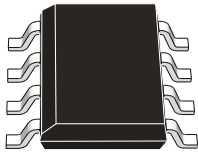

Dual low voltage power amplifier



SO8

Features

- Supply voltage down to 1.8 V
- Low crossover distortion
- Low quiescent current
- Bridge or stereo configuration

Description

The **TDA2822D** is a monolithic integrated circuit in 8 lead (SO-8) package. It is intended for use as a dual audio power amplifier in portable cassette players, radios and CD players.

Product status link
TDA2822D
Ordering information
TDA2822D013TR

1 Application circuit

Figure 1. Application circuit

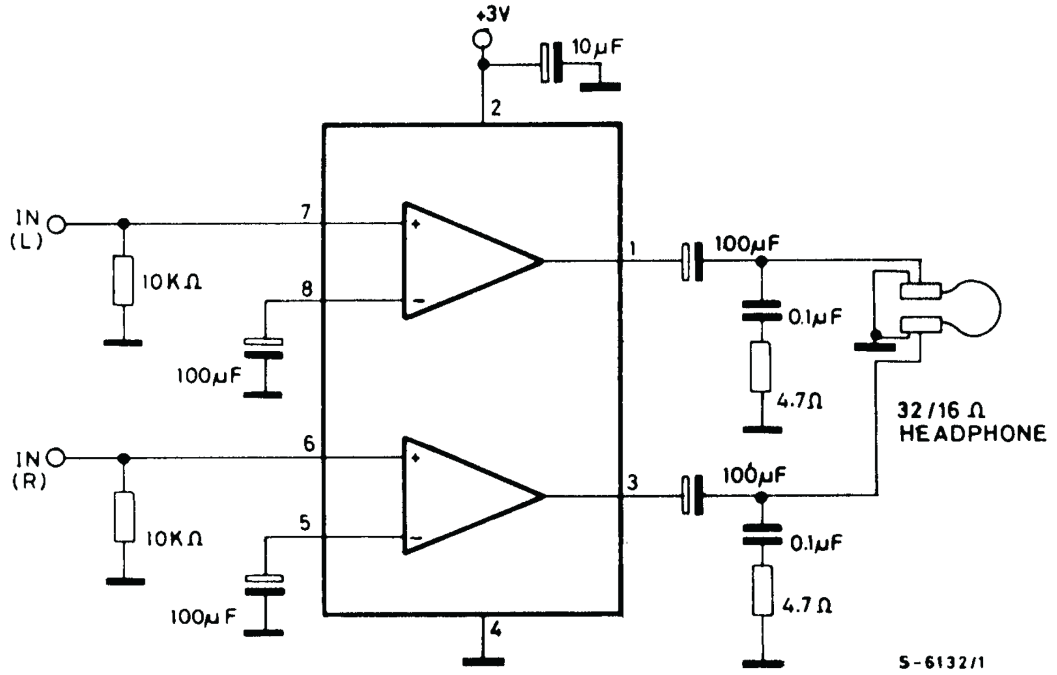


Figure 2. Stereo application and test circuit

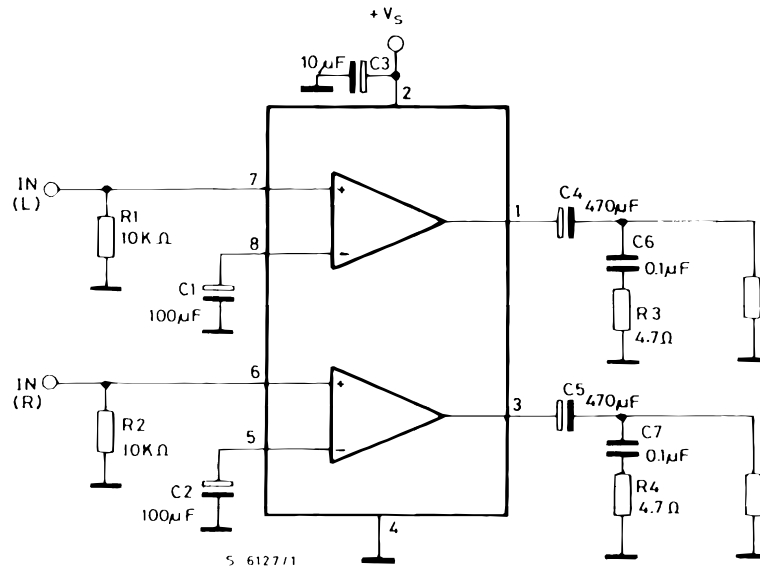
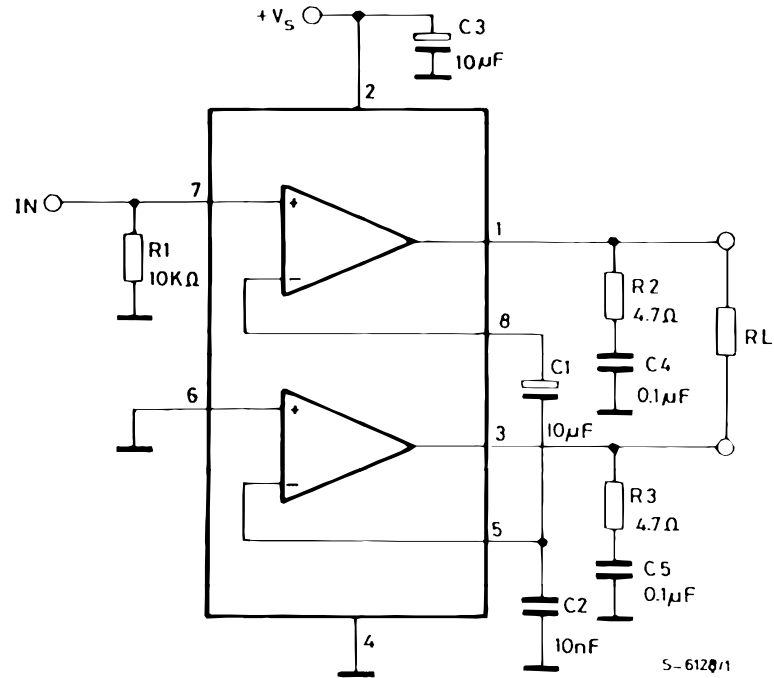
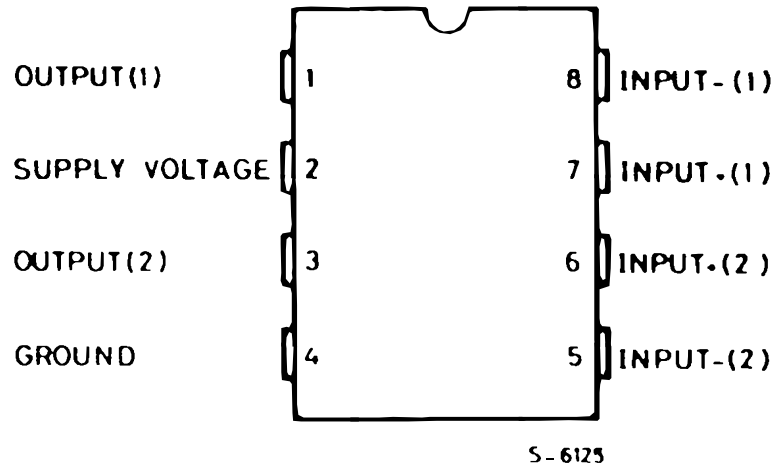


Figure 3. Bridge application and test circuit



2 Pin connection

Figure 4. Pin connection



3 Absolute maximum ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_S	Supply voltage	15	V
I_O	Peak output	1	A
P_{tot}	Total power dissipation $T_{amb} = 50\text{ °C}$	0.5	W
T_{stg}	Storage and junction temperature	-40 to 150	°C
T_j			

Table 2. Thermal data

Symbol	Description	Value	Unit
$R_{thj-amb}$	Thermal resistance junction-ambient max.	200	°C/W

4 Electrical characteristics

($V_S = 6\text{ V}$; $T_{amb} = 25\text{ °C}$, unless otherwise specified.
