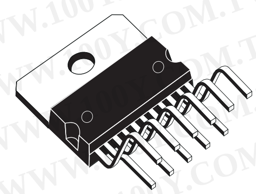
TDA7265

25 +25W STEREO AMPLIFIER WITH MUTE & ST-BY

- WIDE SUPPLY VOLTAGE RANGE (UP TO ±25V ABS MAX.)
- SPLIT SUPPLY
- HIGH OUTPUT POWER 25 + 25W @ THD =10%, R_L = 8Ω, V_S = ±20V
- NO POP AT TURN-ON/OFF
- MUTE (POP FREE)
- STAND-BY FEATURE (LOW I_q)
- SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION



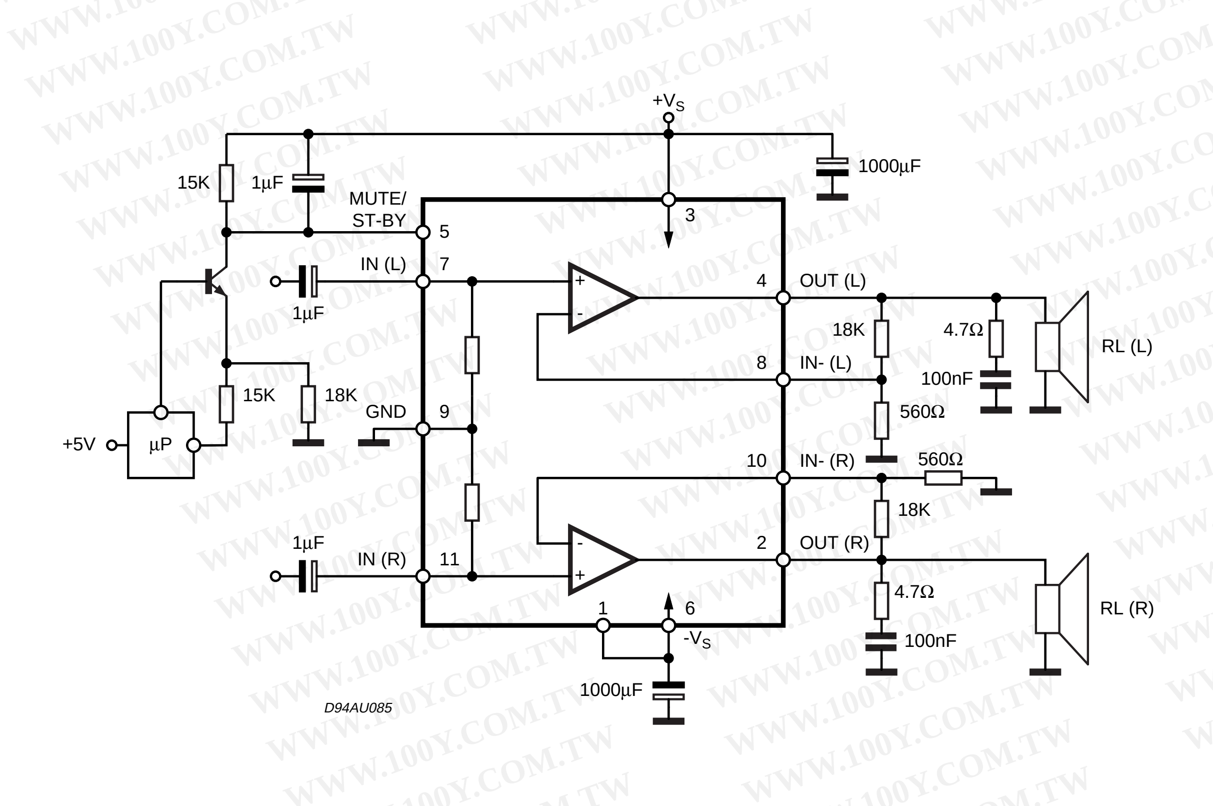
Multiwatt11

ORDERING NUMBER: TDA7265

DESCRIPTION

The TDA7265 is class AB dual Audio power amplifier assembled in the Multiwatt package, specially designed for high quality sound application as Hi-Fi music centers and stereo TV sets.

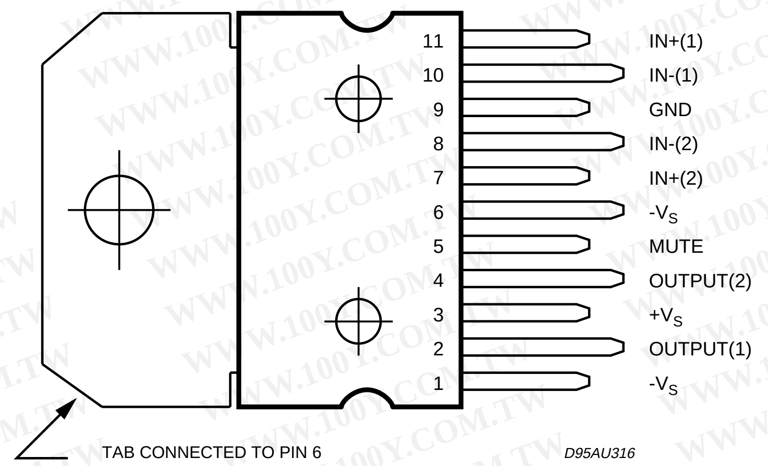
Figure 1: Typical Application Circuit in Split Supply



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	DC Supply Voltage	±25	V
I_O	Output Peak Current (internally limited)	4.5	A
P_{tot}	Power Dissipation T_{case} = 70°C	30	W
T_{op}	Operating Temperature	-20 to 85	°C
T_{stg}, T_j	Storage and Junction Temperature	-40 to +150	°C

