

## 40 + 40W STEREO AMPLIFIER WITH MUTE & ST-BY

TARGET SPECIFICATION

### 1 FEATURES

- WIDE SUPPLY VOLTAGE RANGE (UP TO  $\pm 35V$  ABS MAX.)
- SPLIT SUPPLY
- HIGH OUTPUT POWER
- 40 + 40 W @ THD=10%,  $R_L = 8\Omega$ ,  $V_S \pm 26V$
- NO POP AT TURN ON/OFF
- MUTE (POP FREE)
- STAND-BY FEATURE (LOW  $I_Q$ )
- SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION

Figure 1. Package

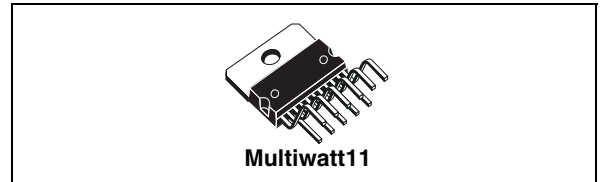


Table 1. Order Codes

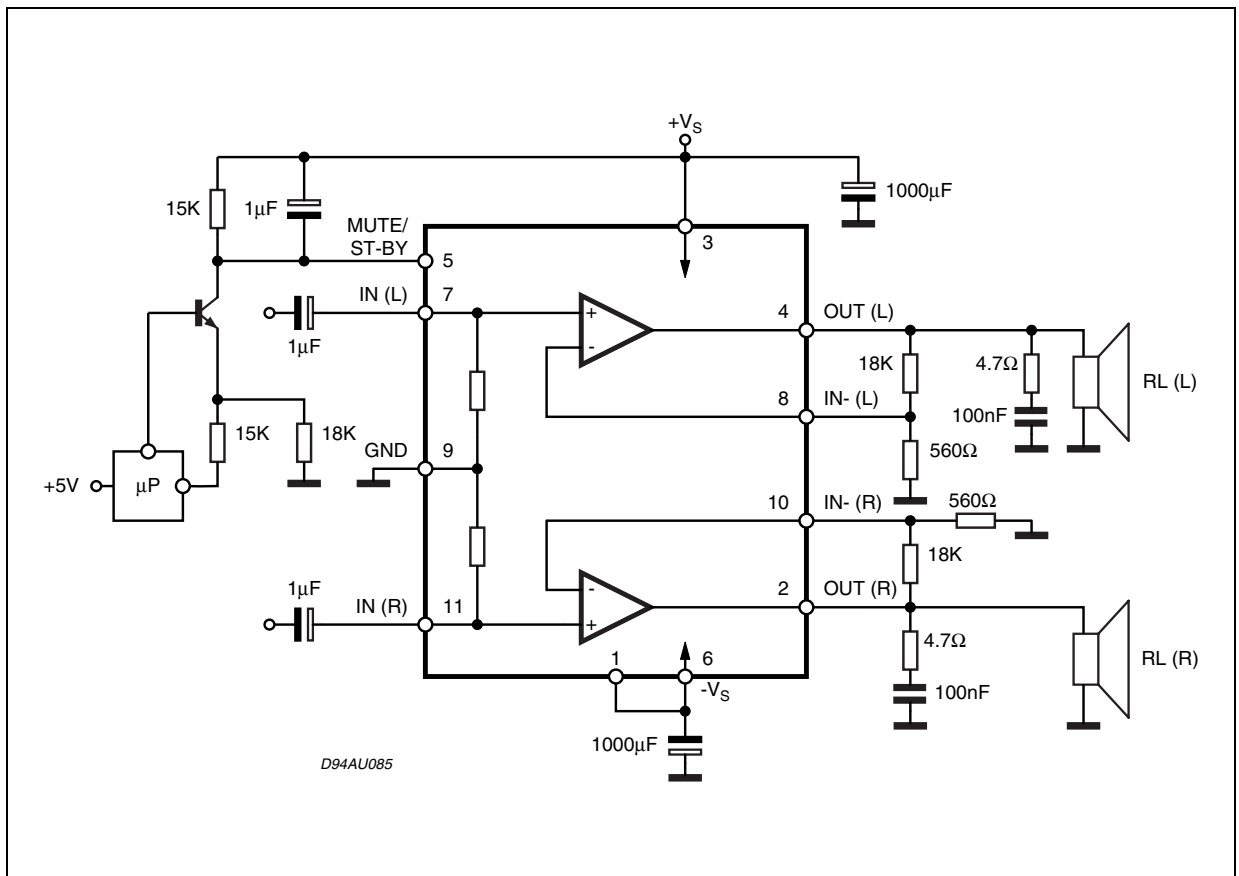
Part Number	Package
TDA7292	Multiwatt11

### 2 DESCRIPTION

The TDA7292 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 2. Typical Application Circuit in Split Supply



