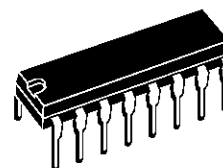


**DUAL POWER AMPLIFIER**

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

**DESCRIPTION**

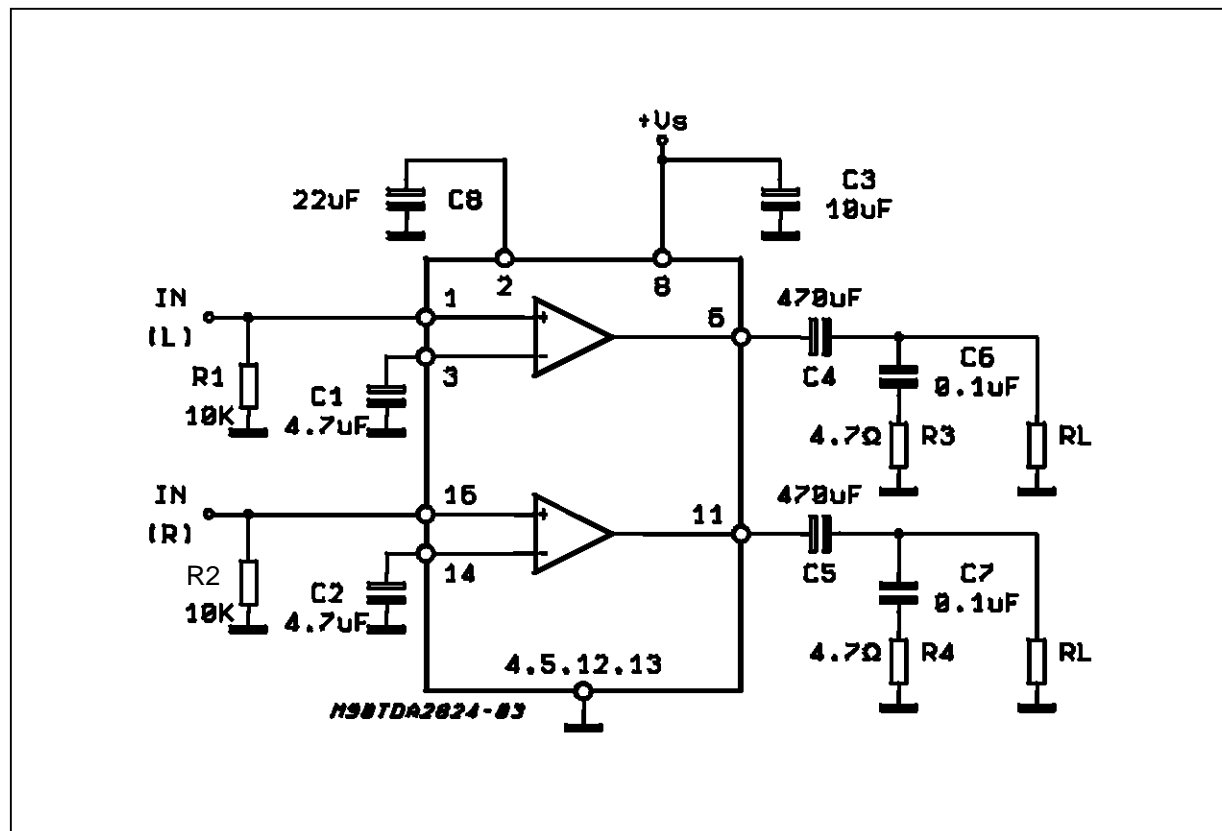
The TDA2824 is a monolithic integrated circuit in 12+2+2 powerdip, intended for use as dual audio power amplifier in portable radios and TV sets.



Powerdip (12+2+2)