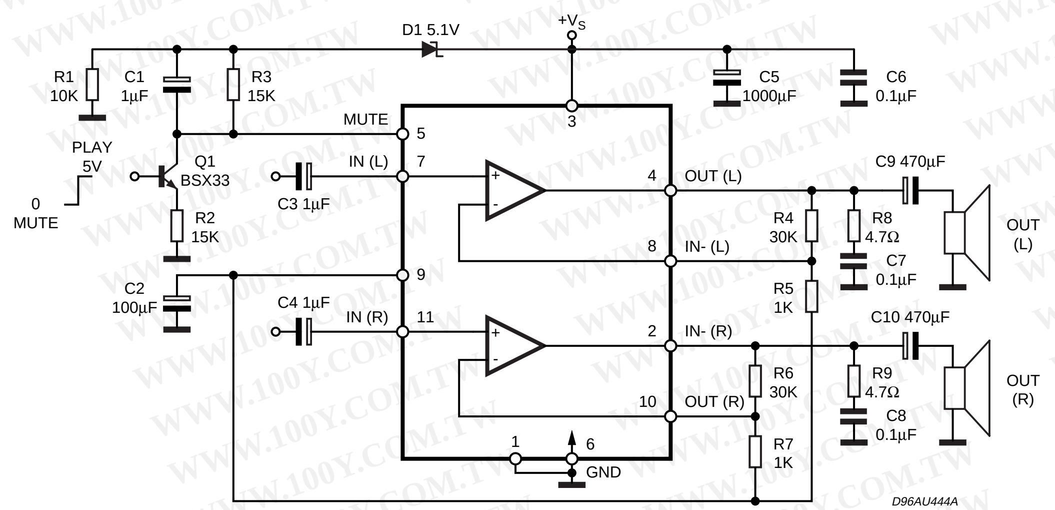
PIN CONNECTION (Top view)



THERMAL DATA

Symbol	Description		Value	Unit
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	2	°C/W

Fig 2: Typical Application Circuit in Single Supply



ELECTRICAL CHARACTERISTICS (Refer to the test circuit, $V_S = \pm 20V$; $R_L = 8\Omega$; $R_S = 50\Omega$; $G_V = 30dB$; f = 1KHz; $T_{amb} = 25°C$, unless otherwise specified.)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_S	Supply Range		± 5		± 25	V
I_q	Total Quiescent Current			80	130	mA
V_{OS}	Input Offset Voltage		–20		+20	mV
I_b	Non Inverting Input Bias Current			500		nA
P_O	Music Output Power (*)	THD = 10%; $R_L = 8\Omega$; $V_S = \pm 22.5V$		32		W
P_O	Output Power	THD = 10% $R_L = 8\Omega$; $V_S \pm 16V$; $R_L = 4\Omega$	 20 	 25 25		 W W
		THD = 1% $R_L = 8\Omega$; $V_S \pm 16V$; $R_L = 4\Omega$		 20 20		 W W
THD	Total Harmonic Distortion	$R_L = 8\Omega$; P_O = 1W; f = 1KHz		0.01		%
		$R_L = 8\Omega$; P_O = 0.1 to 15W; f = 100Hz to 15KHz			0.7	%
		$R_L = 4\Omega$; P_O = 1W; f = 1KHz		0.02		%
		$R_L = 4\Omega$; $V_S \pm 16V$; P_O = 0.1 to 12W; f = 100Hz to 15KHz			1	%
C_T	Cross Talk	f = 1KHz f = 10KHz		70 60		dB dB
SR	Slew Rate			10		V/µs
G_{OL}	Open Loop Voltage Gain			80		dB
e_N	Total Input Noise	A Curve f = 20Hz to 22KHz		3 4	 8	µV µV
R_i	Input Resistance		15	20		KΩ
SVR	Supply Voltage Rejection (each channel)	fr = 100Hz Vr = 0.5V		60		dB
T_j	Thermal Shut-down Junction Temperature			145		°C
MUTE FUNCTION [ref: +Vs]						
VT_{MUTE}	Mute / Play Threshold		-7	-6	-5	V
A_M	Mute Attenuation		60	70		dB
STAND-BY FUNCTION [ref: +Vs]						
VT_{ST-BY}	Stand-by / Mute Threshold		-3.5	-2.5	-1.5	V
A_{ST-BY}	Stand-by Attenuation			110		dB
$I_{q\ ST-BY}$	Quiescent Current @ Stand-by			3		mA

Note :
(*) FULL POWER up to. $V_S = \pm 22.5V$ with $R_L = 8\Omega$ and $V_S = \pm 16V$ with $R_L = 4\Omega$
MUSIC POWER is the maximal power which the amplifier is capable of producing across the rated load resistance (regardless of non linearity) 1 sec after the application of a sinusoidal input signal of frequency 1KHz.