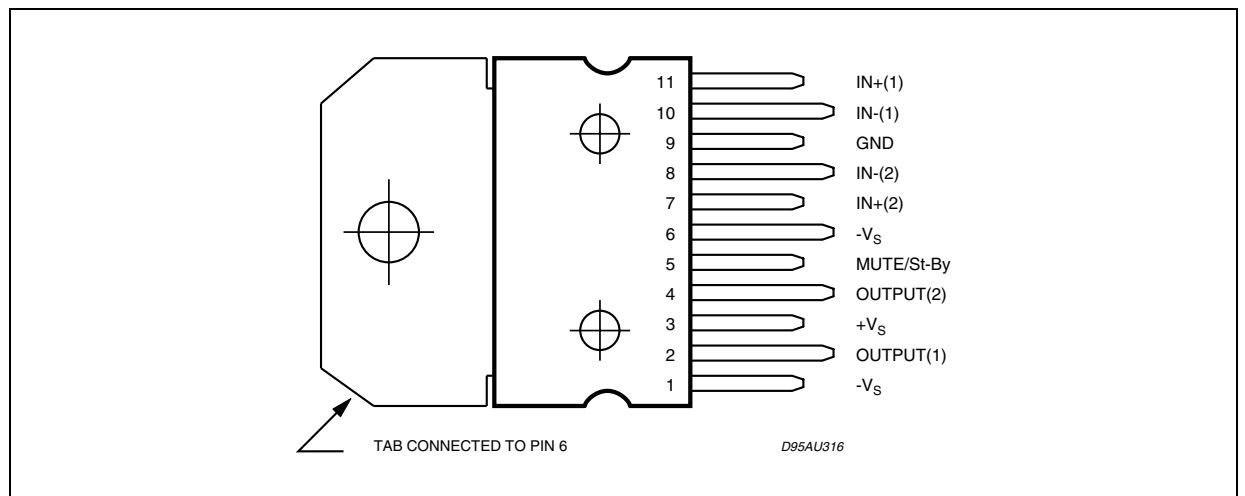
**Table 2. Absolute Maximum Ratings**

Symbol	Description	Value	Unit
$V_S$	DC Supply Voltage	$\pm 35$	V
$I_O$	Output Peak Current (internally limited)	4.5	A
$T_{op}$	Operating Temperature	0 to 70	$^{\circ}C$
$T_{stg}, T_j$	Storage and Junction Temperature	-40 to +150	$^{\circ}C$

**Table 3. Thermal Data**

Symbol	Parameter	Value	Unit
$R_{th\ j\ case}$	Thermal Resistance Junction-case	Typ. 1.5	$^{\circ}C/W$

**Figure 3. Pin Connection (Top view)**



**Table 4. Electrical Characteristics** (Refer to the test circuit,  $V_S = \pm 26V$ ;  $R_L = 8\Omega$ ;  $G_V = 30dB$ ;  $f = 1kHz$ ;  $T_{amb} = 25^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_S$	Supply Range		$\pm 8$		$\pm 33$	V
$I_q$	Total Quiescent Current			50	130	mA
$V_{OS}$	Input Offset Voltage		-20		+20	mV
$I_b$	Non Inverting Input Bias Current			500		nA
$P_O$	Output Power	THD = 10%; $R_L = 8\Omega$ $V_S \pm 18V, R_L = 4\Omega$		40 31		W W
		THD = 1% $R_L = 8\Omega$ ; $V_S \pm 18V; R_L = 4\Omega$		30 24		W W
$I_{Peak}$	Output Peak Current	(Internally Limited)	3.6	4.7		A
THD	Total Harmonic Distortion	$R_L = 8\Omega, P_o = 1W$		0.02		%
SR	Slew Rate			11		V/ms
$G_{ol}$	Open Loop Voltage Gain			80		dB
$e_N$	Total Input Noise	$F = 20Hz - 22kHz$		4		$\mu V$
$R_i$	Input Resistance			20		k $\Omega$
SVR	Supply Voltage Rejection			75		dB
$T_j$	Thermal Shut-down			145		$^\circ C$
<b>MUTE FUNCTION { ref.: +Vs }</b>						
$V_{Tmute}$	Mute / Play Threshold		-7	-6	-5	V
$A_m$	Mute attenuation			75		dB
<b>STANT-BY FUNCTION { ref.: +Vs }</b>						
$V_{Tst-by}$	Stand-By / Mute Threshold		-3.5	-2.5	-1.5	V
$A_{st-by}$	Stand-By Attenuation			110		dB
$I_q$	Quiescent Current @ St-By			8		mA