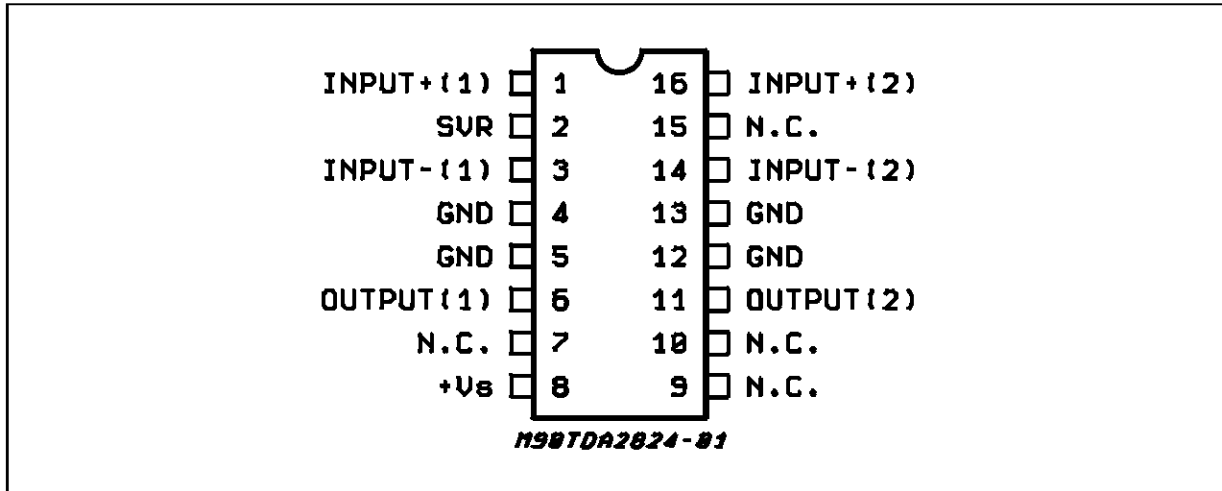
ORDERING NUMBER : TDA2824

**TYPICAL APPLICATION CIRCUIT (Stereo)**

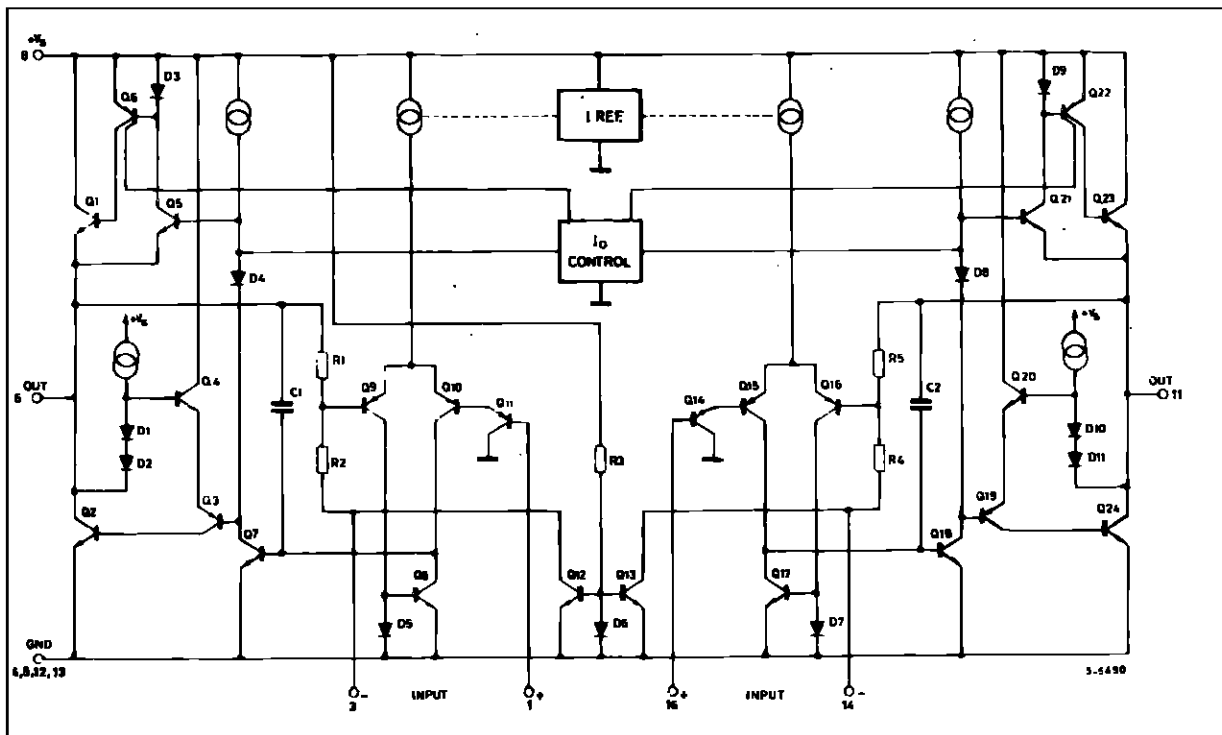


# TDA2824

## 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 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		$\mu V$ $\mu V$
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 $\mu V$
SVR	Supply Voltage Rejection	$f = 100Hz$	48	60		dB

Figure 1 : Test Circuit (stereo).

