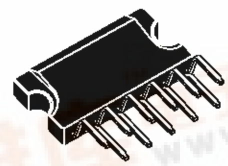
SGS-THOMSON MICROELECTRONICS

TDA7263

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



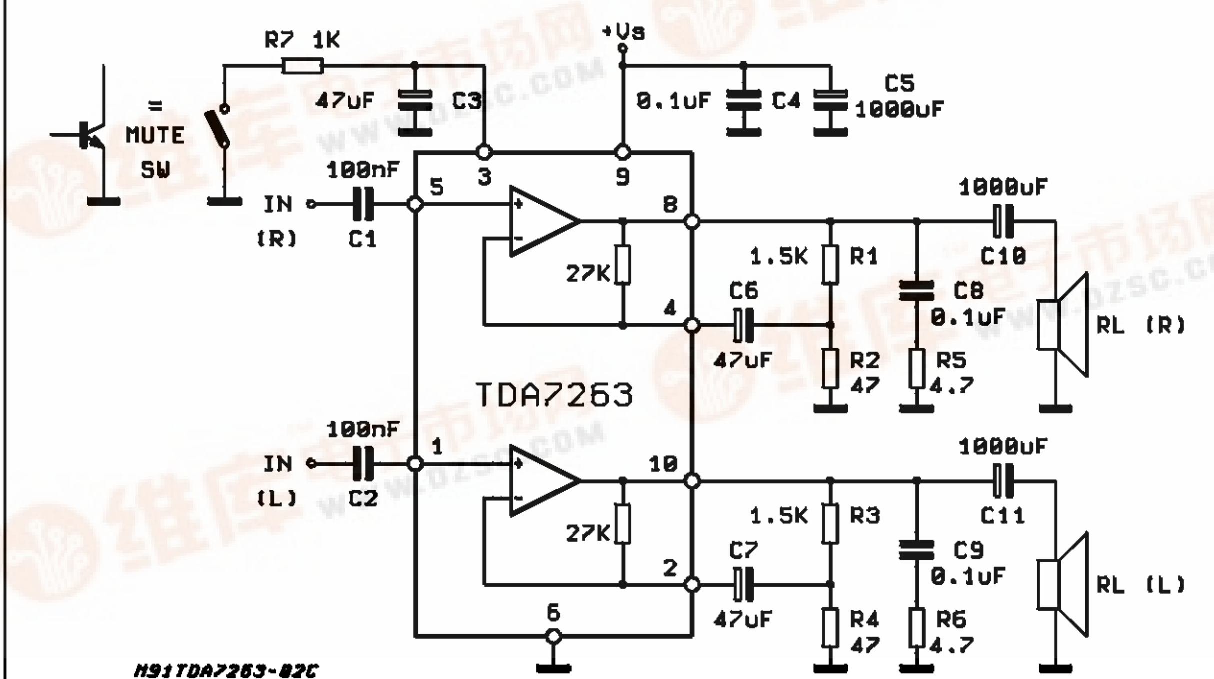
Clipwatt11

ORDERING NUMBER: TDA7263

DESCRIPTION

The TDA7263 is class AB dual audio power amplifier assembled in the new Clipwatt package, specially designed for high quality sound applications as HI-FI music centers and stereo TV sets.