### 3 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 4. MUTE/ST-By thresholds on pin 5.

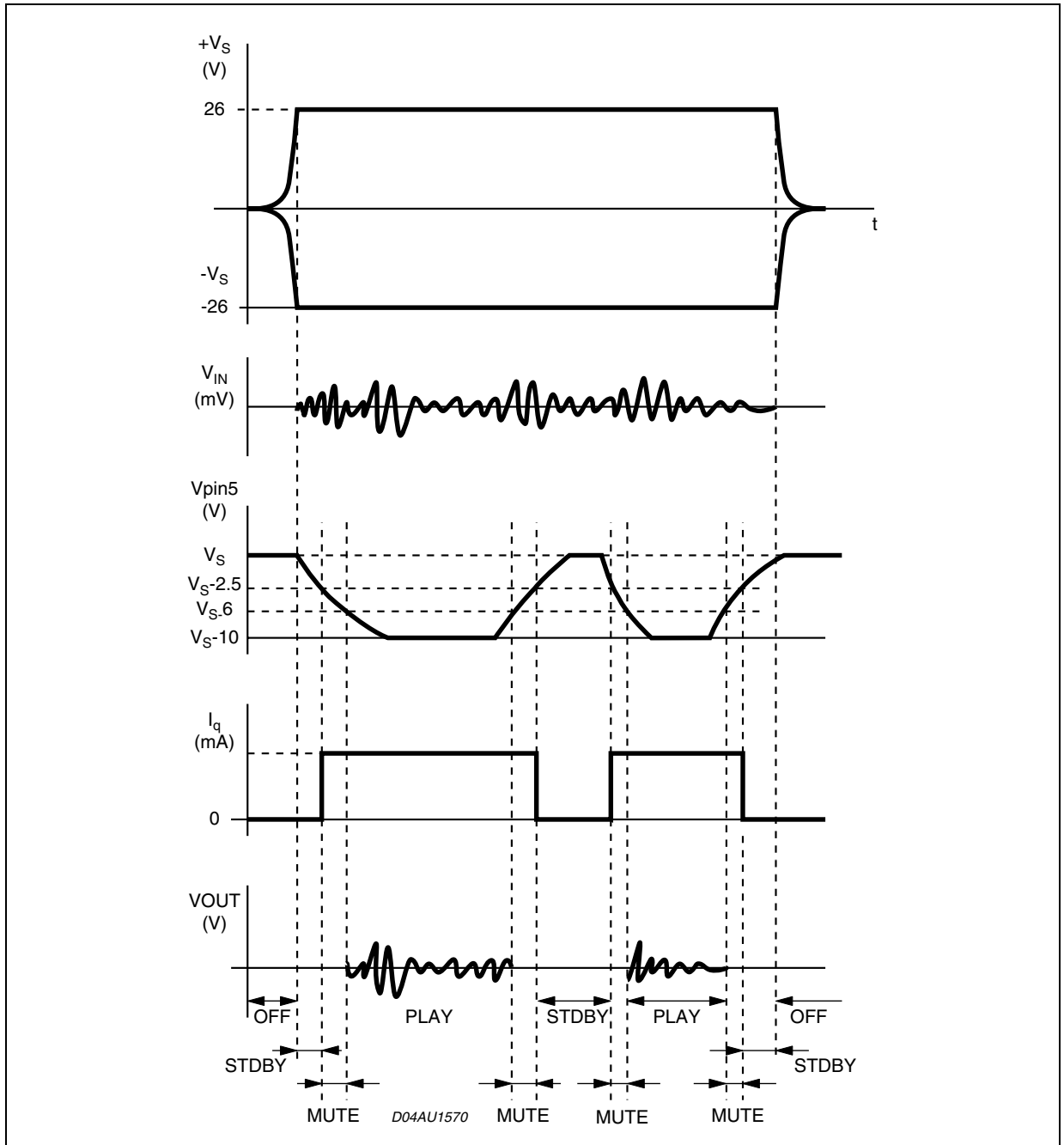


Figure 5. Test and Application Circuit (stereo configuration)

