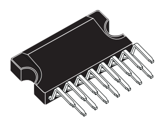
TDA7263SA

12 + 12W STEREO AMPLIFIER WITH MUTING

- WIDE SUPPLY VOLTAGE RANGE
- HIGH OUTPUT POWER
  12+12W @ V_S=28V, R_L = 8Ω, THD=10%
- MUTE FACILITY (POP FREE) WITH LOW CONSUMPTION
- AC SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION



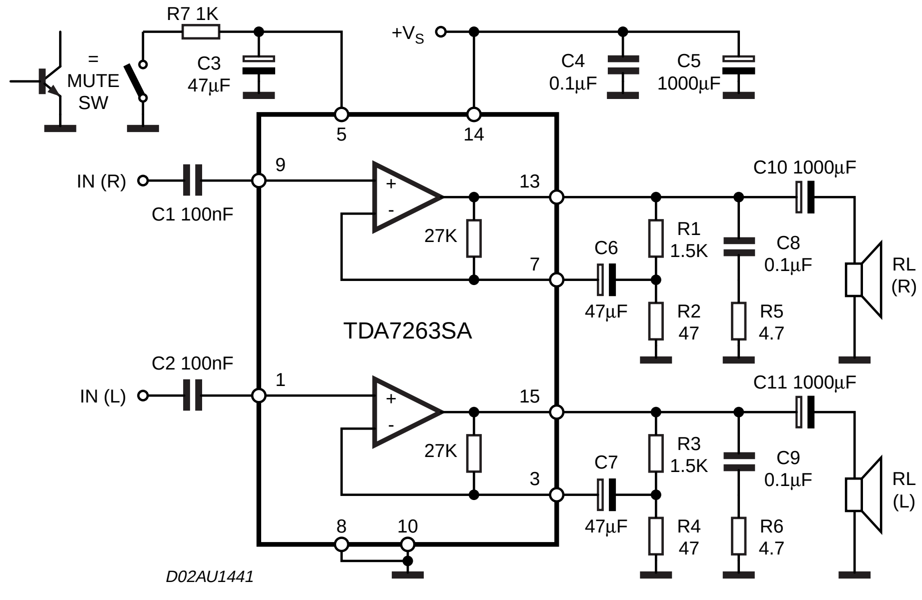
Clipwatt15
ORDERING NUMBER: TDA7263SA

DESCRIPTION

The TDA7263SA is class AB dual audio power amplifier assembled in the Clipwatt package, specially designed for high quality sound application as HI-FI music centers and stereo TV sets.