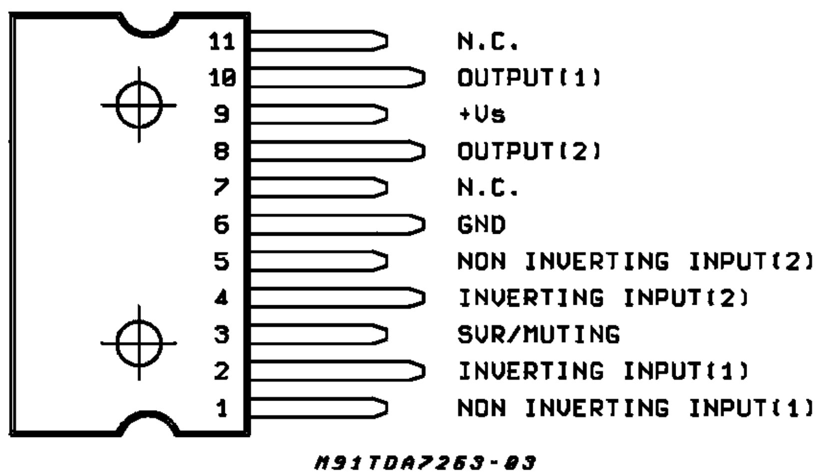
TEST AND APPLICATION CIRCUIT



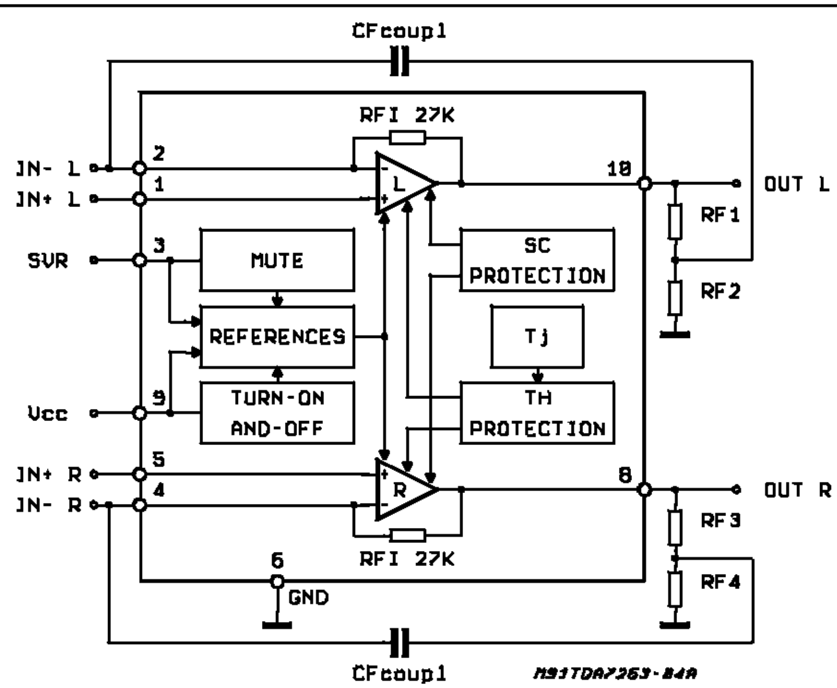
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	Supply Voltage	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)	25	W
T_{op}	Operating Temperature Range	0 to 70	°C
$T_{stg,Tj}$	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	°C/W

ELECTRICAL CHARACTERISTICS (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% Tamb = 85°C d = 1%	10	12 9.5		W W
d	Total Harmonic Distortion	P_O = 1W, f = 1kHz f = 100Hz to 10KHz; P_O = 0.1 to 8W		0.02	0.2 0.5	%
CT	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	µV
SVR	Supply Voltage Rejection (each channel)	R_S = 10KΩ; f = 100Hz; Vr = 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

