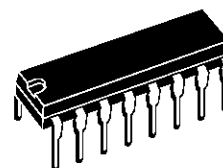


DUAL POWER AMPLIFIER

- SUPPLY VOLTAGE DOWN TO 3 V
- HIGH SVR
- LOW CROSSOVER DISTORTION
- LOW QUIESCENT CURRENT
- BRIDGE OR STEREO CONFIGURATION

DESCRIPTION

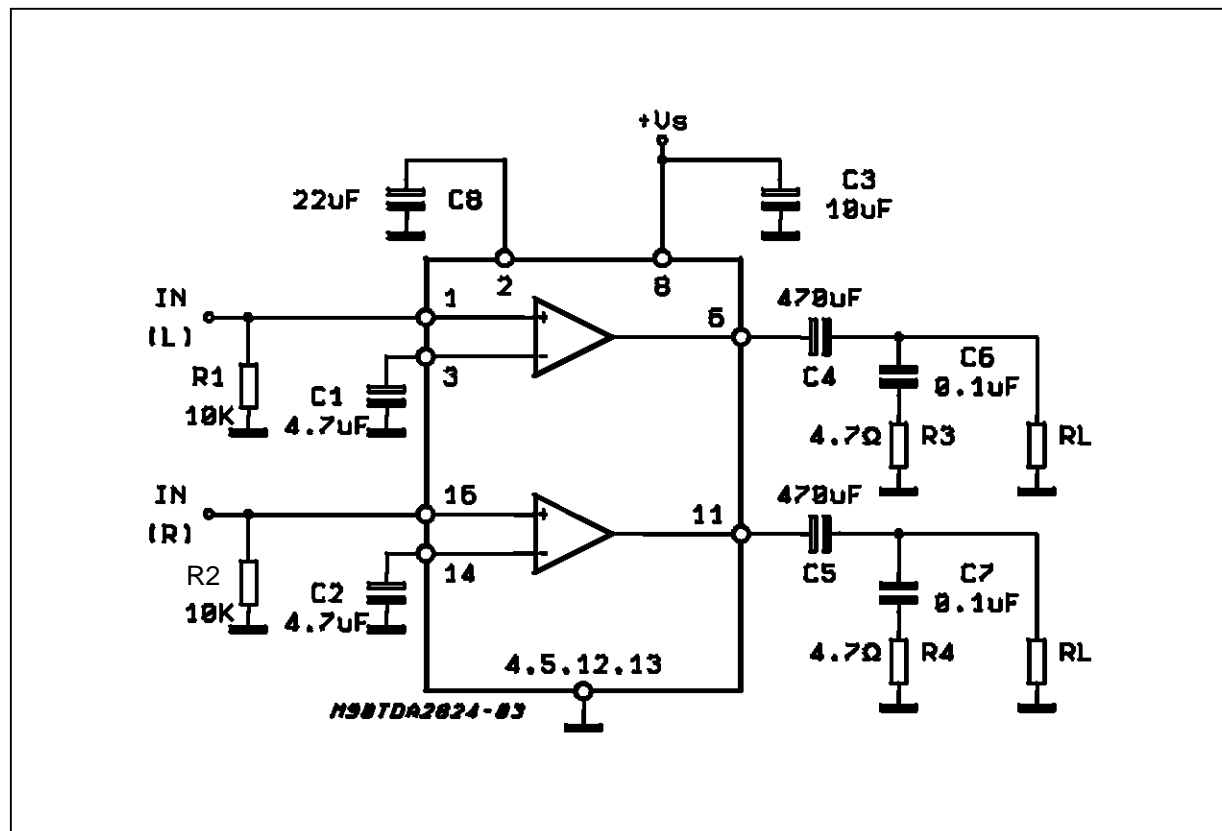
The TDA2824 is a monolithic integrated circuit in 12+2+2 powerdip, intended for use as dual audio power amplifier in portable radios and TV sets.



Powerdip (12+2+2)