Pin to pin compatible with the TDA7253L, TDA7263L

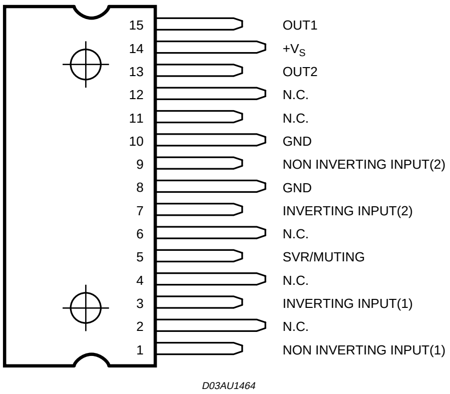
TEST AND APPLICATION DIAGRAM



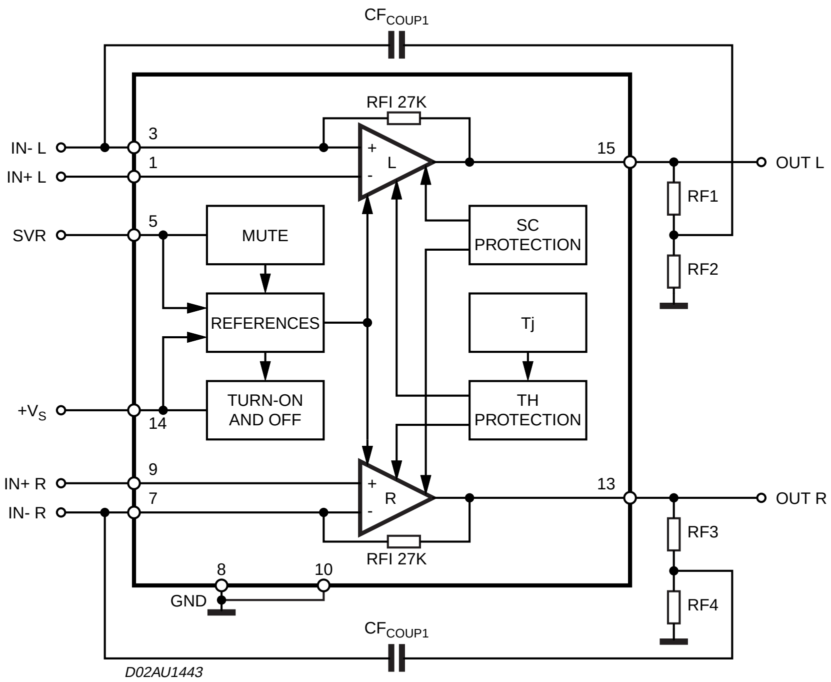
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	Supply Voltage without Load	35	V
I_O	Output Peak Current (repetitive f >20Hz)	2.5	A
I_O	Output Peak Current (non repetitive, t = 100µs)	3.5	A
P_{tot}	Total Power Dissipation (T_{case} = 70°C)	20	W
T_{op}	Operating Temperature Range	0 to 70	°C
T_{stg}, T_j	Storage & Junction Temperature	-40 to 150	°C

PIN CONNECTION (Top view)



BLOCK DIAGRAM



THERMAL DATA

Symbol	Parameter		Value	Unit
$R_{th\ j\text{-}case}$	Thermal resistance junction to case	Max	3.5	°C/W

ELECTRICAL CHARACTERISTCS (Refer to the stereo test and application circuit, V_S = 28V; R_L = 8Ω; G_v = 30dB; f = 1KHz; T_{amb} = 25°C unless otherwise specified.)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_S	Supply Voltage		10		32	V
V_O	Quiescent Output Voltage			13.5		V
I_q	Total Quiescent Current			70	95	mA
P_O	Output Power (RMS)	d = 10%; T_{amb} = 85°C	10	12		W
		d = 1%		9.5		W
d	Total Harmonic Distortion	P_O = 1W, f = 1kHz		0.02	0.2	%
		f = 100Hz to 10KHz; P_O = 0.1 to 8W			0.5	%
C_T	Cross Talk	R_S = 10KΩ; f = 1KHz		70		dB
		R_S = 10KΩ; f = 10KHz		60		dB
R_I	Input Resistance		100	200		KΩ
f_L	Low Frequency Roll-off (-3dB)			40		Hz
f_H	High Frequency Roll-off (-3dB)			80		KHz
e_N	Total Input Noise Voltage	A Curve; R_S = 10KΩ		1.5		mV
		f = 22Hz to 22KHz; R_S = 10KΩ		3	10	V
SVR	Supply Voltage Rejection (each channel)	R_S = 10KΩ; f = 100Hz; V_r = 0.5V	45	60		dB
T_j	Thermal Shutdown Junction Temperature			145		°C
MUTE FUNCTION						
VT_{MUTE}	Mute Threshold		1	1.6		V
VT_{PLAY}	Play Threshold			4.5		V
ATT_{AM}	Mute Attenuation		70	100		dB
I_{qMUTE}	Quiescent Current @ Mute			7	10	mA

TYPICAL CHARACTERISTICS (referred to the typical Application Circuit, V_S = 28V, R_L = 8Ω, unless otherwise specified)

