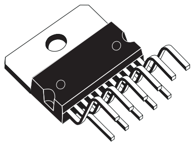
TDA7269A

14W+14W STEREO AMPLIFIER WITH MUTE & ST-BY

- WIDE SUPPLY VOLTAGE RANGE UP TO +20V
- SPLIT SUPPLY
- HHIGH OUTPUT POWER 14+14W @THD = 10%, R_L= 8Ω, V_S = ±16V
- NO POP AT TURN-ON/OFF
- MUTE (POP FREE)
- STAND-BY FEATURE (LOW I_q)
- SHORT CIRCUIT PROTECTION TO GND
- THERMAL OVERLOAD PROTECTION

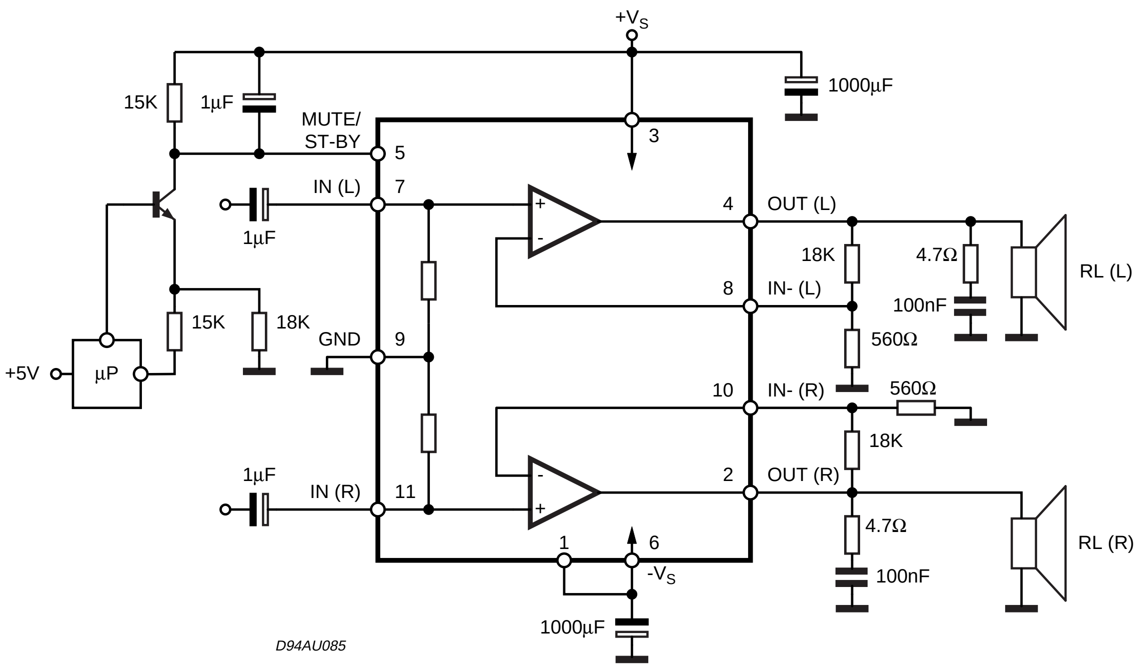


Multiwatt11
ORDERING NUMBER: TDA7269A

DESCRIPTION

The TDA7269A 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.

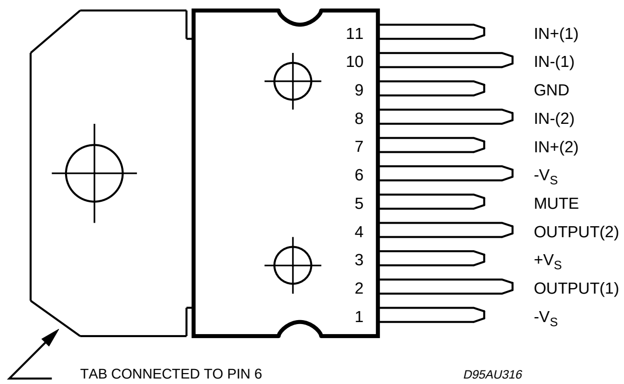
Figure 1. Typical Application Circuit



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	DC Supply Voltage	±22	V
I_O	Output Power Current (internally limited)	3	A
P_{tot}	Total Power Dissipation (Tamb = 70°C)	40	W
T_{op}	Operating Temperature	0 to 70	°C
T_{stg}, T_j	Storage and Junction Temperature	-40 to 150	°C