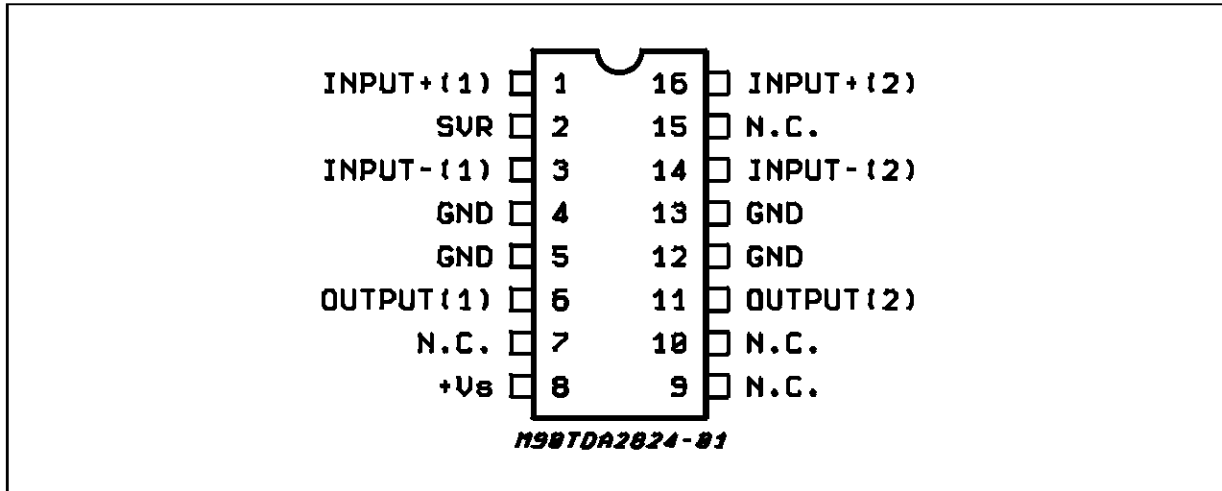
ORDERING NUMBER : TDA2824

TYPICAL APPLICATION CIRCUIT (Stereo)

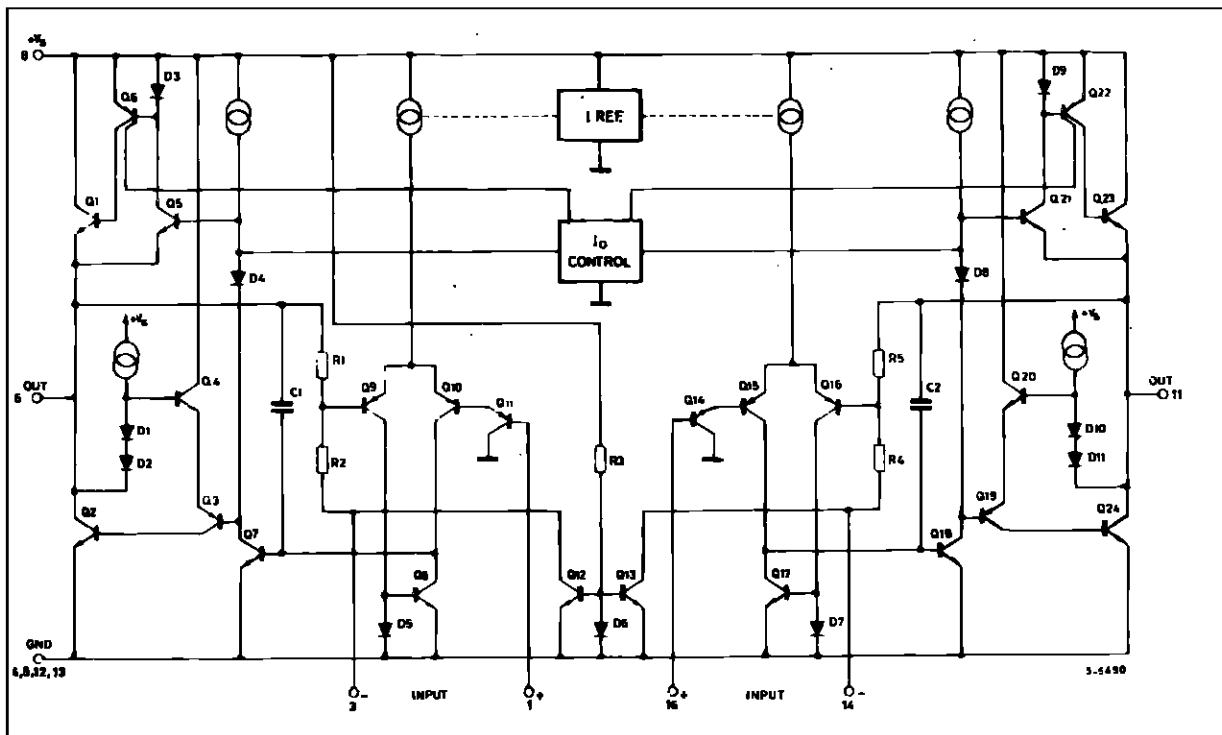


TDA2824

PIN CONNECTION



SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	Supply Voltage	16	V
I_O	Output Peak Current	1.5	A
P_{tot}	Total Power Dissipation at $T_{amb} = 50^\circ\text{C}$ $T_{amb} = 70^\circ\text{C}$	1.25 4	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	$^{\circ}C/W$
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max. 20	$^{\circ}C/W$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
--------	-----------	-----------------	------	------	------	------

STEREO (test circuit of fig. 1)