Figure 1. Output Power vs. Supply Voltage

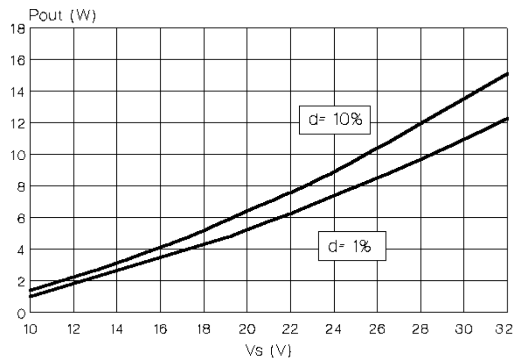


Figure 2. Distortion vs. Output Power

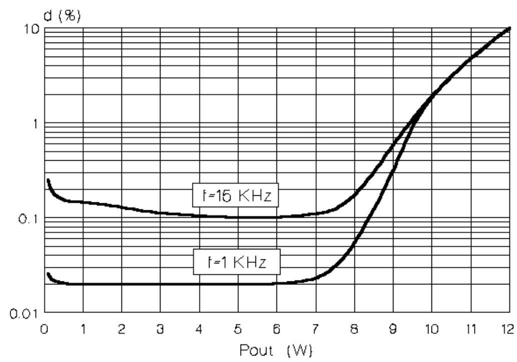


Figure 3. Quiescent Current vs. Supply Voltage

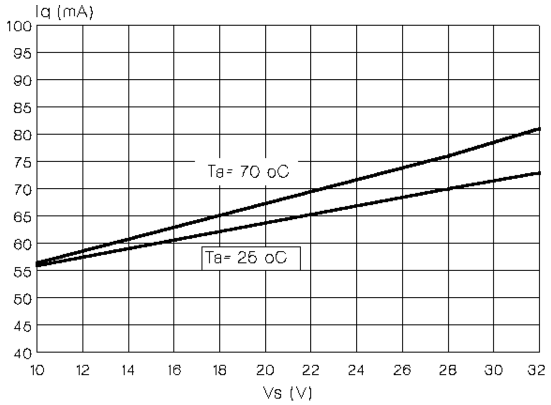


Figure 4. Supply Voltage Rejection vs. Freq.