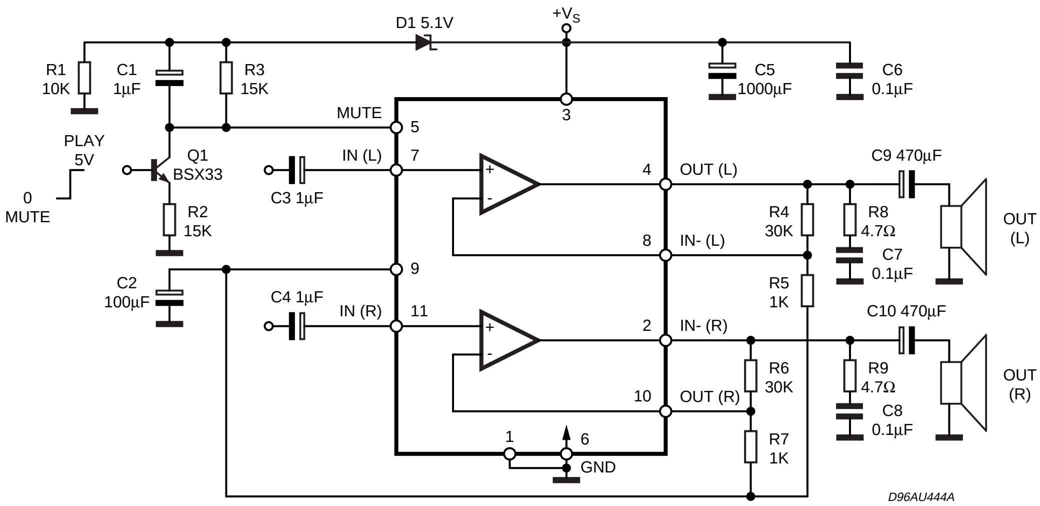
PIN CONNECTION (Top view)



THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case Max.	2.8	°C/W

Figure 2. Single Supply Application



ELECTRICAL CHARACTERISTCS (Refer to the test circuit V_S = ±16V; R_L = 8Ω; R_S = 50Ω; G_V = 30dB, f = 1KHz; T_{amb} = 25°C, unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_S	Supply Voltage Range	R_L = 8Ω	±5		±20	V
		R_L = 4Ω	±5		±15	V
I_q	Total Quiescent Current			60	100	mA
V_{OS}	Input Offset Voltage		-25		25	mV
I_b	Non Inverting Input Bias Current			500		nA
P_O	Output Power	THD = 10%; R_L = 8Ω; V_S = ±12.5V; R_L = 4Ω;	12 8	14 10		W W
		THD = 1%; R_L = 8Ω; V_S = ±12.5V; R_L = 4Ω;	9 6	11 7.5		W W
THD	Total Harmonic Distortion	R_L = 8Ω; P_O = 1W; f = 1KHz;		0.03		%
		R_L = 8Ω; P_O = 0.1 to 7W; f = 100Hz to 15KHz;			0.7	%
		R_L = 4Ω; P_O = 1W; f = 1KHz;		0.02		%
		R_L = 4Ω; V_S = ±10V; P_O = 0.1 to 5W; f = 100Hz to 15KHz;			1	%
C_T	Cross Talk	f = 1KHz; f = 10KHz;	 50	70 60		dB dB
SR	Slew Rate		6.5	10		V/µs
G_{OL}	Open Loop Voltage Gain			80		dB
e_N	Total Output 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)	f = 100Hz; V_R = 0.5V		60		dB
T_j	Thermal Shut-down Junction Temperature			145		°C
MUTE FUNCTION [ref +V_S] (*)						
VT_{MUTE}	Mute /Play threshold		-7	-6	-5	V
A_{MUTE}	Mute Attenuation		60	70		dB
STAND-BY FUNCTIONS [ref: +V_S] (only for Split Supply)						
VT_{ST-BY}	Stand-by Mute threshold		-3.5	-2.5	-1.5	V
A_{ST-BY}	Stand-by Attenuation			110		dB
I_{qST-BY}	Quiescent Current @ Stand-by			3	6	mA