Figure 3: Quiescent Current vs. Supply Voltage

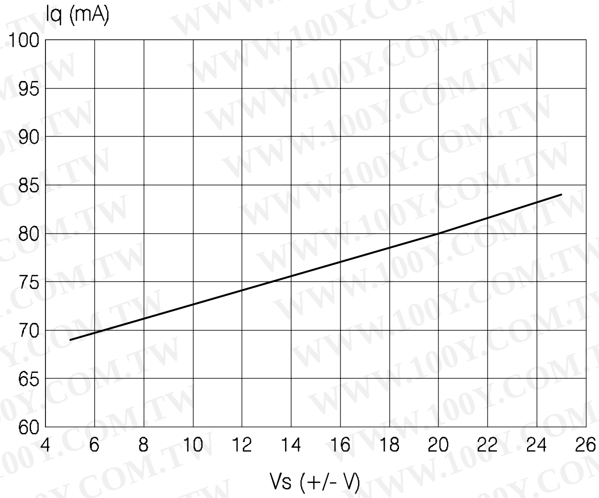


Figure 4: Frequency Response

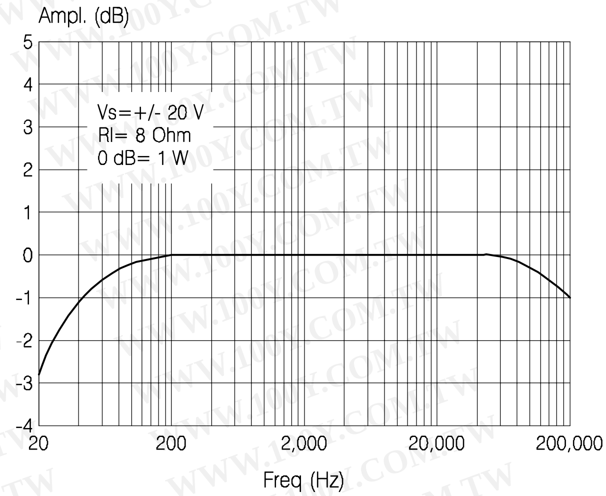


Figure 5: Output Power vs. Supply Voltage

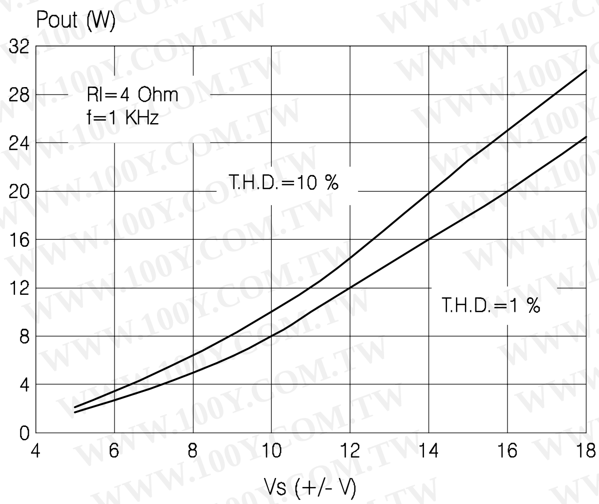


Figure 6: T.H.D. vs. Output Power

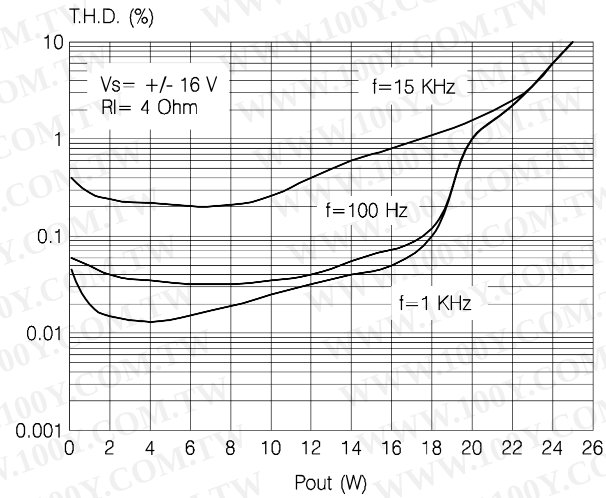


Figure 7: Output Power vs. Supply Voltage

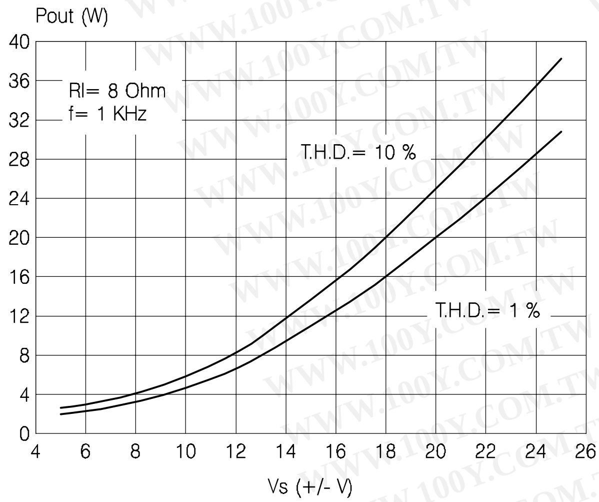


Figure 8: T.H.D. vs. Output Power

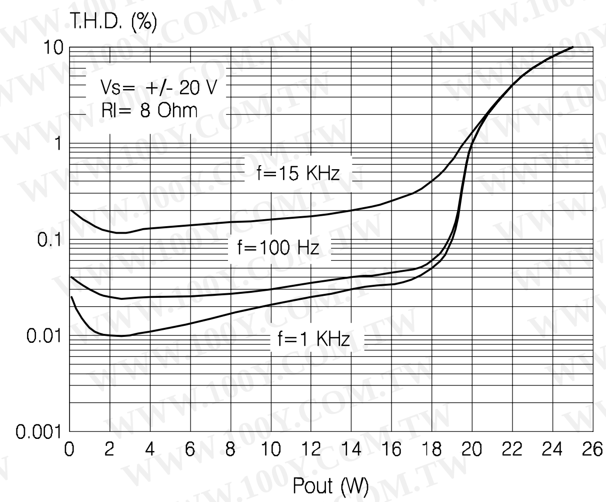


Figure 9: Quiescent Current vs. Pin # 5 Voltage

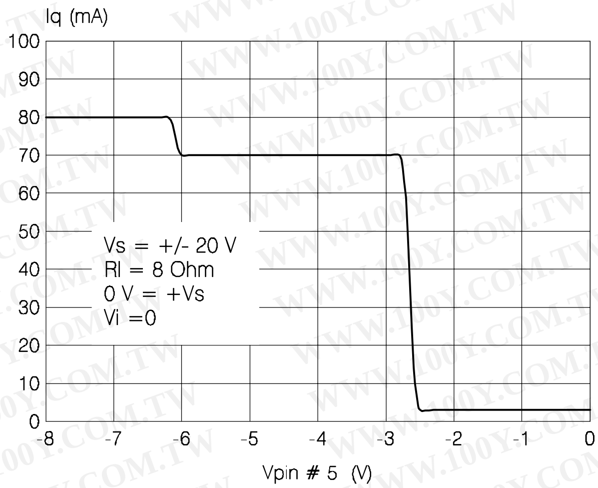