V_S	Supply Voltage		3		15	V
V_O	Quiescent Output Voltage	$V_S = 9V$ $V_S = 9V$		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)	$d = 10\%$ $f = 1KHz$ $V_S = 9V$ $R_L = 4\Omega$ $V_S = 6V$ $R_L = 4\Omega$ $V_S = 4.5V$ $R_L = 4\Omega$	1.3 0.45	1.7 0.65 0.32		W W W
d	Distortion	$V_S = 9V$, $f = 1KHz$ $R_L = 8\Omega$, $P_O = 0.5W$		0.2		%
G_V	Closed Loop Voltage Gain	$f = 1KHz$	36	39	41	dB
R_i	Input Resistance	$f = 1KHz$	100			$K\Omega$
e_N	Total Input Noise	$R_S = 10K\Omega$ $B = 22Hz$ to $22KHz$ Curve A		2.5 2		μV μV
SVR	Supply Voltage Rejection	$f = 100Hz$	40	50		dB
CS	Channel Separation	$R_S = 10K\Omega$ $f = 1KHz$		50		dB

BRIDGE (test circuit of fig. 2)

V_S	Supply Voltage		3		15	V
V_{OS}	Output Offset Voltage	$R_L = 8\Omega$			60	mV
I_b	Input Bias Current			100		nA
P_O	Output Power	$d = 10\%$ $f = 1KHz$ $V_S = 9V$ $R_L = 8\Omega$ $V_S = 6V$ $R_L = 8\Omega$ $V_S = 4.5V$ $R_L = 4\Omega$	2.5 0.9	3.2 1.35 1		W W W
d	Distortion ($f = 1KHz$)	$R_L = 8\Omega$ $P_O = 0.5W$		0.2		%
G_V	Closed Loop Voltage Gain	$f = 1KHz$		39		dB
e_N	Total Input Noise	$R_S = 10K\Omega$ $B = 22Hz$ to $22KHz$ Curve A		3 2.5		mV μV
SVR	Supply Voltage Rejection	$f = 100Hz$	48	60		dB

Figure 1 : Test Circuit (stereo).

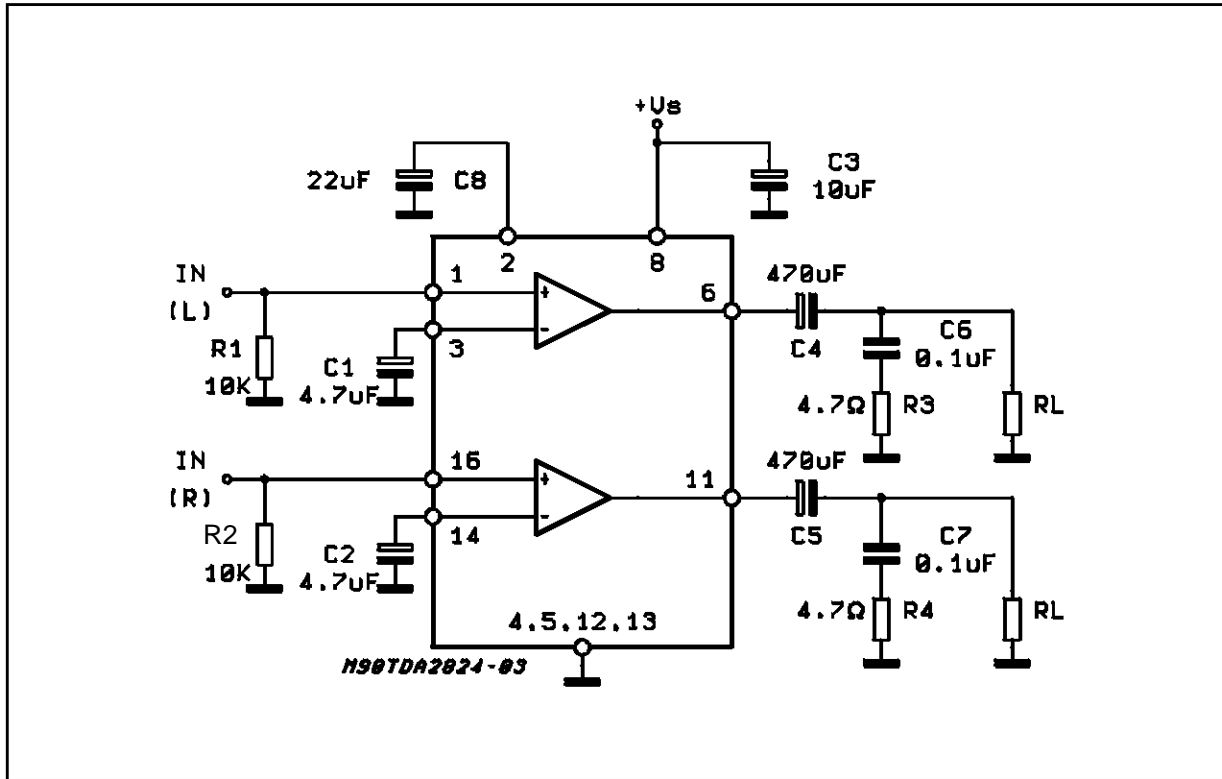


Figure 2: P.C. Board and Component Layout of the Circuit of Figure 1. (1:1 scale)