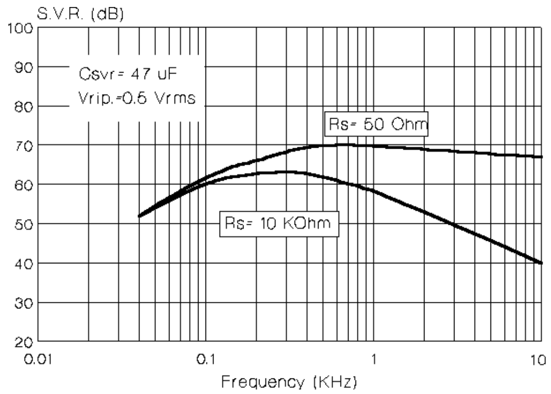


Figure 5. Crosstalk vs. Frequency

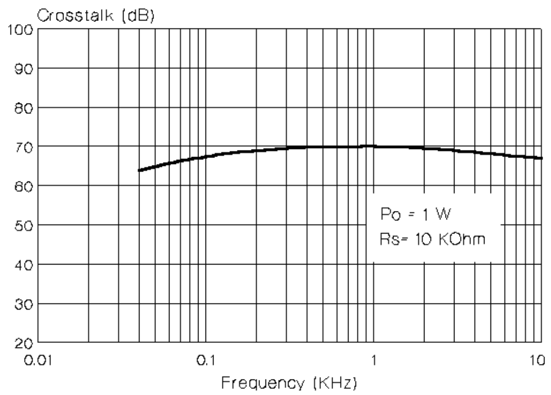


Figure 6. Output Attenuation & Quiescent Current vs. V_{pin5}

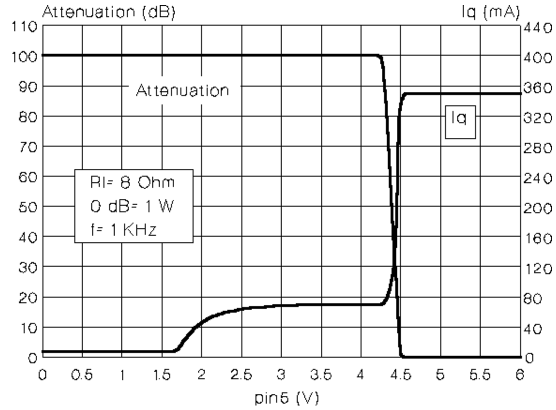
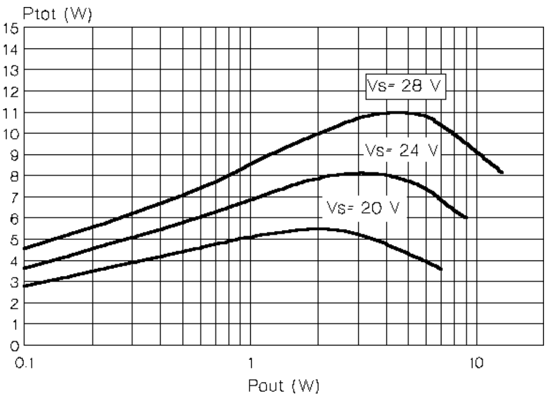


Figure 7. Total Power Dissipation vs. Output Power



BUILT-IN PROTECTION SYSTEMS

Thermal Shut-down

The presence of a thermal limiting circuit offers the following advantages:

1 an overload on the output (even if it is permanent), or an excessive ambient temperature can be easily withstood.

2 the heatsink can have a smaller factor of safety compared with that of a conventional circuit. There is no device damage in the case of excessive junction temperature; all that happens is that P_O (and therefore P_O) and I_O are reduced.

Short Circuit (AC Conditions)

The TDA7263SA can withstand accidental short circuits across the speaker made by a wrong connection during normal play operation.

HEAT SINK DIMENSIONING:

In order to avoid the thermal protection intervention, that is placed approximatively at T_j = 150°C, it is important the dimensioning of the Heat Sinker R_{Th} (°C/W).

The parameters that influence the dimensioning are:

– Maximum dissipated power for the device (P_{dmax})

– Max thermal resistance Junction to case ($R_{Th\ j\text{-}c}$)

– Max. ambient temperature $T_{amb\ max}$

– Quiescent current I_q (mA)

Example:

V_{CC} = 28V, R_{load} = 8ohm, $R_{Th\ j\text{-}c}$ = 3.5 °C/W , $T_{amb\ max}$ = 50°C