Figure 10: Attenuation vs. Pin # 5 Voltage

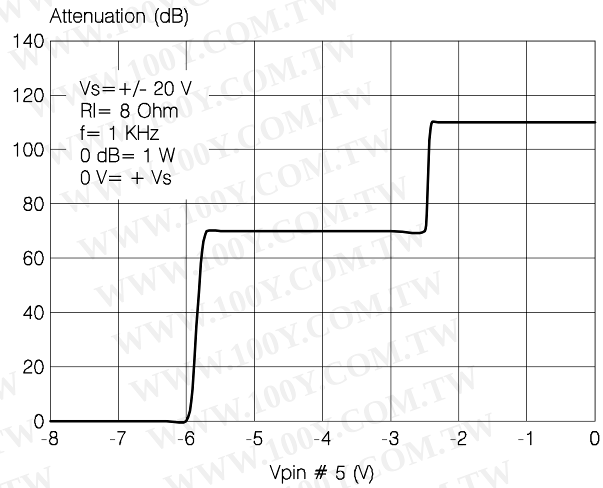


Figure 11: SVR vs. Frequency

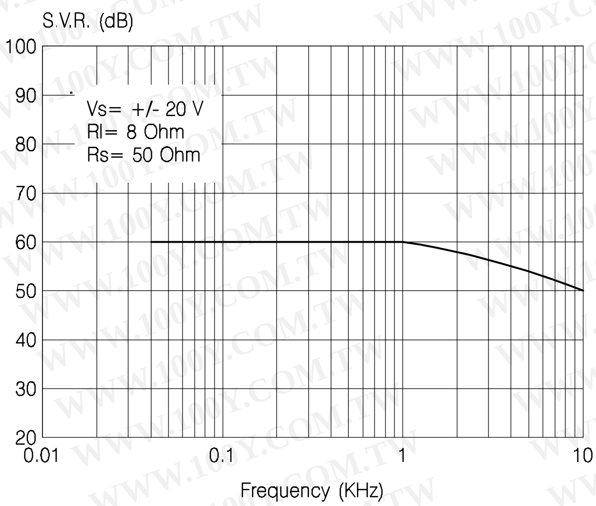


Figure 12: Crosstalk vs. Frequency

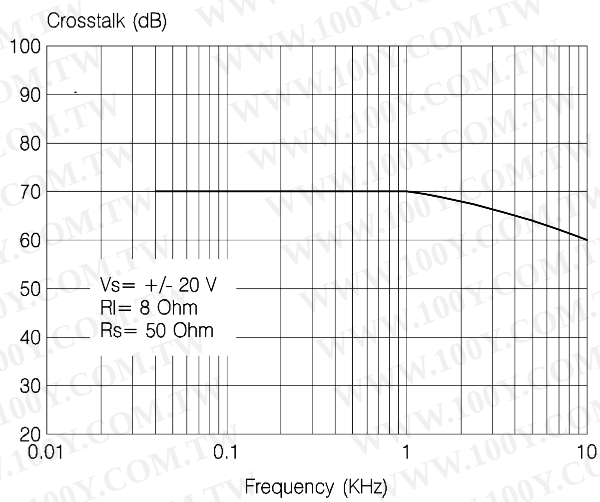


Figure 13: Power Dissipaton vs. Output Power

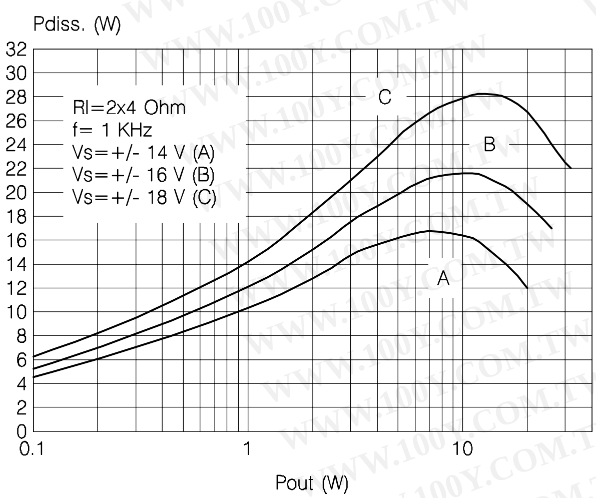
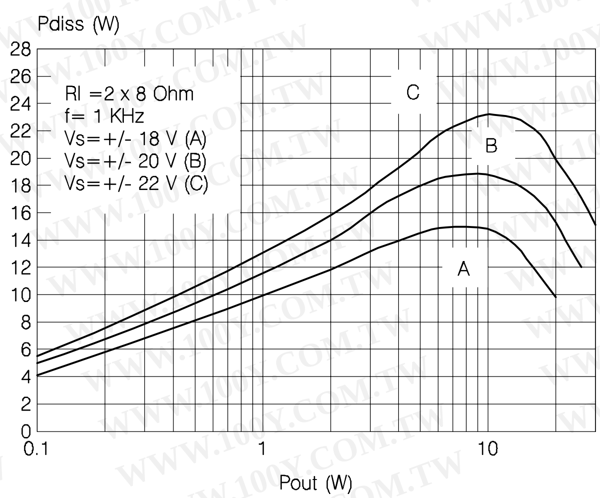


Figure 14: Power Dissipaton vs. Output Power



MUTE STAND-BY FUNCTION

The pin 5 (MUTE/STAND-BY) controls the amplifier status by two different thresholds, referred to $+V_S$.