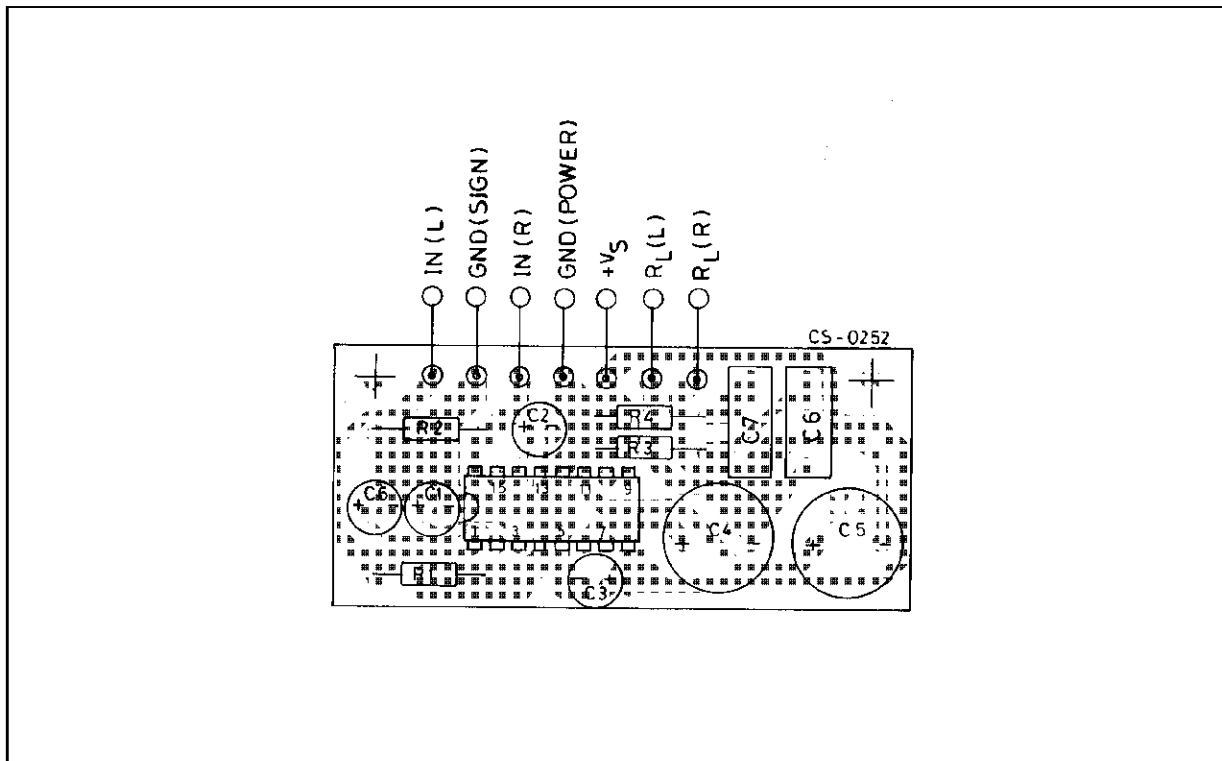


Figure 3 : Test Circuit (bridge).