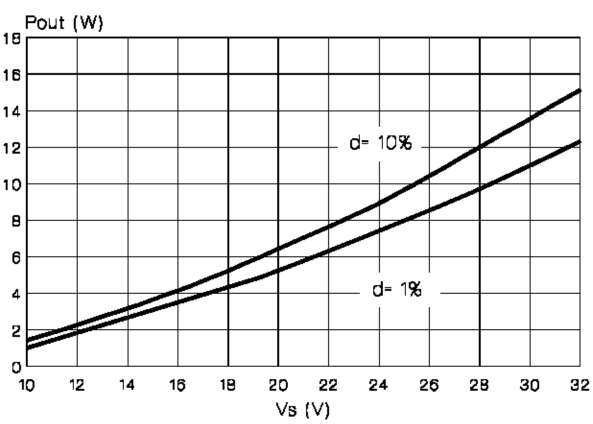


Figure 2: Distortion vs. Output Power

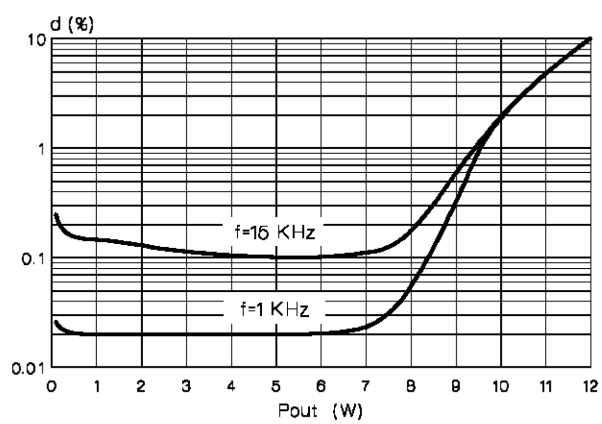


Figure 3: Quiescent Current vs. Supply Voltage

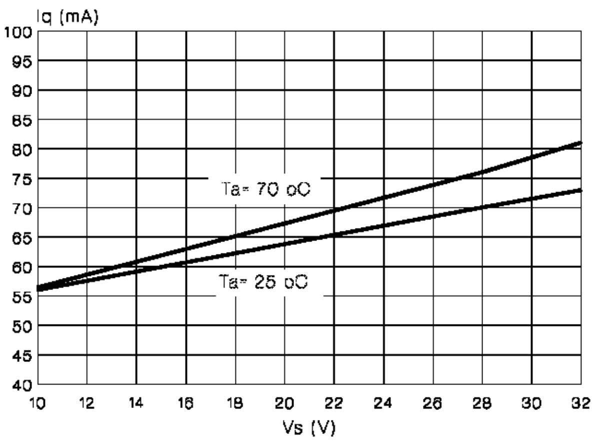


Figure 4: Supply Voltage Rejection vs. Frequency

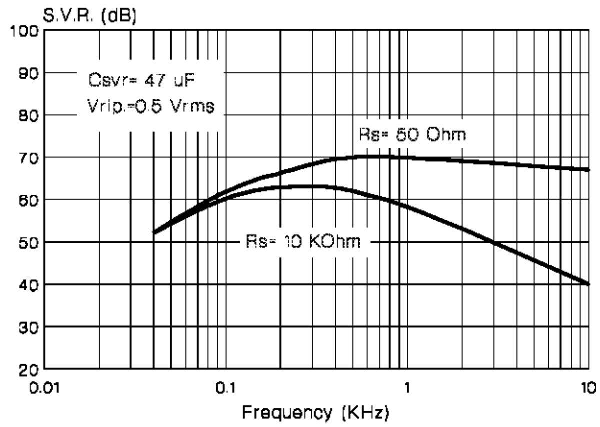


Figure 5: Crosstalk vs. Frequency

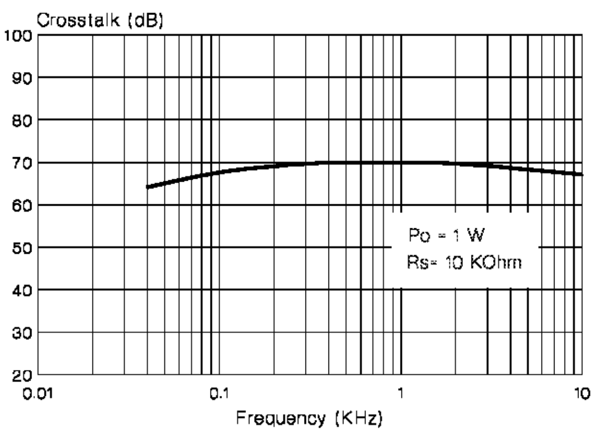


Figure 6: Output Attenuation & Quiescent Current vs. V_{pin3}

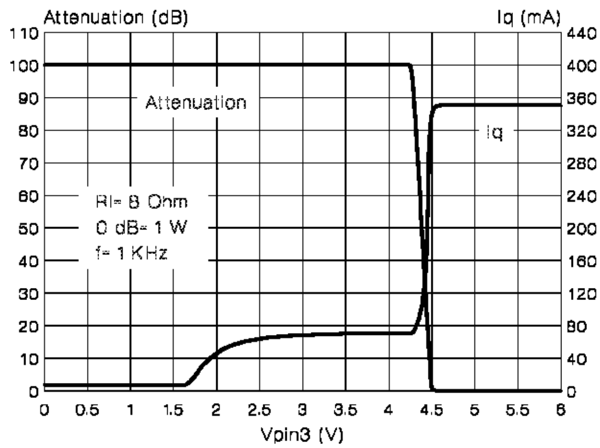


Figure 7: Total Power Dissipation vs. Output Power

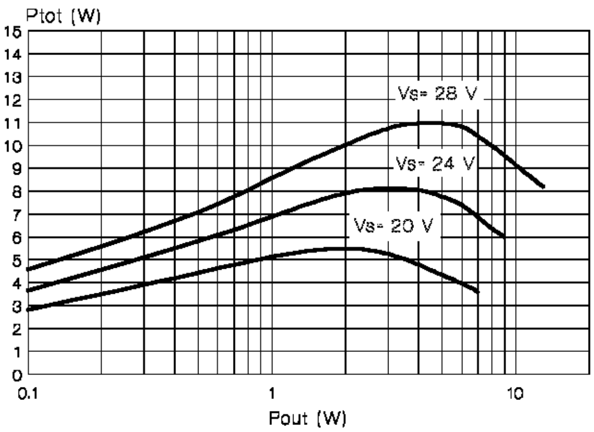
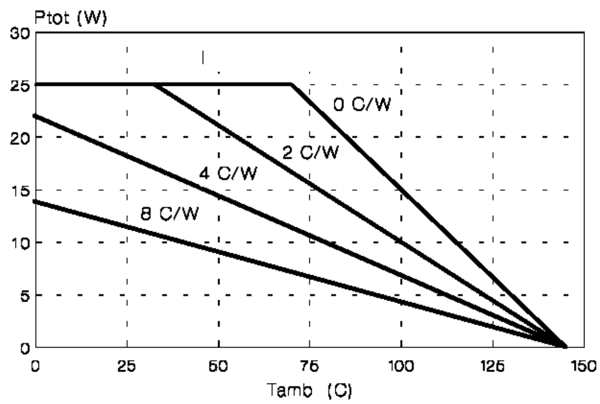