- When V_{pin5} higher than = $+V_S$ - 2.5V the amplifier is in Stand-by mode and the final stage generators are off
- when V_{pin5} is between $+V_S$ - 2.5V and $+V_S$ - 6V the final stage current generators are switched on and the amplifier is in mute mode
- when V_{pin5} is lower than $+V_S$ - 6V the amplifier is play mode.

Figure 15

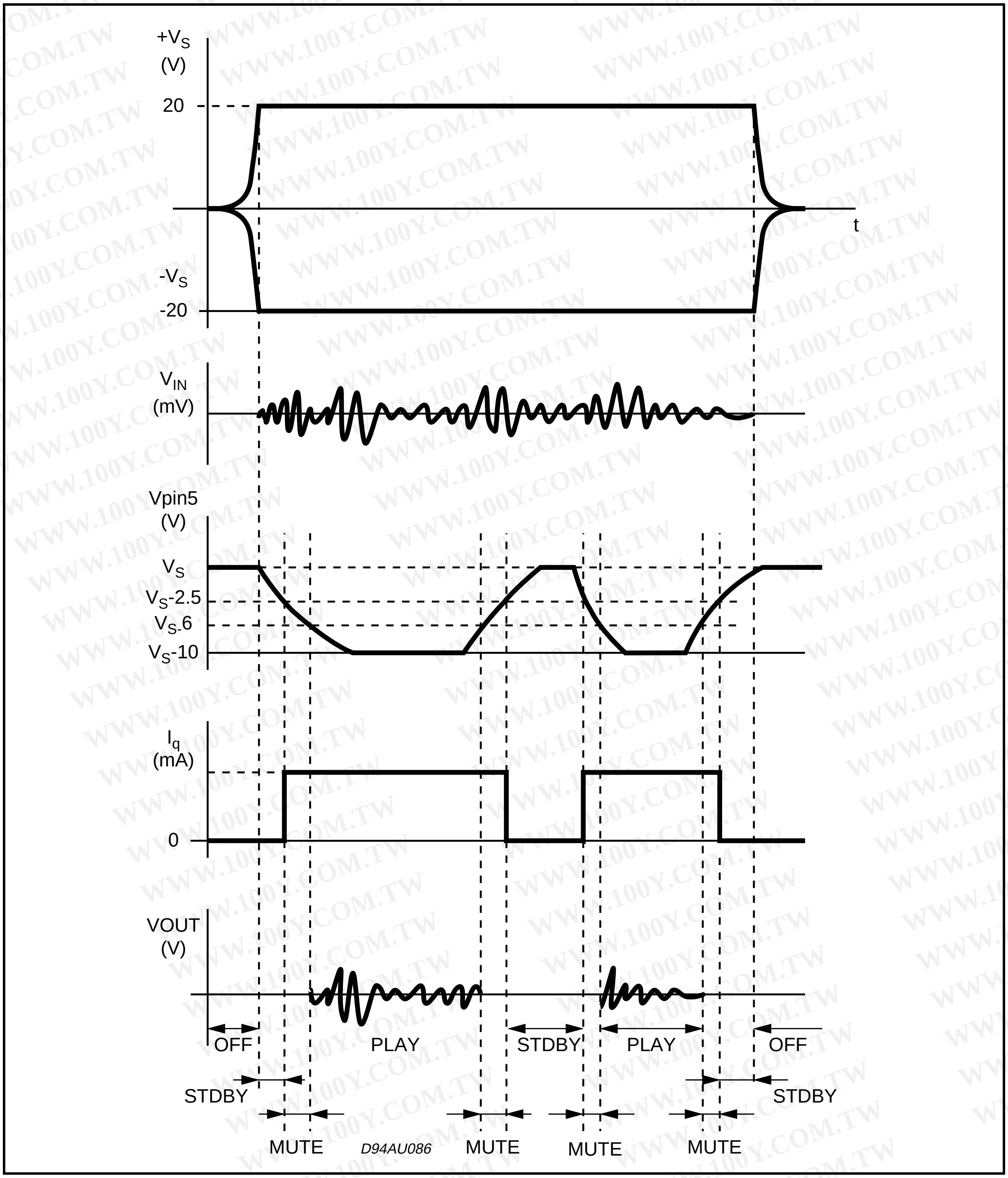


Figure 16: Test and Application Circuit (Stereo Configuration)