(*) In mute condition the current drawn from Pin 5 must be ≤650µA

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} 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 3.

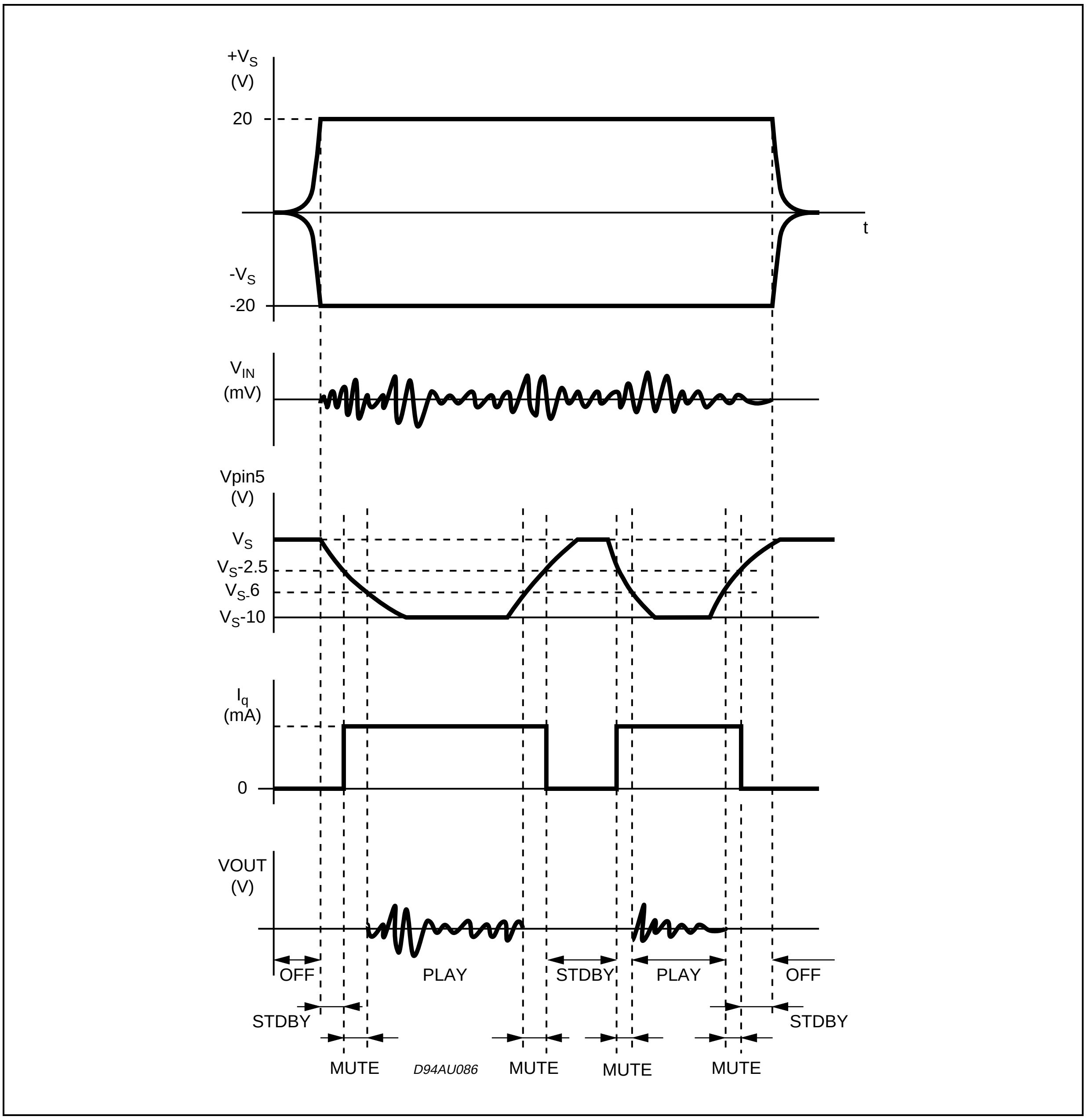
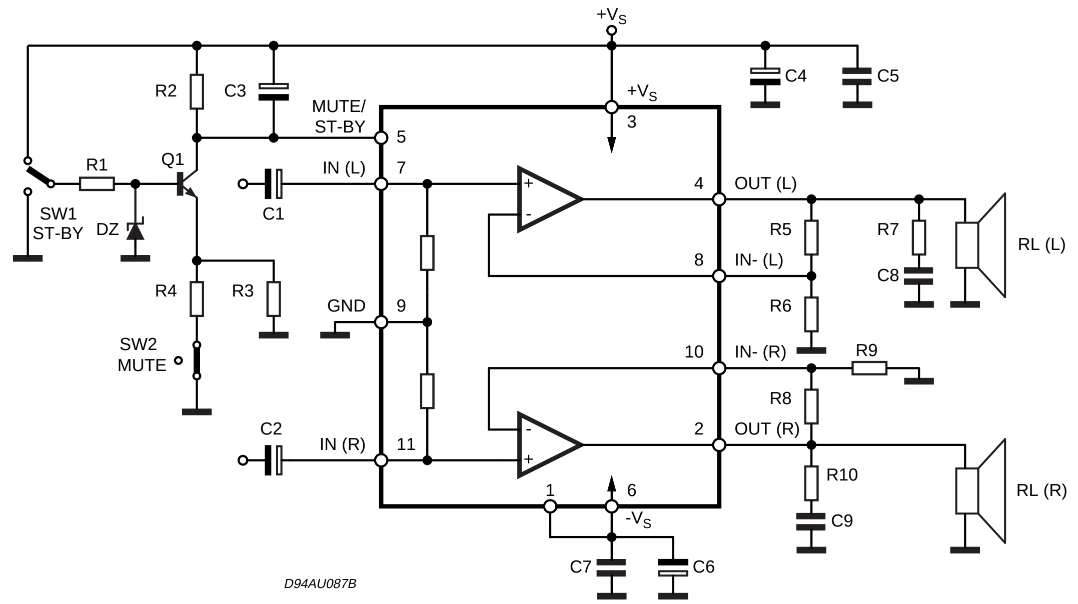


