Dissipation vs. Ambient Temperature.



TDA2822

POWERDIP 16 PACKAGE MECHANICAL DATA

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



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