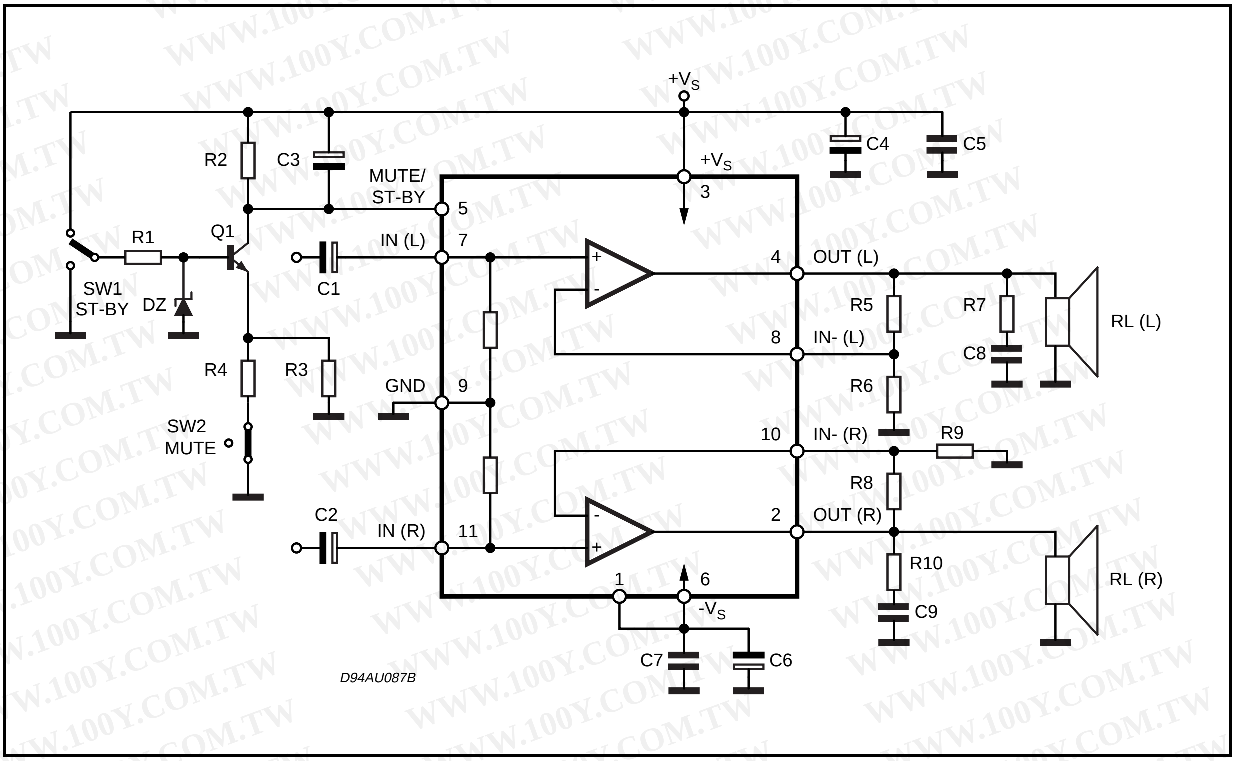
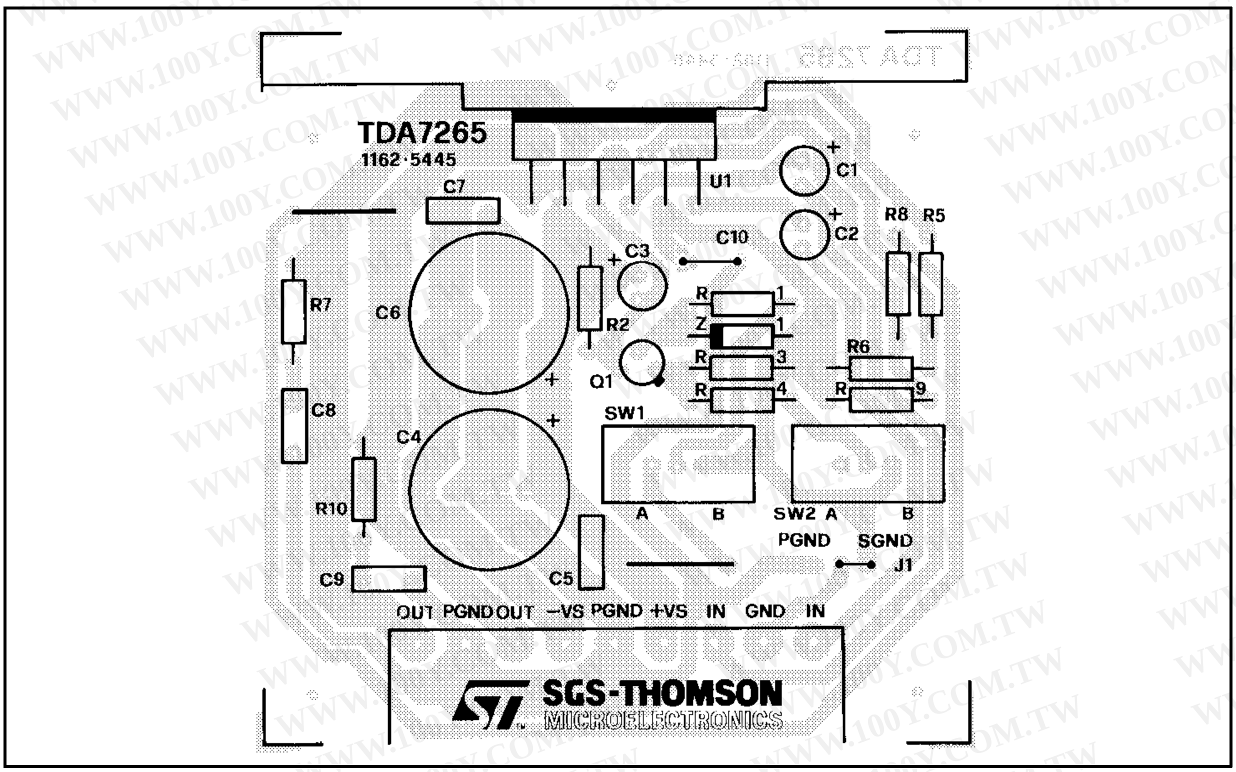


Figure 17: PC Board and Components Layout of the figure 15 (1:1 scale)



APPLICATIONS SUGGESTION

(Demo Board Schematic)

The recommended values of the external components are those shown are the demo board schematic different values can be used: the following table can help the designer.