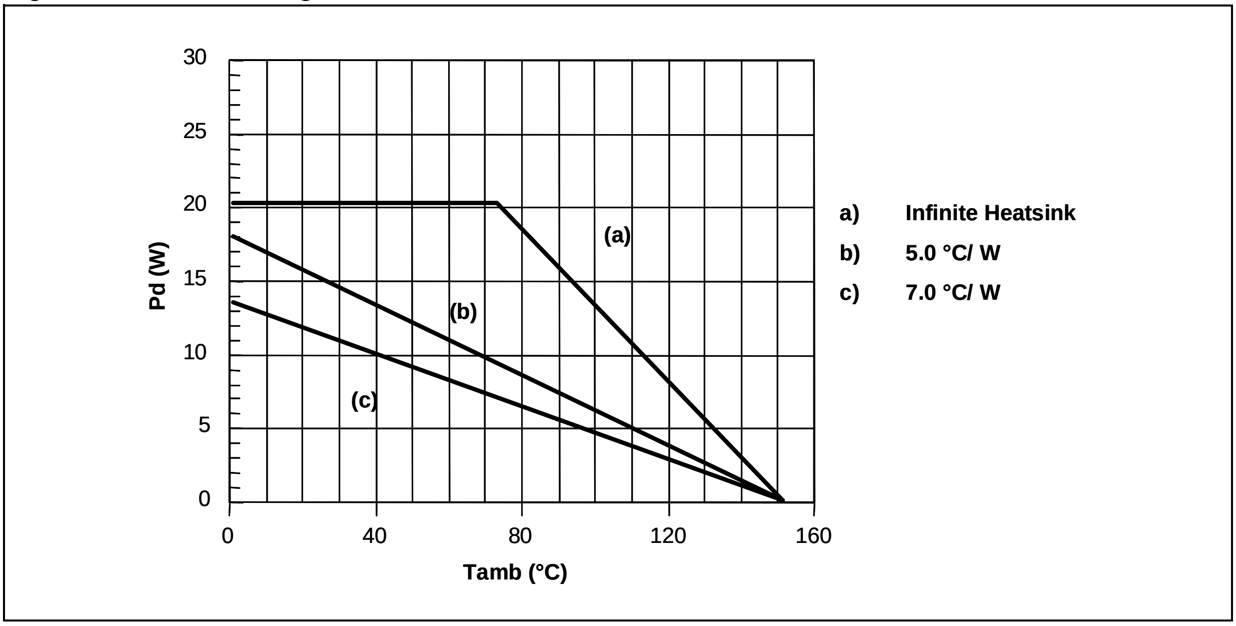
$$P_{dmax} = (\text{N° channels}) \cdot \frac{V_{cc}^2}{2\Pi^2 \cdot R_{load}} + I_q \cdot V_{cc}$$

P_{dmax} = 2 · (4.9) + 1.9 = 11.3W

$$\text{(Heat Sinker)}\quad R_{Th\ c\text{-}a} = \frac{150 - T_{amb\ max}}{P_{d\ max}} - R_{Th\ j\text{-}c} = \frac{150 - 50}{11.3} - 3.5 = 5.3°C/W$$

In figure 8 is shown the Power derating curve for the device.

Figure 8. Power derating curve



Clipwatt Assembling Suggestions

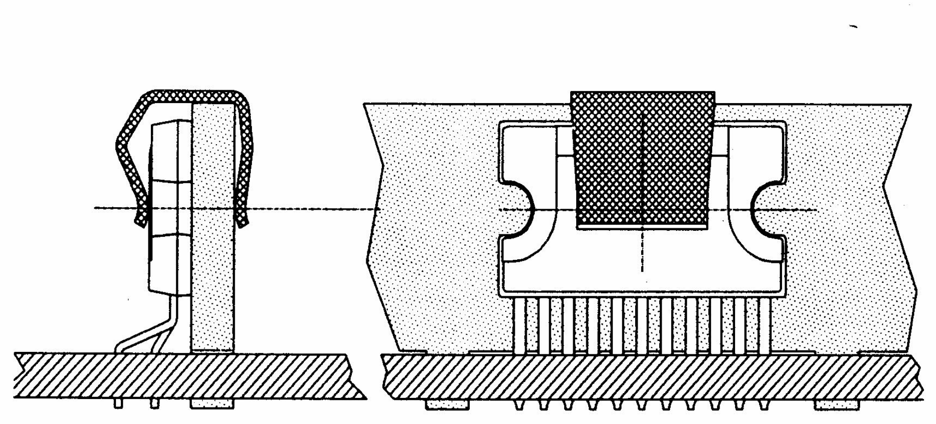
The suggested mounting method of Clipwatt on external heat sink, requires the use of a clip placed as much as possible in the plastic body center, as indicated in the example of figure 9.

A thermal grease can be used in order to reduce the additional thermal resistance of the contact between package and heatsink.

A pressing force of 7 - 10 Kg gives a good contact and the clip must be designed in order to avoid a maximum contact pressure of 15 Kg/mm2 between it and the plastic body case.