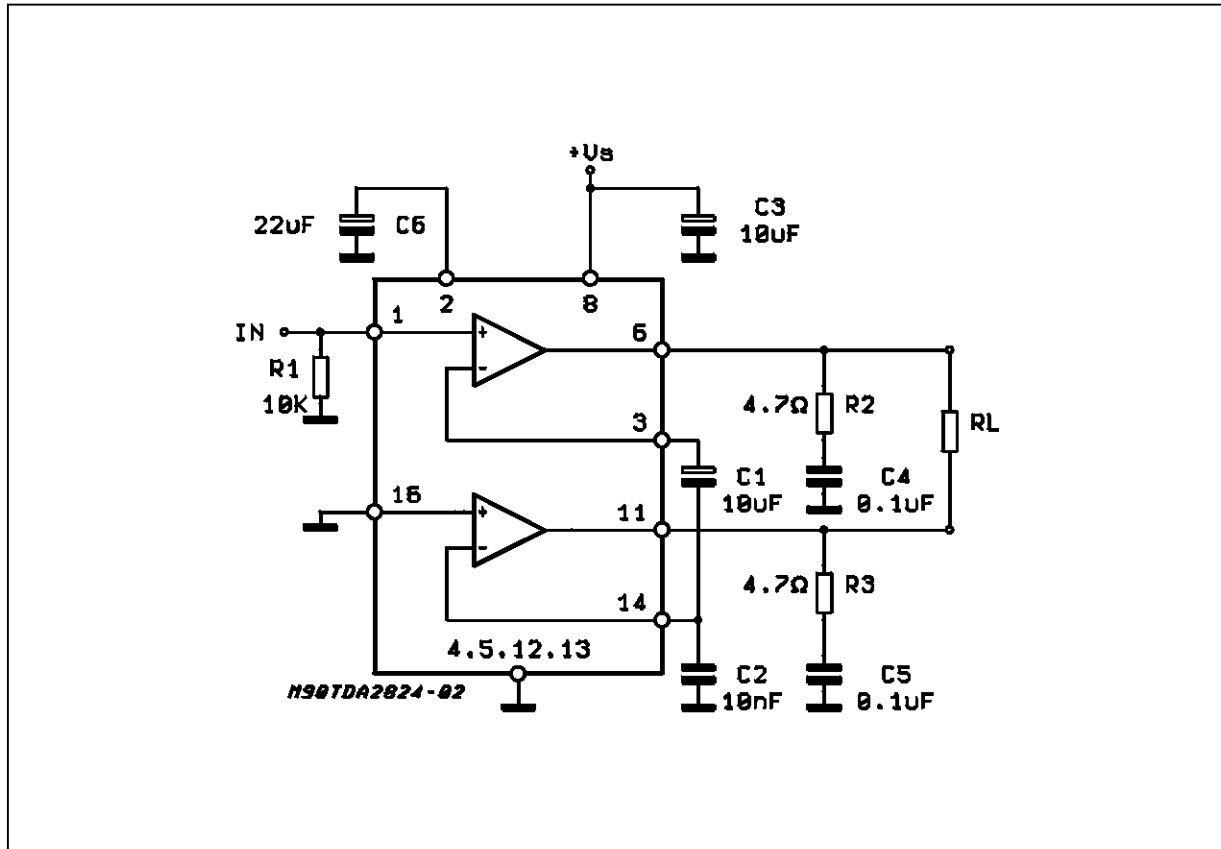


Figure 4: P.C. Board and Component Layout of the Circuit of Figure 3. (1:1 scale)

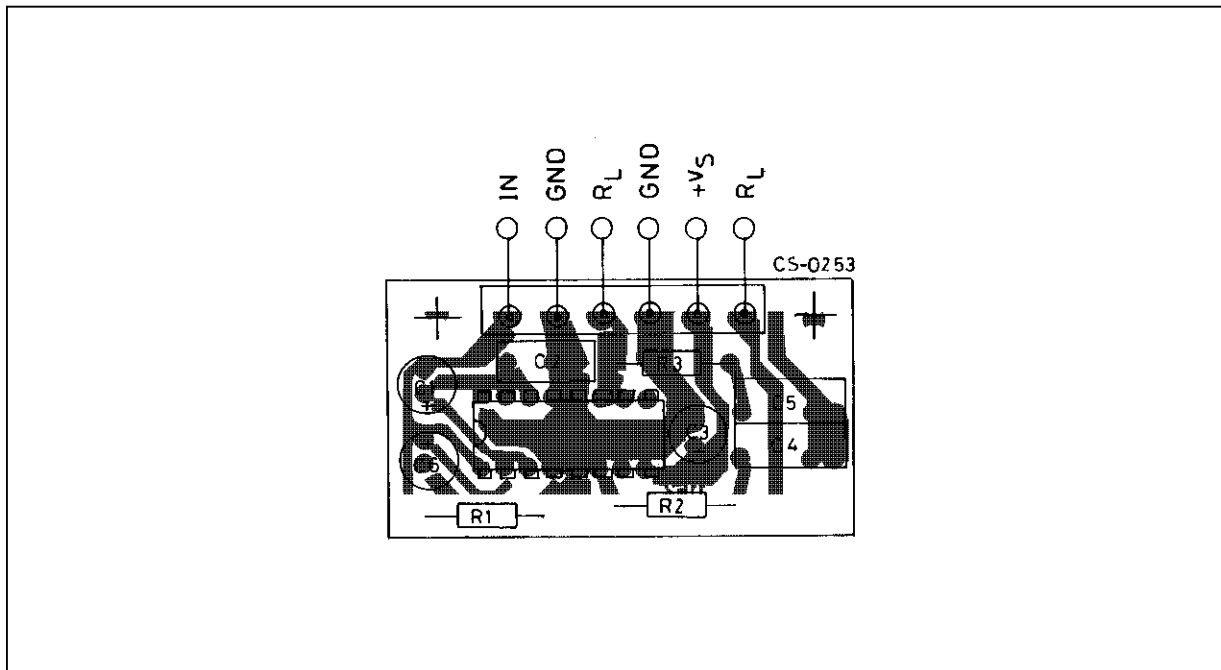


Figure 3 : Output Power vs. Supply Voltage (Stereo).

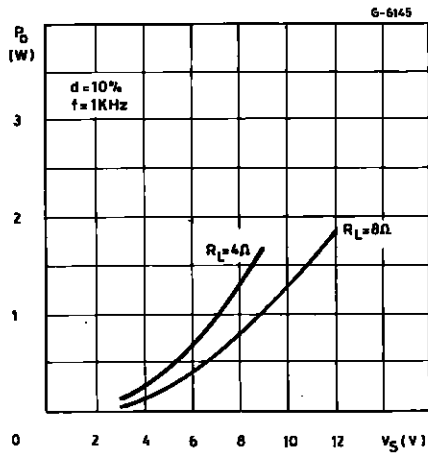


Figure 4 : Output Power vs. Supply Voltage (Bridge).