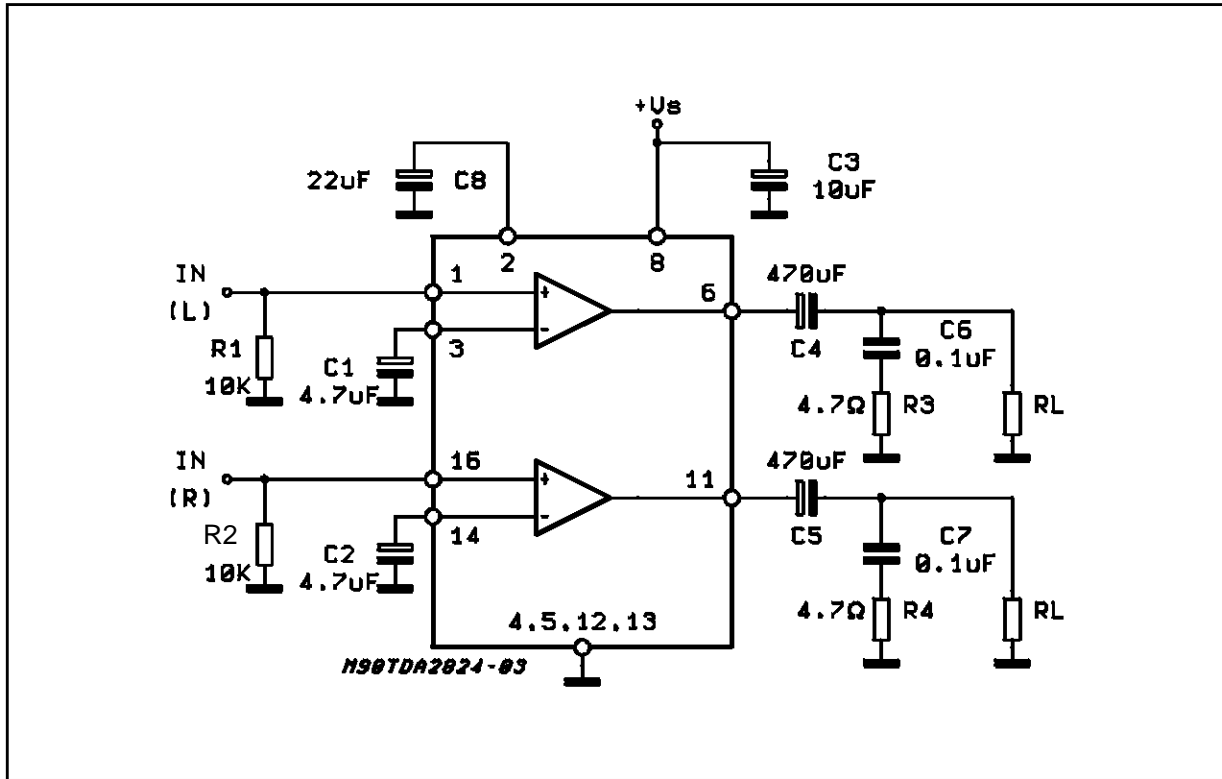


Figure 2: P.C. Board and Component Layout of the Circuit of Figure 1. (1:1 scale)