Figure 4. Test and Application Circuit (Stereo Configuration)



APPLICATION SUGGESTIONS (Demo Board Schematic)

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

COMPONENT	SUGGESTION 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		

(*) Closed loop gain has to be ≥25dB

BRIDGE APPLICATION

Another application suggestion concerns the Bridge configuration , where the two power amplifiers are connected as shown by the schematic diagrams of figure 5 "Split Power Supply" , and figure 6 "Single Power Supply".

This application shows,however, some operative limits due to dissipation and current capability of the output stage.

For this reason we recommend to use the TDA7269A in BTL with the following supply voltages depending on the used load impedance (for the single supply consider double Vs) :

±Vs (V)	Rload (ohm)
14	8
11	6
10	4

The detected characteristics of THD vs Pout are shown in figg: 7, 8 and 9 for the different load impedances.

With Rload = 8ohm , Vs = ±14V the maximum output power obtainable is 30W at THD = 10% (fig. 9). With Rload = 6ohm , Vs = ±12V the maximum output power obtainable is 28W at THD = 10% (fig. 8). With Rload = 4ohm , Vs = ±10V the maximum output power obtainable is 20W at THD=10% (fig. 7).

We suggest not to exceed the suggested supply voltages in order to avoid the current limiter intervention.

Figure 5. Split Power Supply Application Diagram

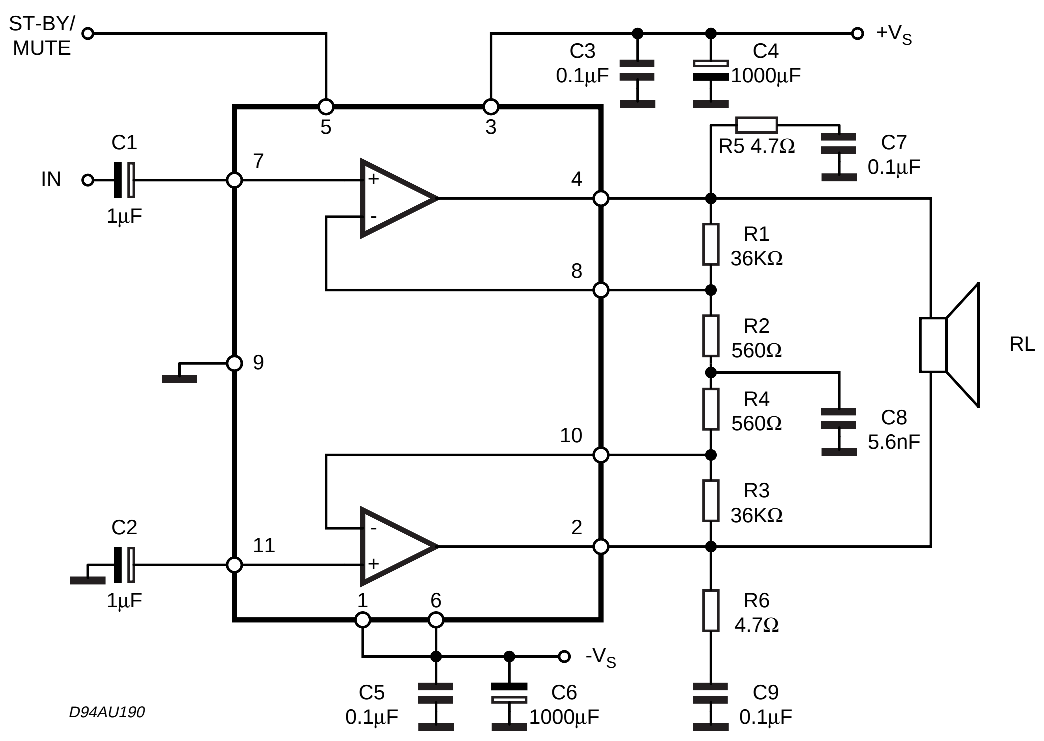


Figure 6. Single Power Supply Application Diagram

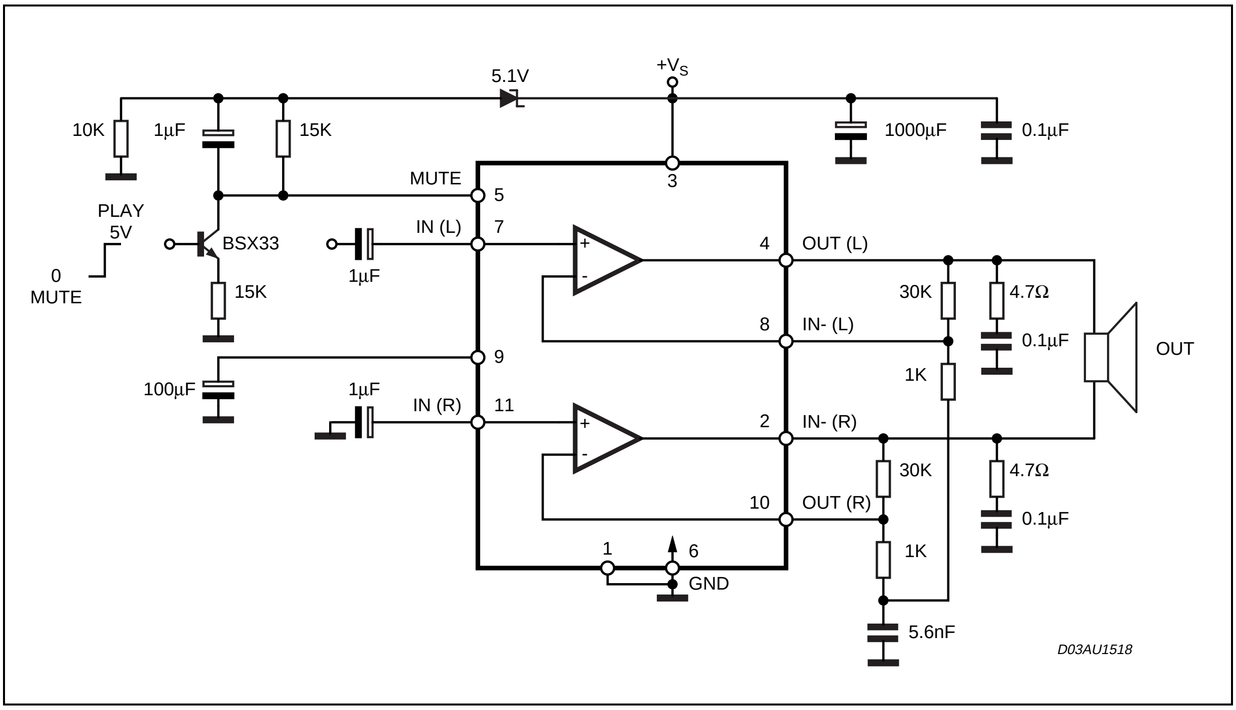


Figure 7. Distortion vs Output Power

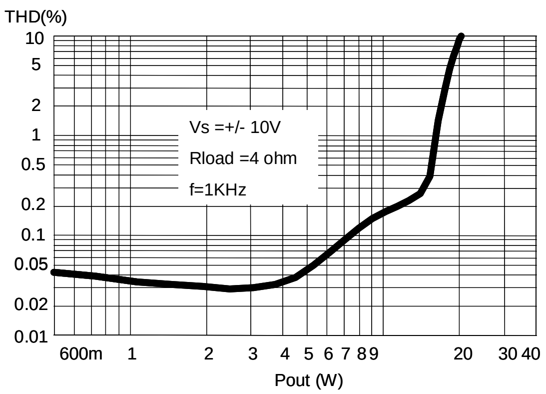


Figure 9. Distortion vs Output Power

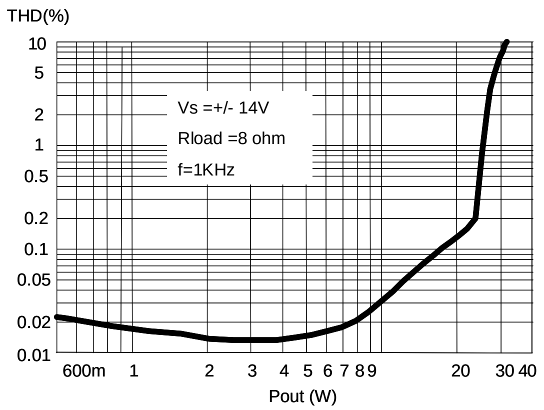
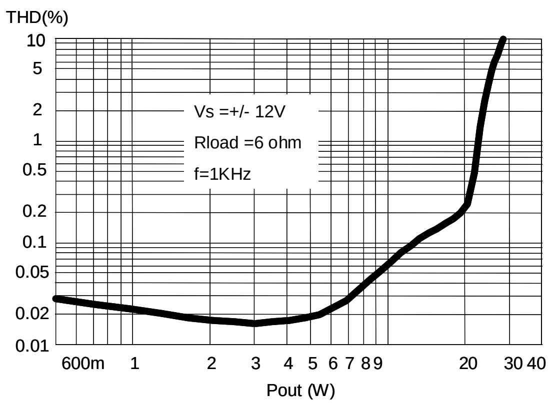
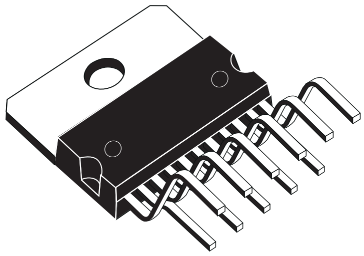