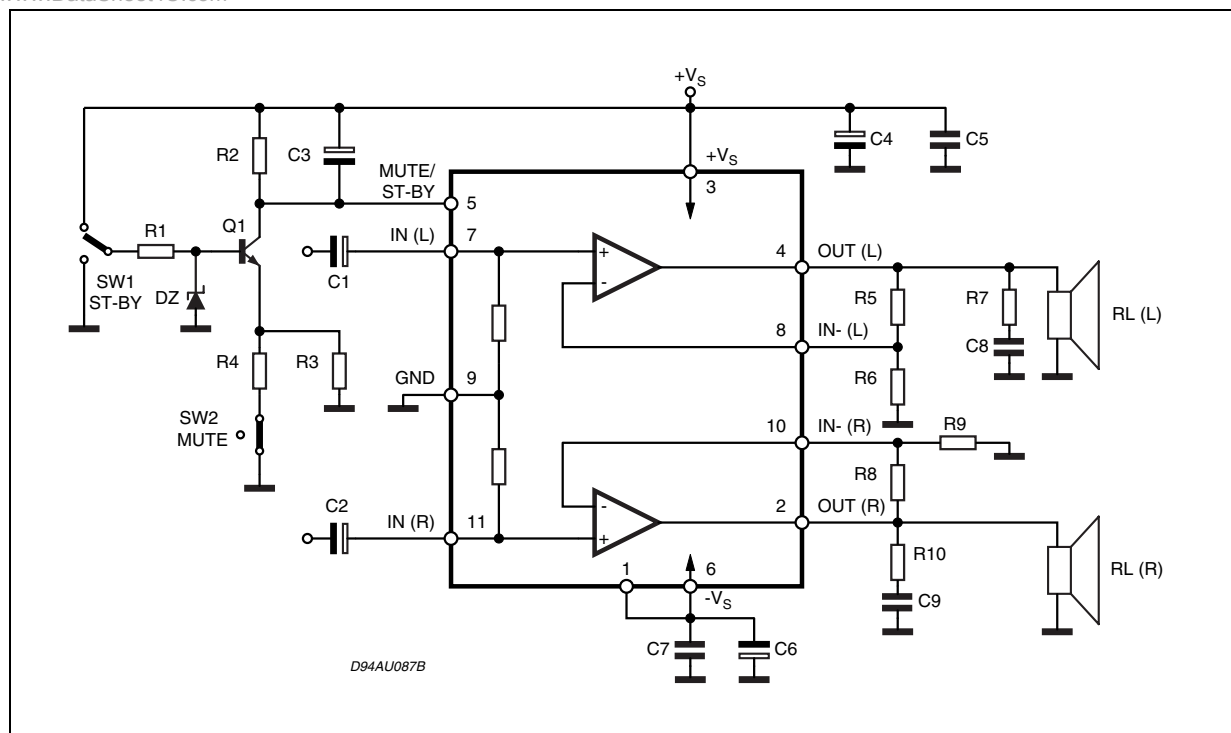
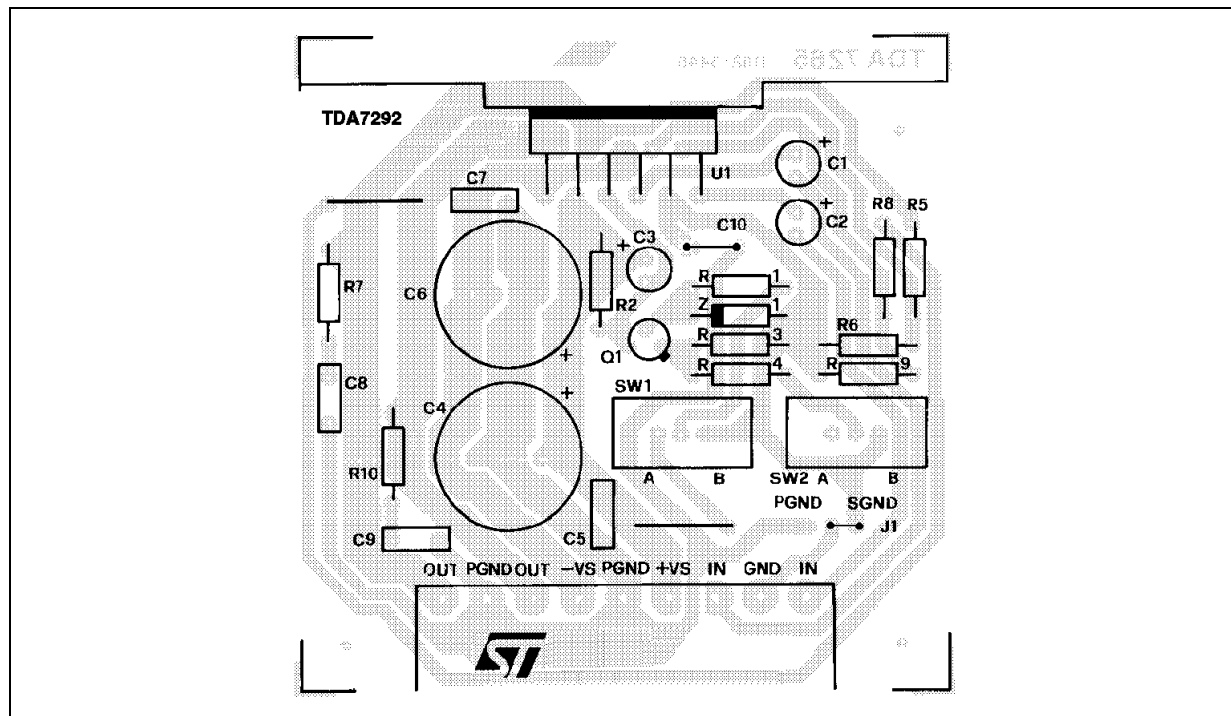