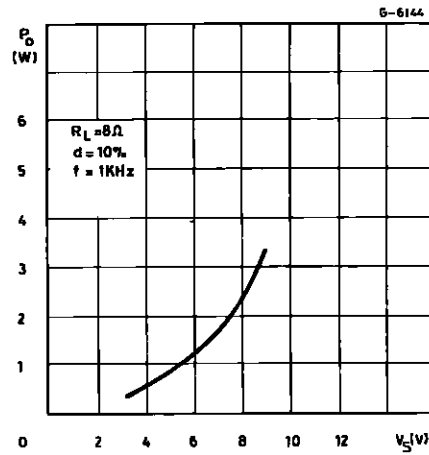


Figure 5 : Distortion vs. Output Power (Bridge).

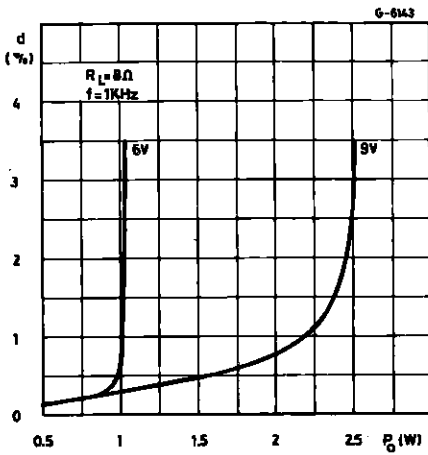


Figure 6 : Distortion vs. Output Power (Bridge).

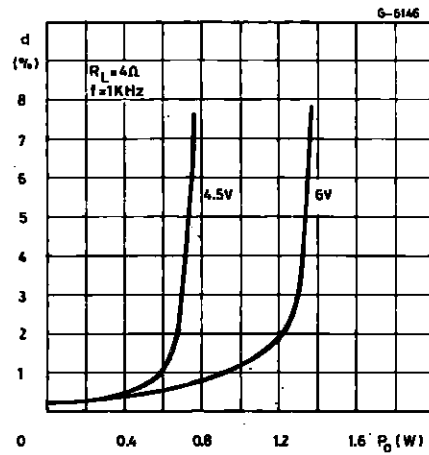


Figure 7 : Supply Voltage Rejection vs. Frequency (Stereo).

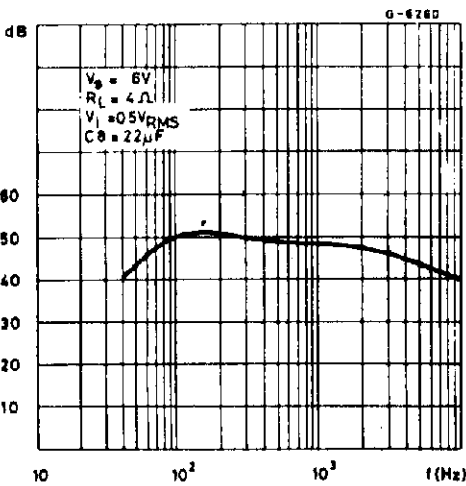


Figure 8 : Quiescent Current vs. Supply Voltage.

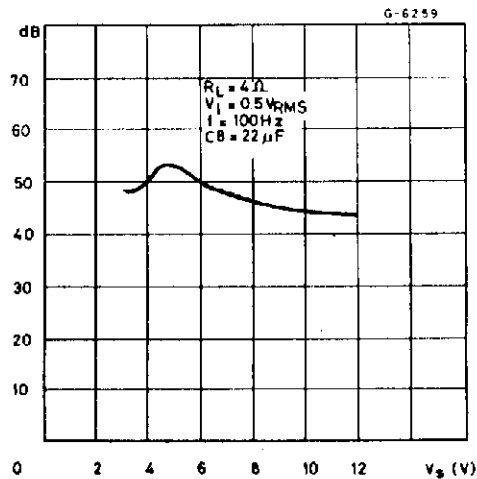


Figure 9 : Quiescent Current vs. Supply Voltage.

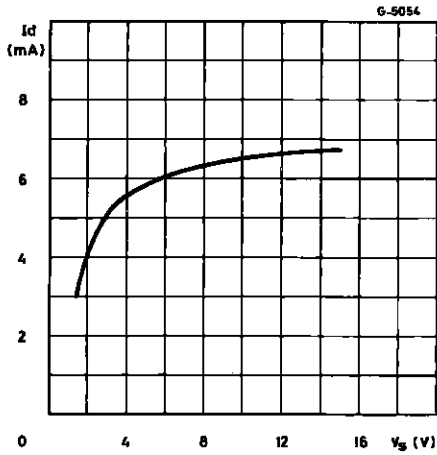


Figure 10 : Total Power Dissipation vs. Output Power (Stereo).