 STEREO (see Figure 2. Stereo application and test circuit).

Table 3. Electrical characteristics (stereo)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit	
V_S	Supply voltage		1.8		15	V	
I_d	Total quiescent drain current				15	mA	
V_O	Quiescent output voltage			2.7		V	
		$V_S = 3\text{ V}$		1.2		V	
I_b	Input bias current			100		nA	
P_O	Output power (each channel) ($f = 1\text{ kHz}$, $d = 10\%$)	$R_L = 32\ \Omega$	$V_S = 9\text{ V}$	300		mW	
			$V_S = 6\text{ V}$	120			
			$V_S = 4.5\text{ V}$	60			
			$V_S = 3\text{ V}$	20			
			$V_S = 2\text{ V}$	5			
		$R_L = 16\ \Omega$	$V_S = 6\text{ V}$	170	220		mW
		$R_L = 8\ \Omega$	$V_S = 6\text{ V}$	300	380		mW
			$R_L = 4\ \Omega$	$V_S = 4.5\text{ V}$		320	
		$V_S = 3\text{ V}$		110			
d	Distortion	$R_L = 32\ \Omega$	$P_O = 40\text{ mW}$		0.2		%
		$R_L = 16\ \Omega$	$P_O = 75\text{ mW}$		0.2		%
		$R_L = 8\ \Omega$	$P_O = 150\text{ mW}$		0.2		%
G_V	Closed loop voltage gain	$f = 1\text{ kHz}$	36	39	41	dB	
ΔG_V	Channel balance				1	dB	
R_i	Input resistance	$f = 1\text{ kHz}$	100			k Ω	
e_N	Total input noise	$R_S = 10\text{ k}\Omega$, B = curve A		2		μV	
		$R_S = 10\text{ k}\Omega$, B = 22 Hz to 22 kHz		2.5		μV	
SVR	Supply voltage rejection	$f = 100\text{ Hz}$, $C_1 = C_2 = 100\text{ F}$	24	30		dB	
C_s	Channel separation	$f = 1\text{ kHz}$		50		dB	