As example , if a 15Kg force is applied by the clip on the package , the clip must have a contact area of 1mm2 at least.

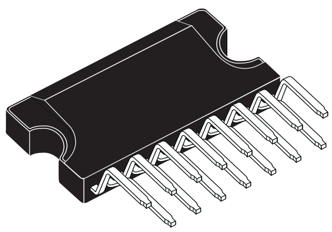
Figure 9. Example of right placement of the clip



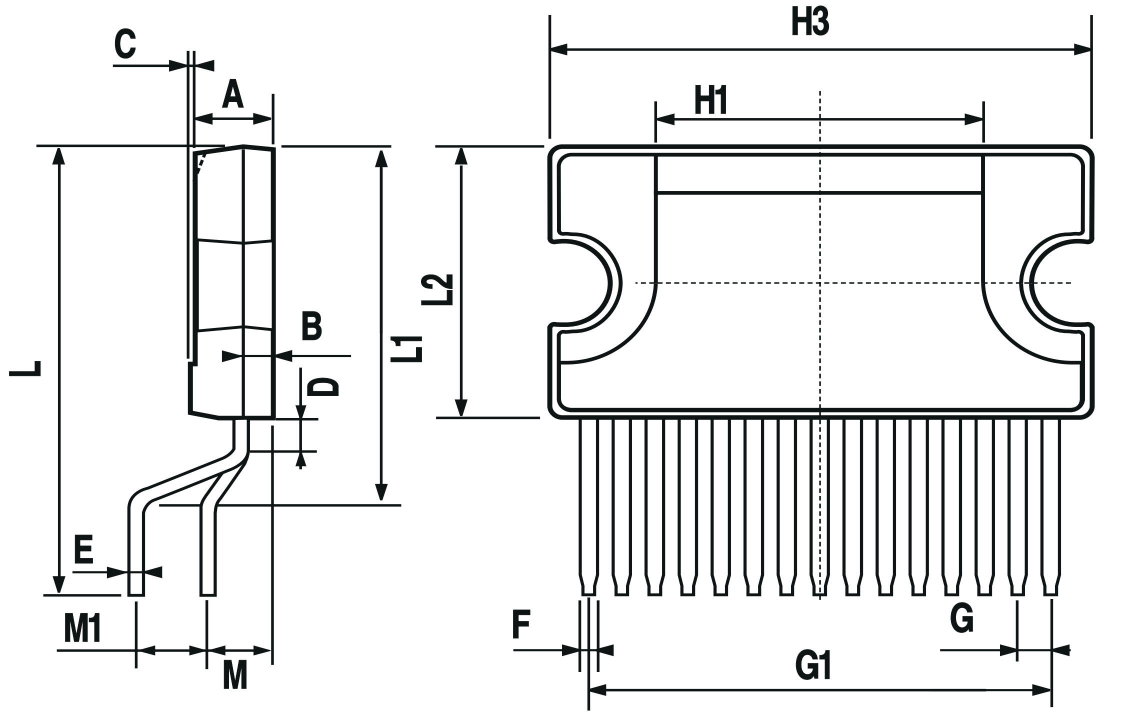
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			3.2			0.126
B			1.05			0.041
C		0.15			0.006	
D		1.55			0.061	
E	0.49		0.55	0.019		0.022
F	0.67		0.73	0.026		0.029
G	1.14	1.27	1.4	0.045	0.050	0.055
G1	17.57	17.78	17.91	0.692	0.700	0.705
H1		12			0.480	
H2		18.6			0.732	
H3	19.85			0.781		
L		17.95			0.707	
L1		14.45			0.569	
L2	10.7	11	11.2	0.421	0.433	0.441
L3		5.5			0.217	
M		2.54			0.100	
M1		2.54			0.100	

OUTLINE AND MECHANICAL DATA

Weight: 1.92gr



Clipwatt15



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