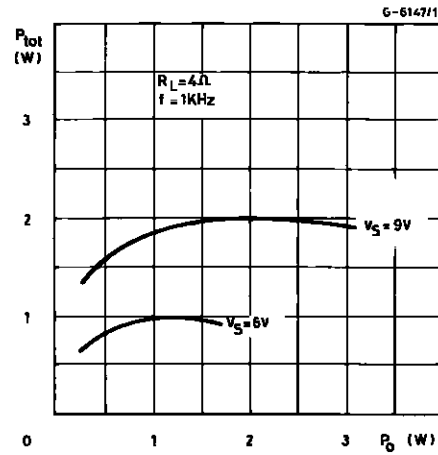


Figure 11 : Total Power Dissipation vs. Output Power (Bridge).

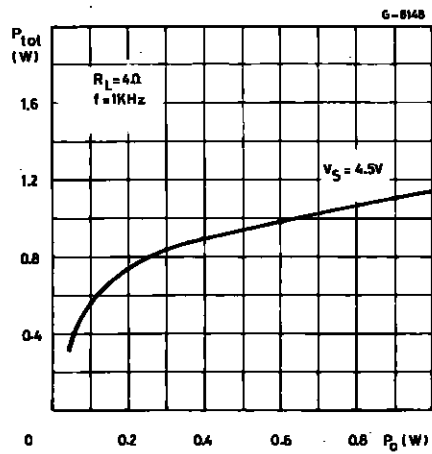
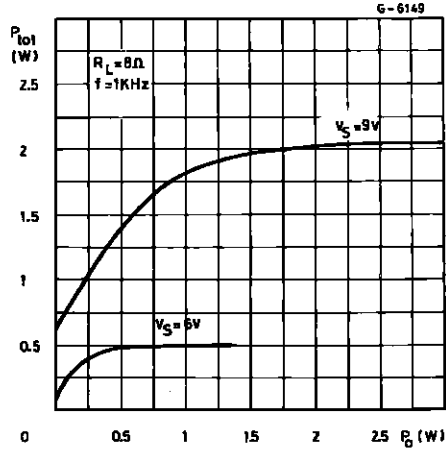


Figure 12 : Total Power Dissipation vs. Output Power (Bridge).



MOUNTING INSTRUCTION

The $R_{thj-amb}$ of the TDA2824 can be reduced by soldering the GND pins to a suitable copper area of the printed circuit board (Figure 13) or to an external heatsink (Figure 14).

The diagram of Figure 15 shows the maximum dissippable 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 35μ (1.4 mils).

Figure 13 : Example of P.C. Board Copper Area which is used as Heatsink.

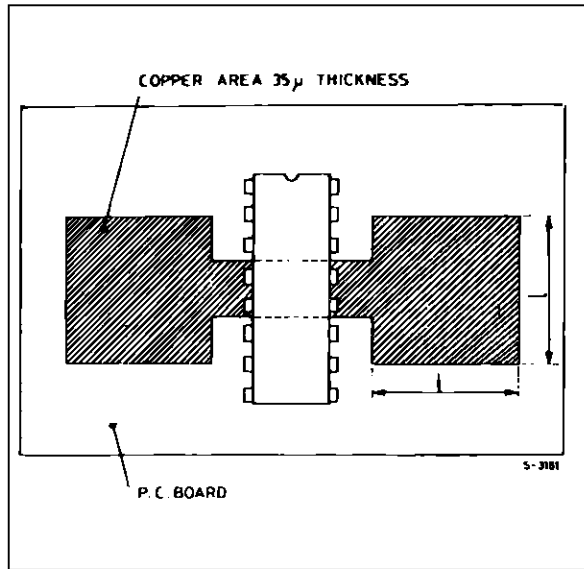
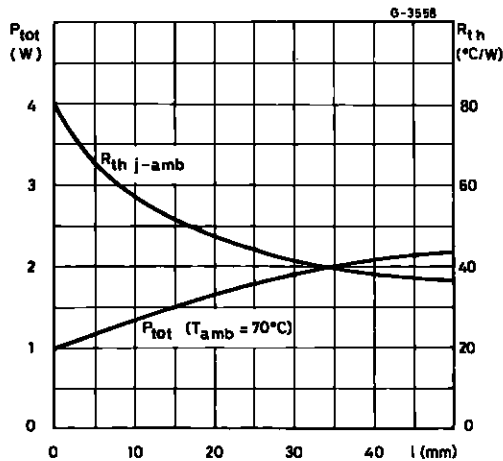


Figure 15 : Maximum Dissippable Power and Junction to Ambient Thermal Resistance vs. Side "d".



During soldering the pins temperature must not exceed $260 \text{ }^\circ\text{C}$ 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 14 : External Heatsink Mounting Example.