COMPONENTS	RECOMMENDED VALUE	PURPOSE	LARGER THAN RECOMMENDED VALUE	SMALLER THAN RECOMMENDED VALUE
R1	10KΩ	Mute Circuit	Increase of Dz Biasing Current	
R2	15KΩ	Mute Circuit	V_{pin} # 5 Shifted Downward	V_{pin} # 5 Shifted Upward
R3	18KΩ	Mute Circuit	V_{pin} # 5 Shifted Upward	V_{pin} # 5 Shifted Downward
R4	15KΩ	Mute Circuit	V_{pin} # 5 Shifted Upward	V_{pin} # 5 Shifted Downward
R5, R8	18KΩ	Closed Loop Gain Setting (*)	Increase of Gain	
R6, R9	560Ω		Decrease of Gain	
R7, R10	4.7Ω	Frequency Stability	Danger of Oscillations	Danger of Oscillations
C1, C2	1µF	Input DC Decoupling		Higher Low Frequency Cutoff
C3	1µF	St-By/Mute Time Constant	Larger On/Off Time	Smaller On/Off Time
C4, C6	1000µF	Supply Voltage Bypass		Danger of Oscillations
C5, C7	0.1µF	Supply Voltage Bypass		Danger of Oscillations
C8, C9	0.1µF	Frequency Stability		
Dz	5.1V	Mute Circuit		
Q1	BC107	Mute Circuit		

(*) Closed loop gain has to be => 25dB

MUTE, STAND-BY TRUTH TABLE

SW1	SW2	
B	A	STAND-BY
B	B	STAND-BY
A	A	MUTE
A	B	PLAY

BRIDGE APPLICATION

Another application suggestion concerns the BRIDGE configuration, where the two power amplifiers are connected as shown by the schematic diagram of figure. 18.

This application shows, however, some operative limits due to dissipation and current capability of the output stage. For this reason, we reccomend to use the TDA7265 in bridge with the supply voltage equal/lower than ±16V when the load is 8Ω; with higher loads (i.e.16Ω), the amplifier can work correctly in the whole supply voltage range.

The detected characteristics of T.H.D. vs Pout and Frequency Response are shown in fig.19 and fig.20.

With R1=8Ω, Vs=+/-16V the maximum output power obtainable is 50W at T.D.H.=10%.

The quiescent current remains unchanged with respect to the stereo configuration (~80mA as typical at Vs=+/-16V).

The last point to take into consideration concerns the short-circuit protection. As for the stereo application, the TDA7265 is fully protected against any kind of short-circuit (between Out/Gnd, Out/+Vs and Out/-Vs).