Figure 8: Maximum allowable Power dissipation vs. Ambient Temperature



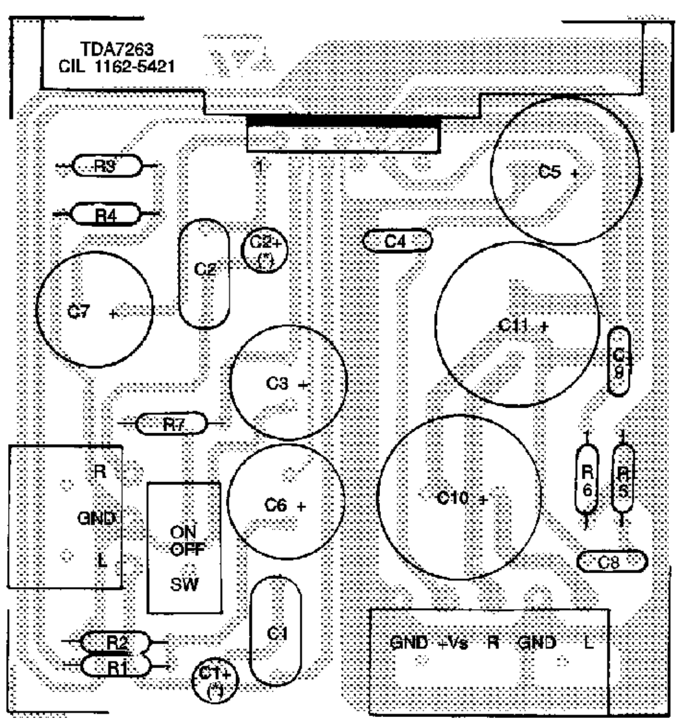
APPLICATION SUGGESTION

The recommended values of the components are those shown on the typical application circuit. Different values can be used; the following table can help the designer.

Component	Recomm. Value	Purpose	Larger Than	Smaller Than
R1 and R3	1.5KΩ	Close loop gain setting (*)	Increase of gain	Decrease of gain
R2 and R4	47Ω	Close loop gain setting (*)	Decrease of gain	Increase of gain
R5 and R6	4.7Ω	Frequency stability	Danger of oscillations	
C1 and C2	100nF	Input DC decoupling	Higher SVR	Higher low frequency cutoff
C3	47µF	- Ripple Rejection - Mute time constant	Increase of the Switch-on time	- Degradation of SVR - Worse turn-off pop by muting
C4	100nF	Supply Voltage Bypass		Danger of oscillations
C5	1000µF	Supply Voltage Bypass		
C6 and C7	47µF	Feedback input DC decoupling	Increase of the Switch-on time	Danger of Switch-on time
C8 and C9	0.1µF	Frequency stability		Danger of oscillations
C10 and C11	1000µF	Output DC decoupling		Higher low-frequency cut-off

(*) Closed loop gain must be higher than 26dB

Figure 9: P.C. Board and Component Layout (1:1 scale)



Note: Use either C1, C2 (Polyester) or C1(*), C2(*) (Electrolytic) but not both.

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; if for any reason the junction temperature increases up to 145°C. the thermal shutdown simply reduces the output power and therefore the power dissipation.

The maximum allowable power dissipation depends upon the thermal resistance junction-ambient. Figure 8 shows the dissipable power as a function of ambient temperature for different heatsink thermal resistance.

SHORT CIRCUIT (AC CONDITIONS)

The TDA7263 can withstand accidental short circuits across the speaker made by a wrong connection during normal play operation.

CLIPWATT11 PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			3.10			0.122
B			1.10			0.04
C		0.15			0.006	
D		1.50			0.059	
E		0.52			0.02	
F		0.80			0.03	
G		1.70			0.066	
G1		17.00			0.66	
H1		12.00			0.48	
H3		20.00			0.79	
L		17.90			0.70	
L1		14.40			0.57	
L2		11.00			0.43	
M		2.54			0.1	
M1		2.54			0.1