Bridge (see Figure 3. Bridge application and test circuit).

Table 4. Electrical characteristics (bridge)

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
V_S	Supply voltage			1.8		15	V
I_d	Total quiescent drain current		$R_L = \infty$			15	mA
V_{OS}	Output offset voltage between the outputs		$R_L = 8 \Omega$			± 80	mV
I_b	Input bias current				100		nA
P_O	Output power (f = 1 kHz, d = 10%)	$R_L = 32 \Omega$	$V_S = 9 V$	1000			mW
			$V_S = 6 V$	320	400		
			$V_S = 4.5 V$		200		
			$V_S = 3 V$	50	65		
			$V_S = 2 V$		8		
		$R_L = 16 \Omega$	$V_S = 6 V$		800		mW
			$V_S = 3 V$		120		
		$R_L = 8 \Omega$	$V_S = 4.5 V$		700		mW
			$V_S = 3 V$		220		
		$R_L = 4 \Omega$	$V_S = 3 V$		350		mW
$V_S = 2 V$			80				
d	Distortion	$R_L = 8 \Omega$	$P_O = 0.5 mW, f = 1 kHz$		0.2		%
G_V	Closed loop voltage gain		f = 1 kHz		39		dB
R_i	Input resistance		f = 1 kHz	100			k Ω
e_N	Total input noise	$R_S = 10 k\Omega, B = \text{curve A}$			2.5		μV
		$R_S = 10 k\Omega, B = 22 Hz \text{ to } 22 kHz$			3		
SVR	Supply voltage rejection		f = 100 Hz		40		dB
B	Power bandwidth (-3 dB)		$R_L = 8 k\Omega, P_O = 1 W$		120		kHz

Figure 5. Supply voltage rejection vs. frequency

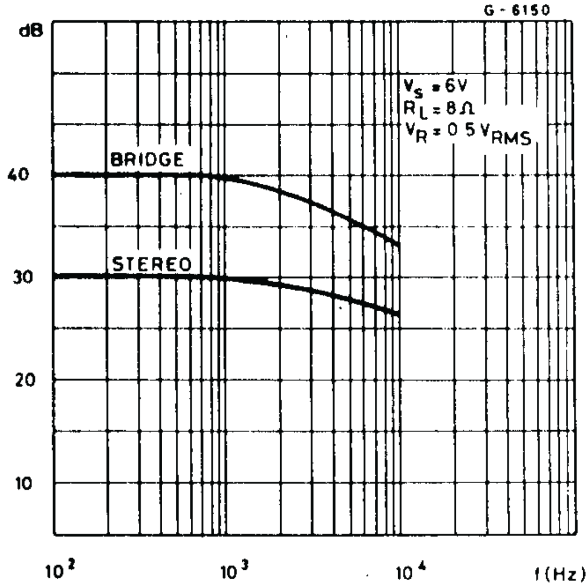


Figure 6. Output power vs. supply voltage (THD= 10%, f=1 kHz stereo)

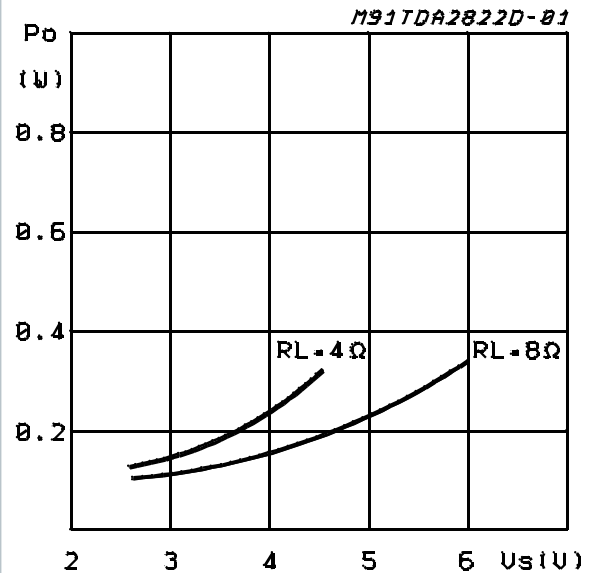


Figure 7. Total power dissipation vs. output power (bridge, $R_L=8\Omega$)