Figure 18: Bridge Application Circuit

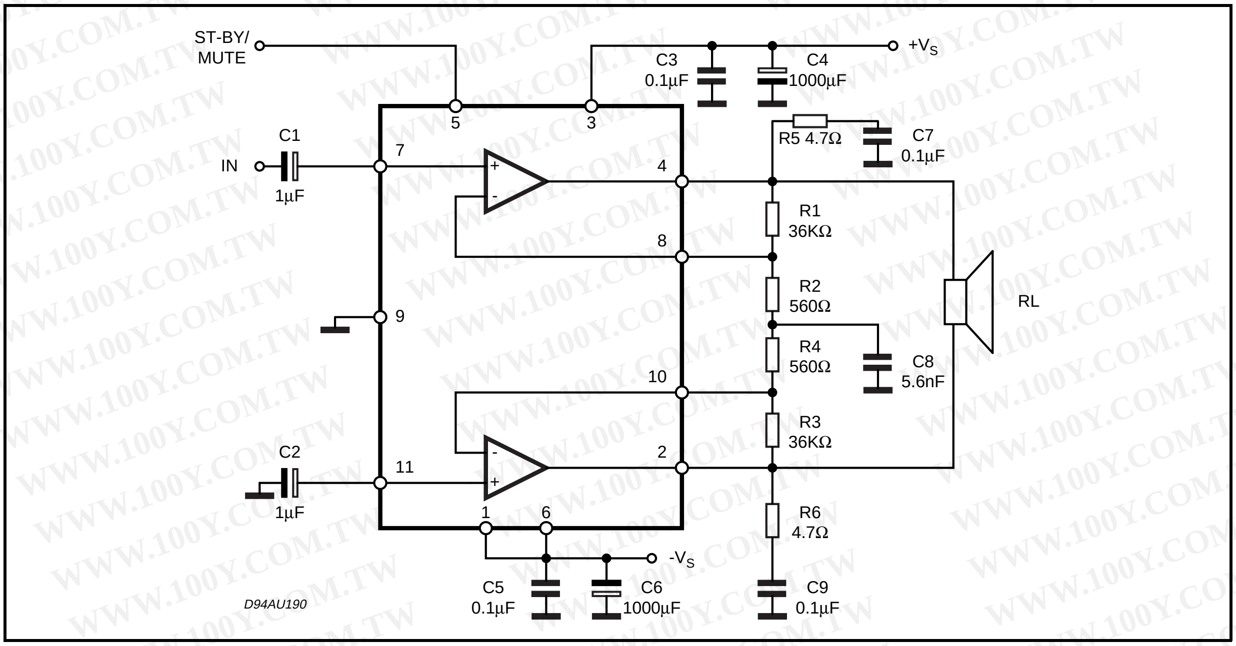


Figure 19: Distortion vs. Output Power

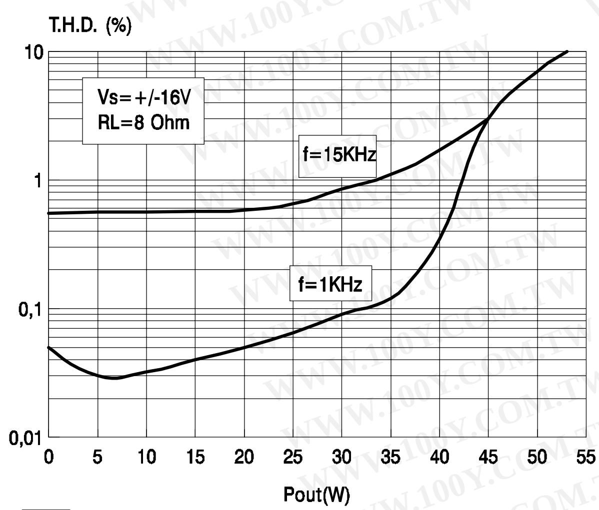
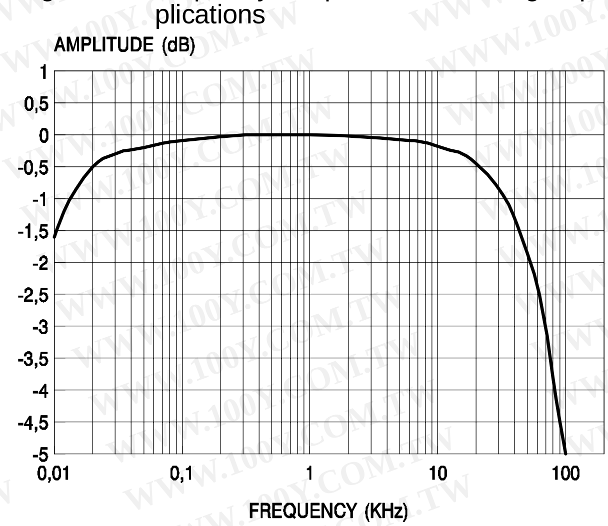
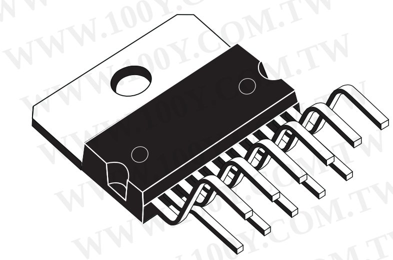


Figure 20: Frequency Response of the Bridge Applications

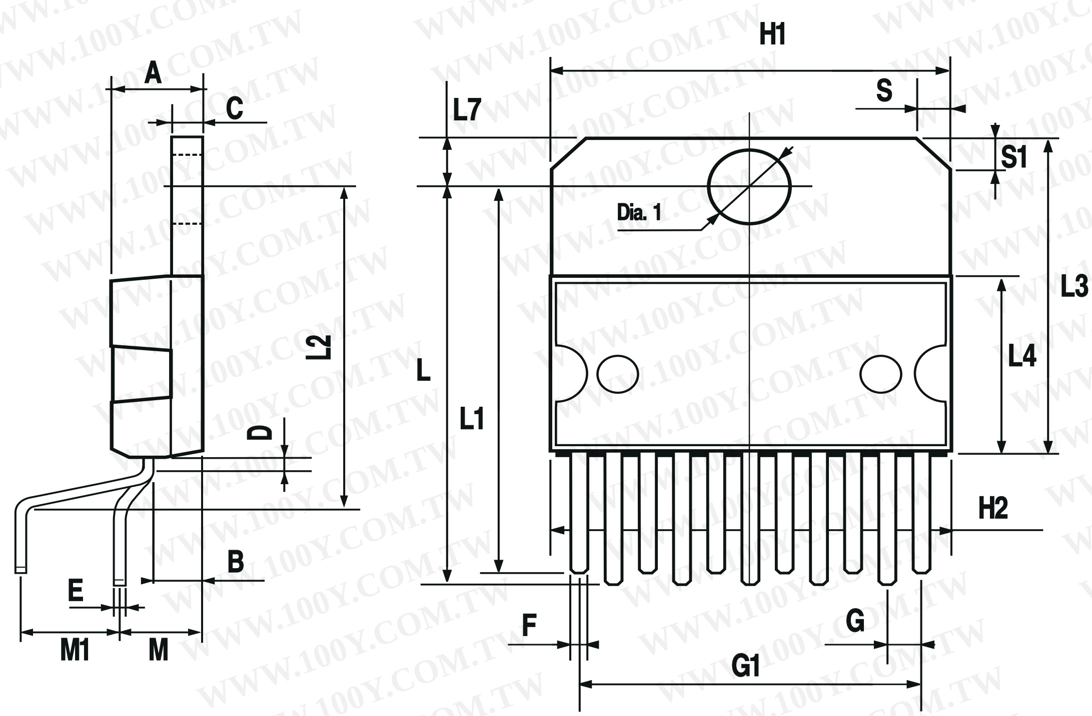


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			5			0.197
B			2.65			0.104
C			1.6			0.063
D		1			0.039	
E	0.49		0.55	0.019		0.022
F	0.88		0.95	0.035		0.037
G	1.45	1.7	1.95	0.057	0.067	0.077
G1	16.75	17	17.25	0.659	0.669	0.679
H1	19.6			0.772		
H2			20.2			0.795
L	21.9	22.2	22.5	0.862	0.874	0.886
L1	21.7	22.1	22.5	0.854	0.87	0.886
L2	17.4		18.1	0.685		0.713
L3	17.25	17.5	17.75	0.679	0.689	0.699
L4	10.3	10.7	10.9	0.406	0.421	0.429
L7	2.65		2.9	0.104		0.114
M	4.25	4.55	4.85	0.167	0.179	0.191
M1	4.73	5.08	5.43	0.186	0.200	0.214
S	1.9		2.6	0.075		0.102
S1	1.9		2.6	0.075		0.102
Dia1	3.65		3.85	0.144		0.152

OUTLINE AND MECHANICAL DATA



Multiwatt11 V



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