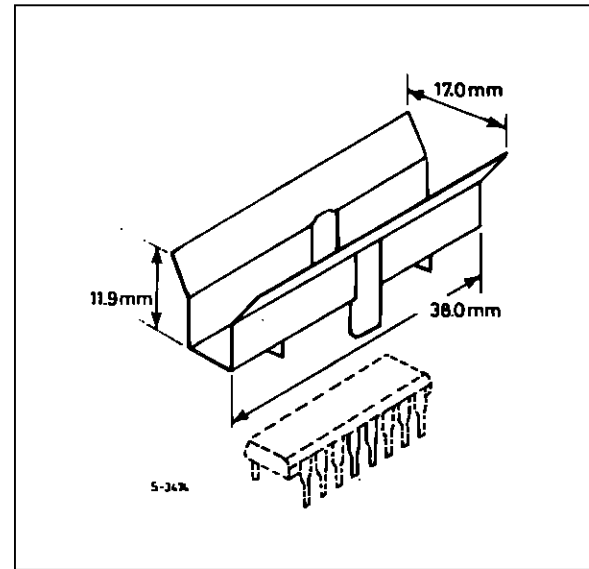
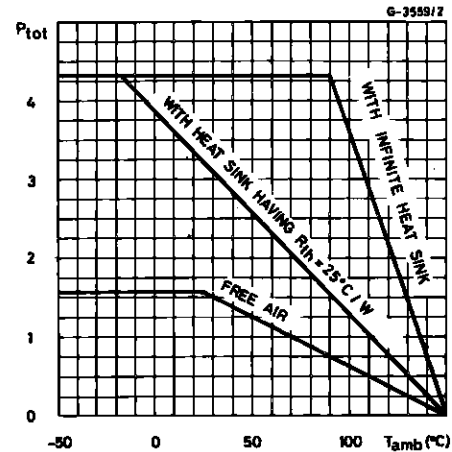
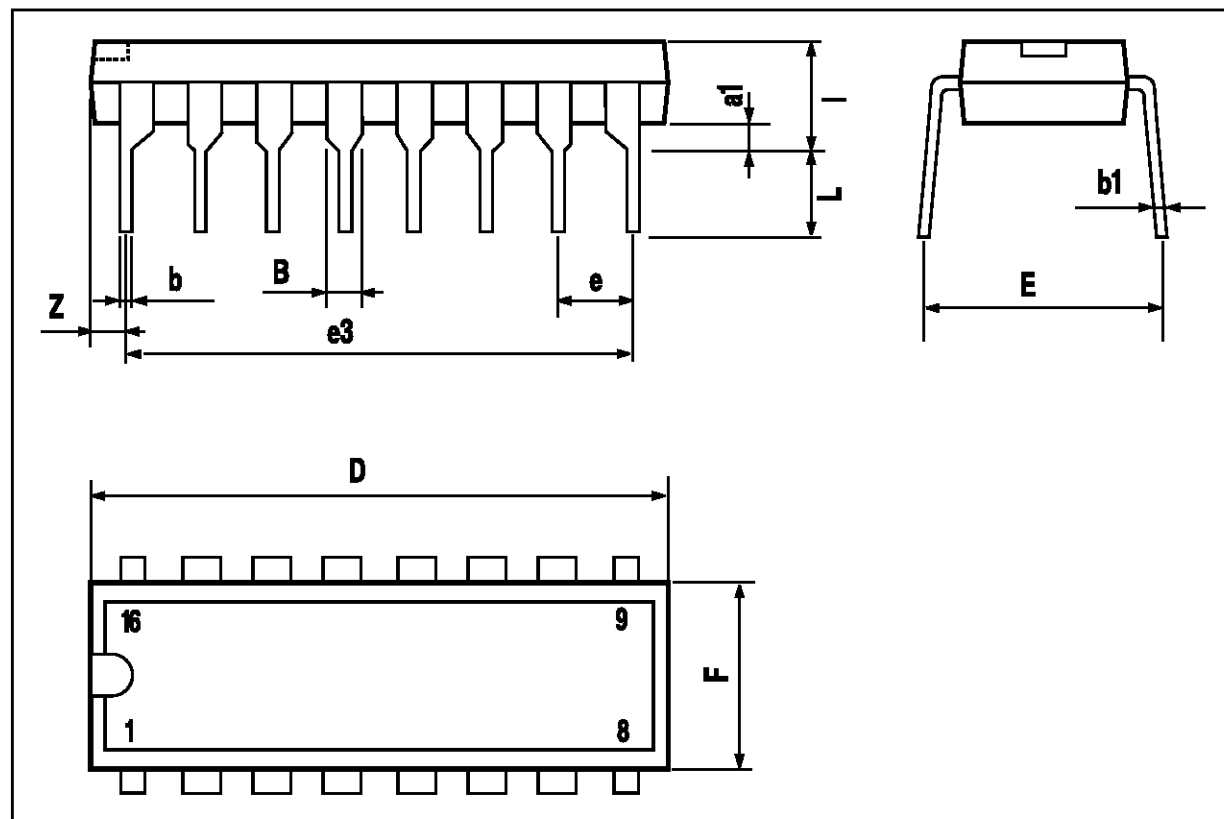


Figure 16 : Maximum Allowable Power Dissipation vs. Ambient Temperature.



POWERDIP 12+2+2 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
l			5.10			0.201
L		3.30			0.130	
Z			1.27			0.050



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