Figure 8. Distortion vs Output Power

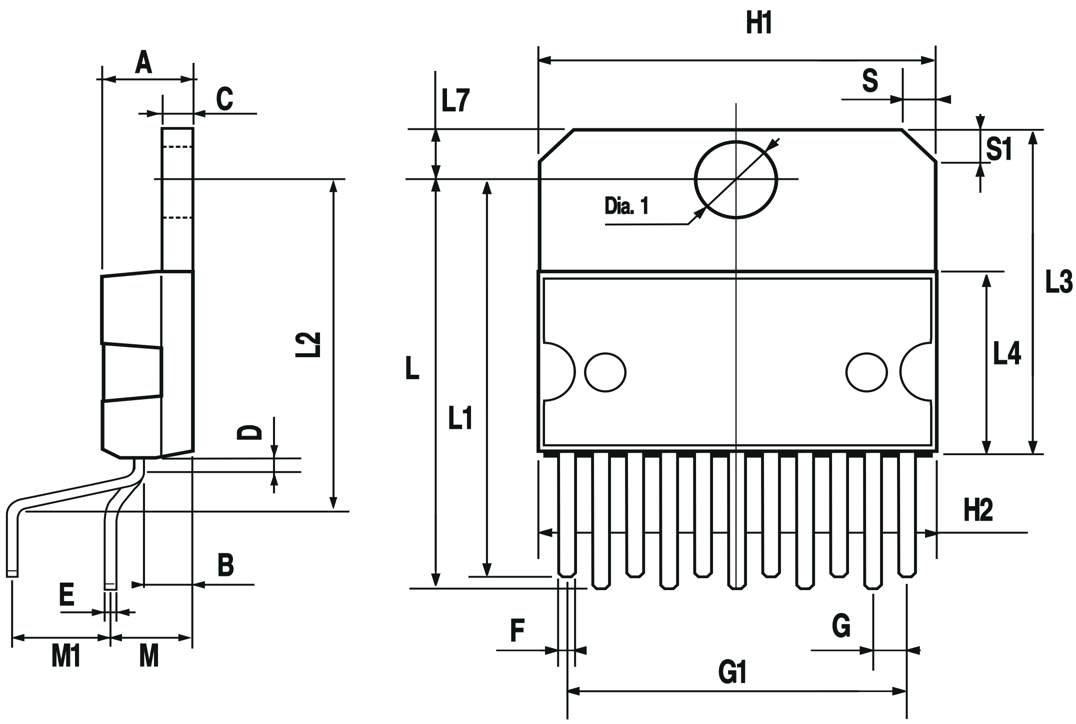


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			5			0.197
B			2.65			0.104
C			1.6			0.063
D		1			0.039	
E	0.49		0.55	0.019		0.022
F	0.88		0.95	0.035		0.037
G	1.45	1.7	1.95	0.057	0.067	0.077
G1	16.75	17	17.25	0.659	0.669	0.679
H1	19.6			0.772		
H2			20.2			0.795
L	21.9	22.2	22.5	0.862	0.874	0.886
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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