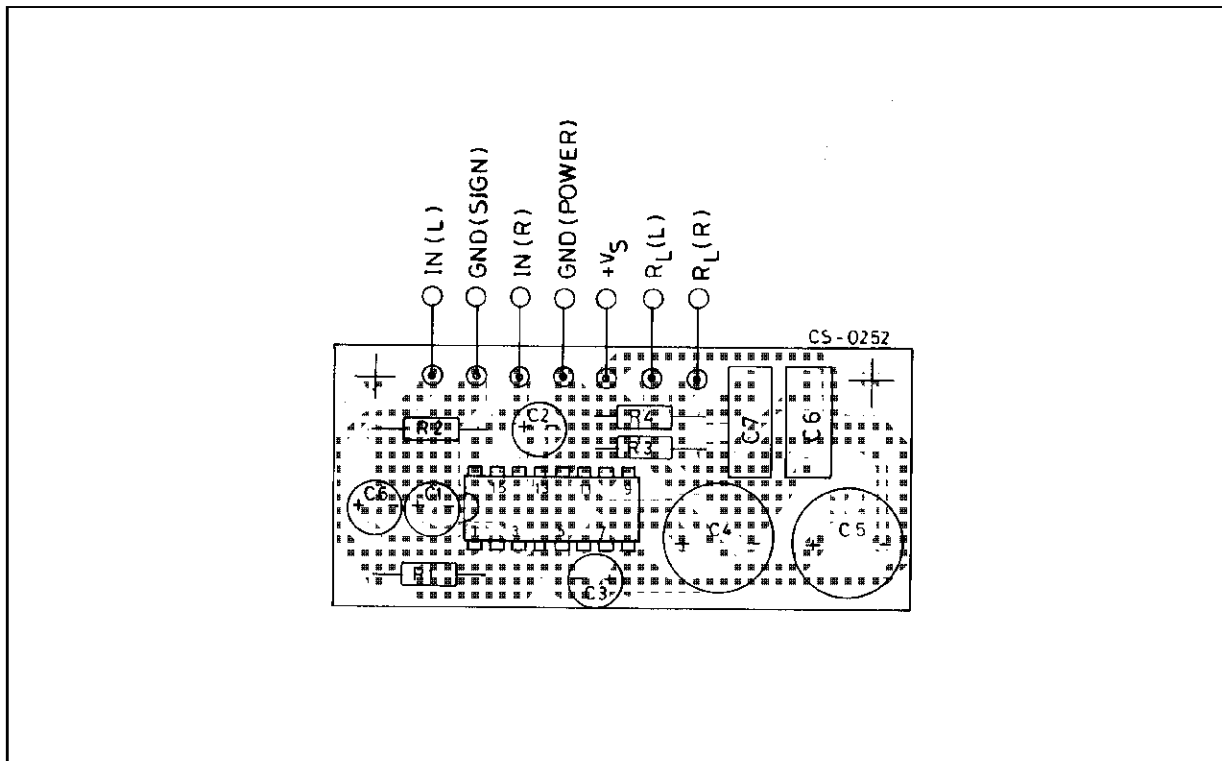


Figure 3 : Test Circuit (bridge).

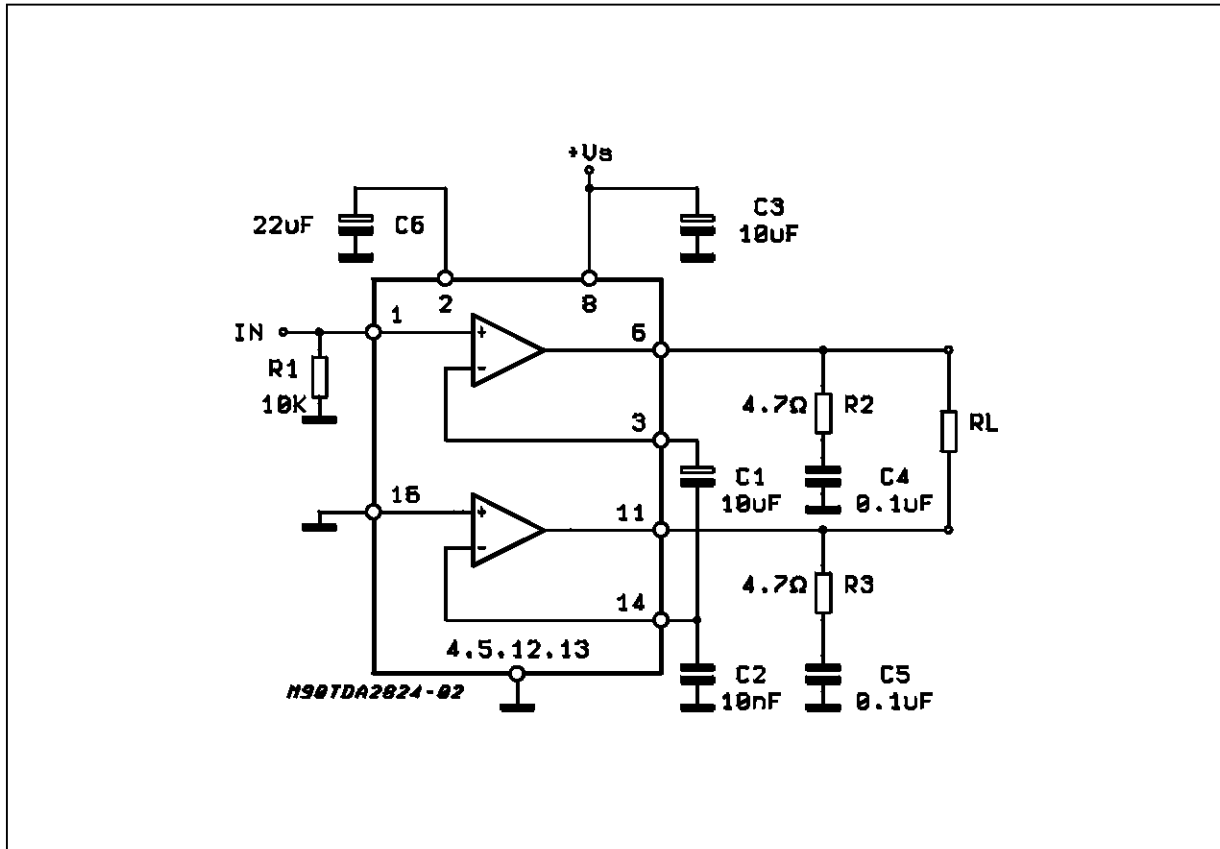


Figure 4: P.C. Board and Component Layout of the Circuit of Figure 3. (1:1 scale)