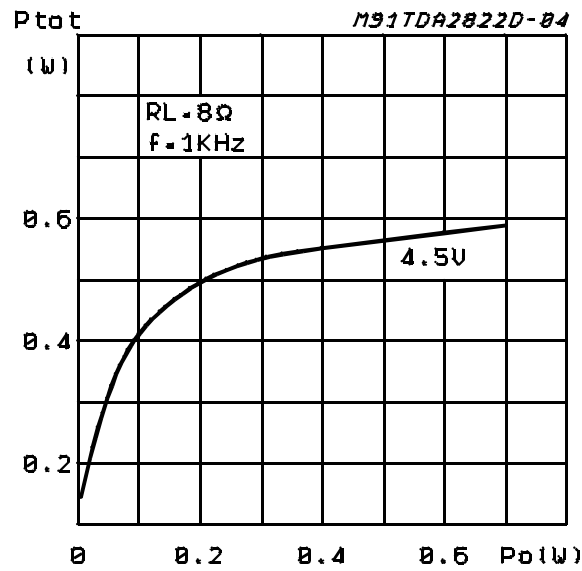
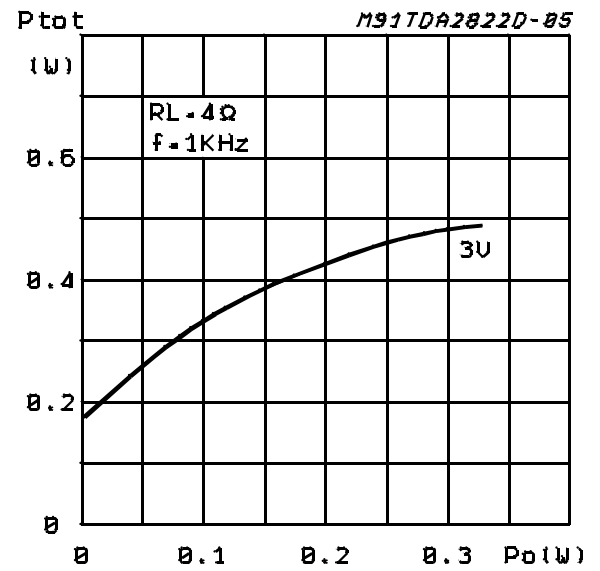


Figure 8. Total power dissipation vs. output power (bridge, $R_L=4\Omega$)



5 Package information

In order to meet environmental requirements, ST offers these devices in different grades of **ECOPACK** packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

5.1 SO8 package information

Figure 9. SO8 package outline

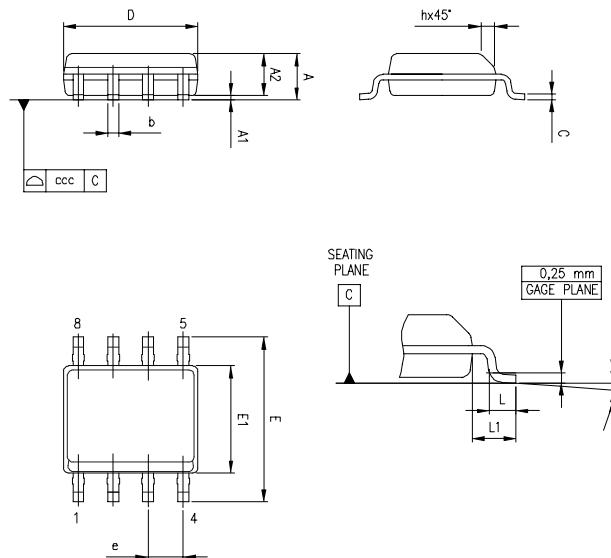


Table 5. SO-8 mechanical data

Dim.	mm			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
A1	0.1		0.25	0.004		0.01
A2	1.25			0.049		
b	0.28		0.48	0.011		0.019
c	0.17		0.23	0.007		0.01
D	4.8	4.9	5	0.189	0.193	0.197
E	5.8	6	6.2	0.228	0.236	0.244
E1	3.8	3.9	4	0.15	0.154	0.157
e		1.27			0.05	
h	0.25		0.5	0.01		0.02
L	0.4		1.27	0.016		0.05
L1		1.04			0.04	
k			8 °			8 °
ccc			0.1			0.004

Revision history

Table 6. Document revision history

Date	Version	Changes
05-Sep-2003	1	No history because of migration.
19-Sep-2016	2	
28-Aug-2020	3	Updated the ordering information table in cover page.

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