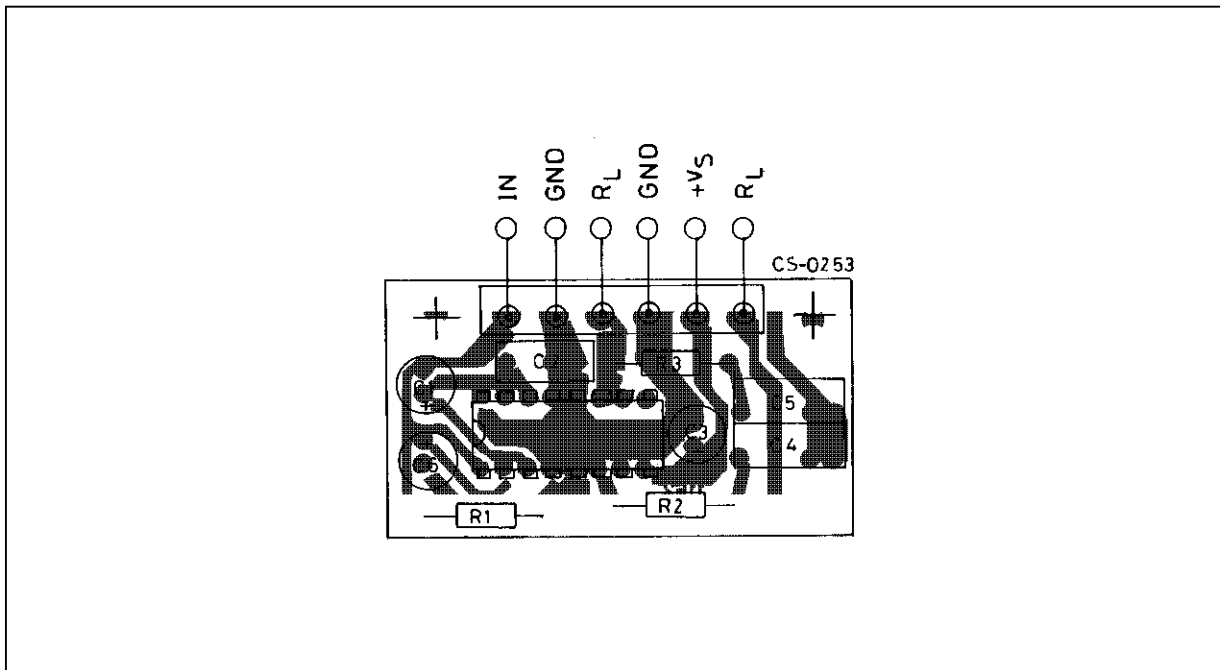


Figure 3 : Output Power vs. Supply Voltage (Stereo).

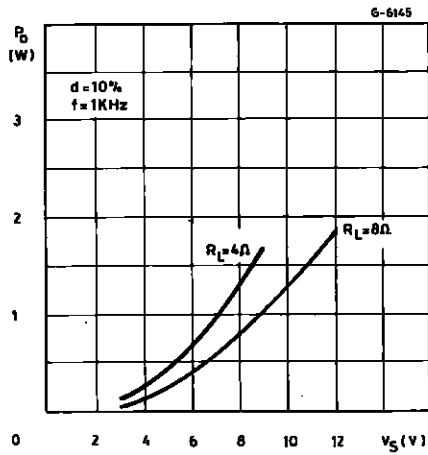


Figure 4 : Output Power vs. Supply Voltage (Bridge).

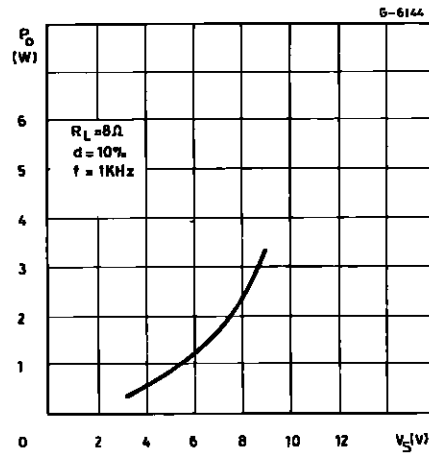


Figure 5 : Distortion vs. Output Power (Bridge).

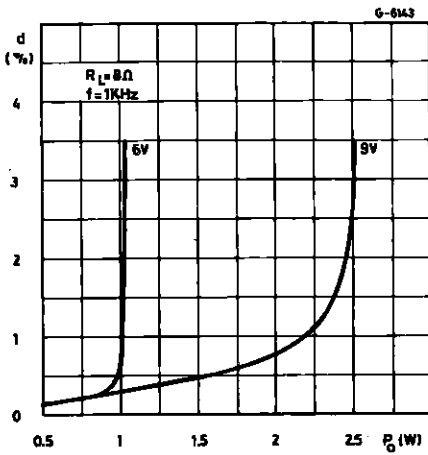


Figure 6 : Distortion vs. Output Power (Bridge).

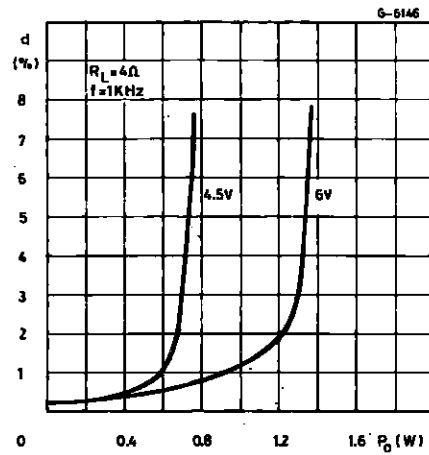


Figure 7 : Supply Voltage Rejection vs. Frequency (Stereo).

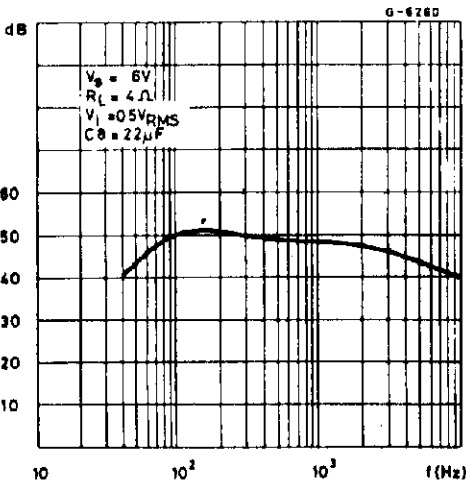


Figure 8 : Quiescent Current vs. Supply Voltage.

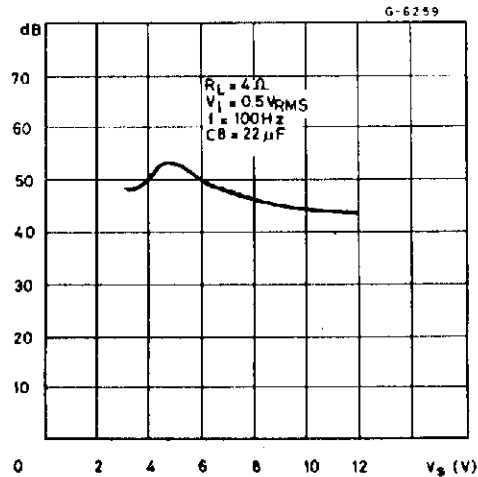


Figure 9 : Quiescent Current vs. Supply Voltage.

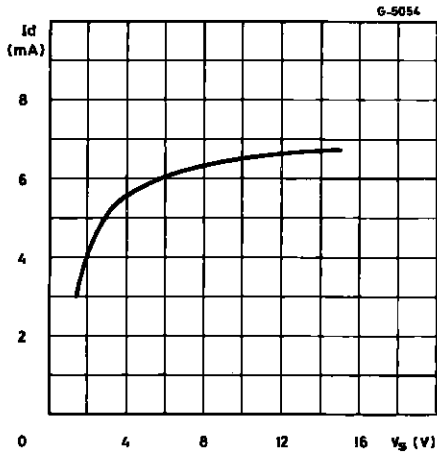


Figure 10 : Total Power Dissipation vs. Output Power (Stereo).

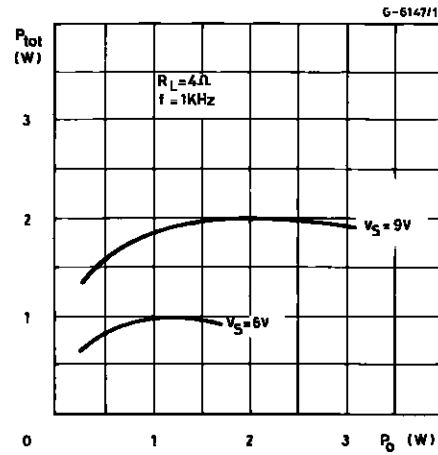


Figure 11 : Total Power Dissipation vs. Output Power (Bridge).

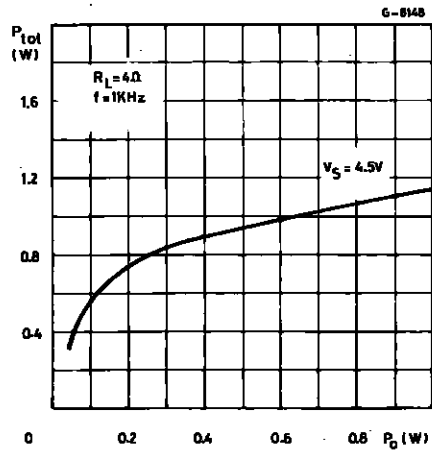
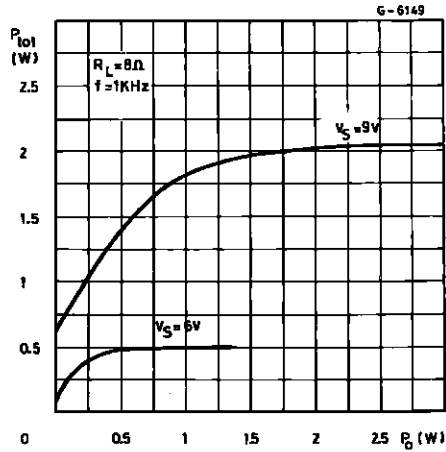


Figure 12 : Total Power Dissipation vs. Output Power (Bridge).

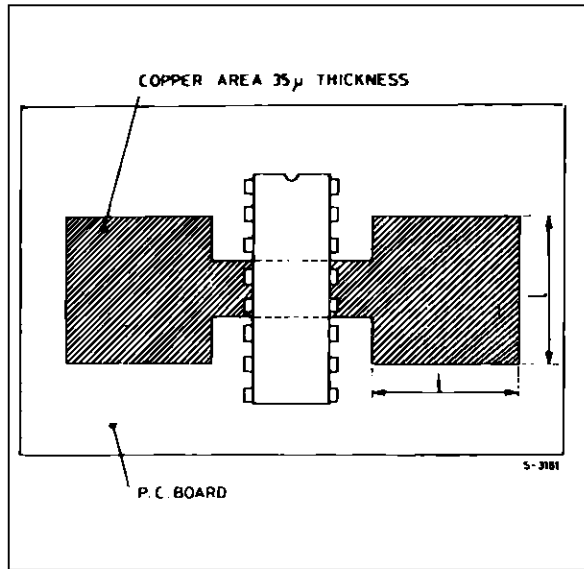


**MOUNTING INSTRUCTION**

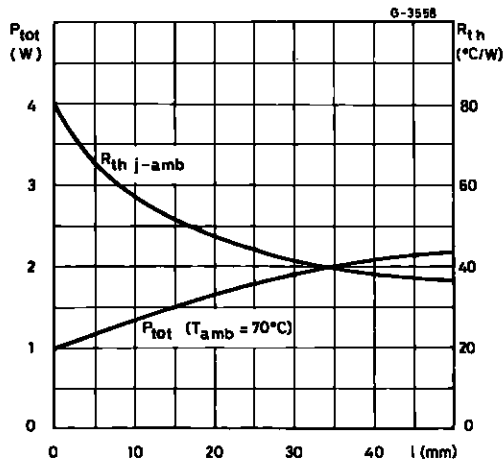
The  $R_{thj-amb}$  of the TDA2824 can be reduced by soldering the GND pins to a suitable copper area of the printed circuit board (Figure 13) or to an external heatsink (Figure 14).

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  $35 \mu$  (1.4 mils).

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



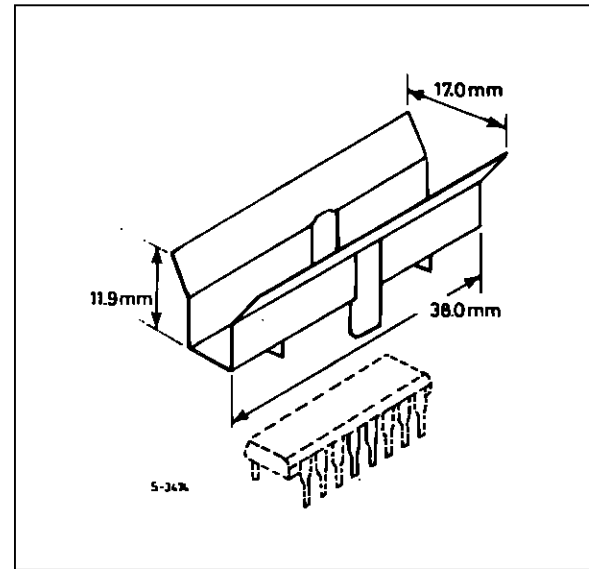
**Figure 15 :** Maximum Dissippable Power and Junction to Ambient Thermal Resistance vs. Side "d".



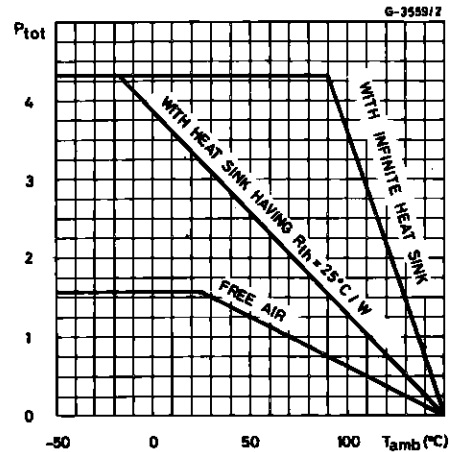
During soldering the pins temperature must not exceed  $260^{\circ}C$  and the soldering time must not be longer than 12 seconds.

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

**Figure 14 :** External Heatsink Mounting Example.



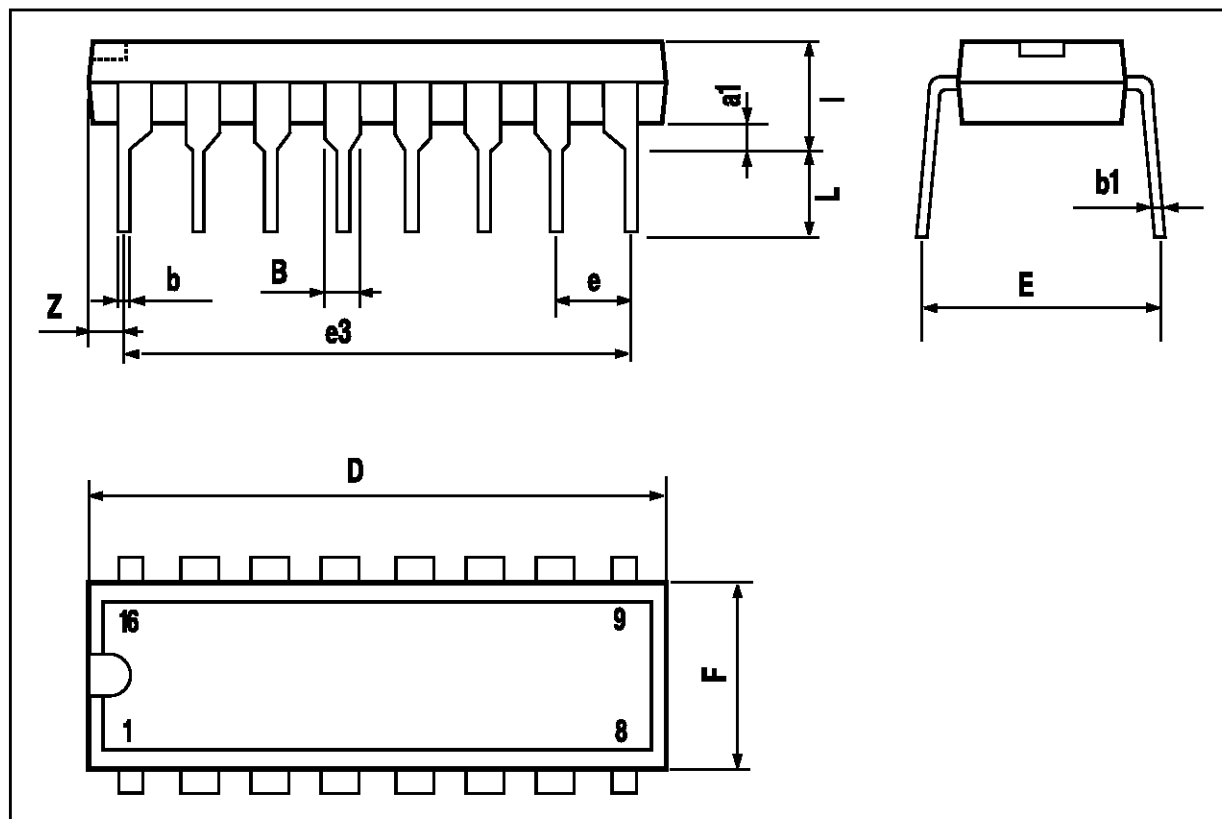
**Figure 16 :** Maximum Allowable Power Dissipation vs. Ambient Temperature.





## 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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