Figure 6. PC Board and Components Layout of the figure 5



### 4 APPLICATIONS SUGGESTION (ref. to Figure 5)

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.

**Table 5. Recommended values of the external components on the TDA7292 demo board schematic**

Components	Recomm. Value	Purpose	Larger Than Recommended Value	Smaller Than Recommended Value
R1	10KΩ	Mute Circuit	Increase of Dz Biasing Current	
R2	15KΩ	Mute Circuit	V <sub>pin # 5</sub> Shifted Downward	V <sub>pin # 5</sub> Shifted Upward
R3	18KΩ	Mute Circuit	V <sub>pin # 5</sub> Shifted Upward	V <sub>pin # 5</sub> Shifted Downward
R4	15KΩ	Mute Circuit	V <sub>pin # 5</sub> Shifted Upward	V <sub>pin # 5</sub> 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 => 29dB

**Table 6. Mute, Stand-by Truth Table**

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

**Figure 7. Typical Application Circuit in Single Supply**

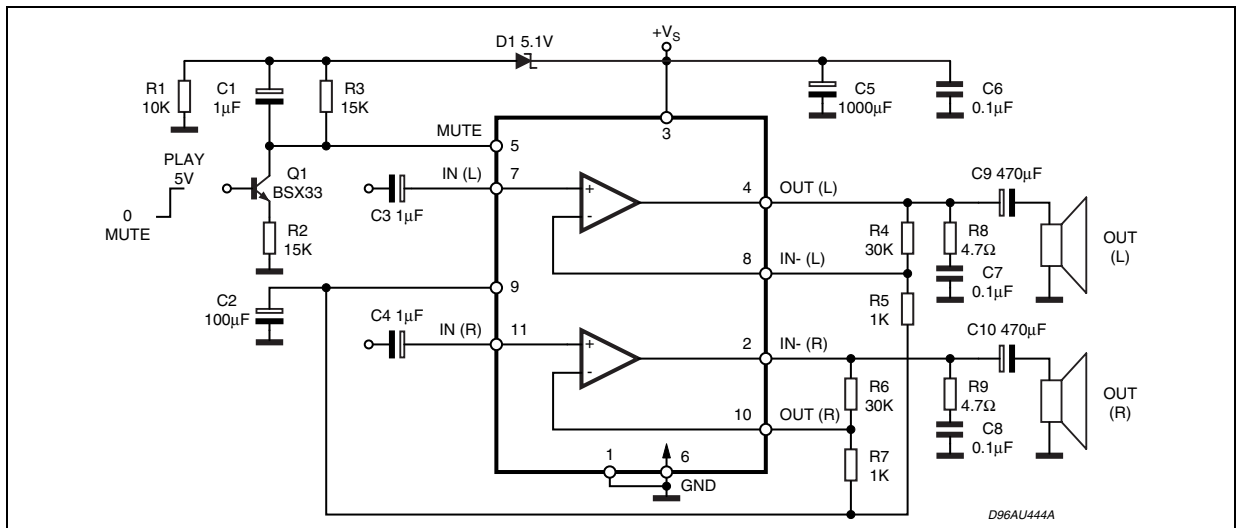
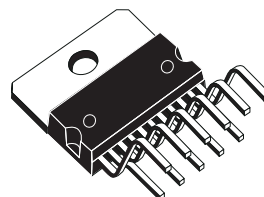


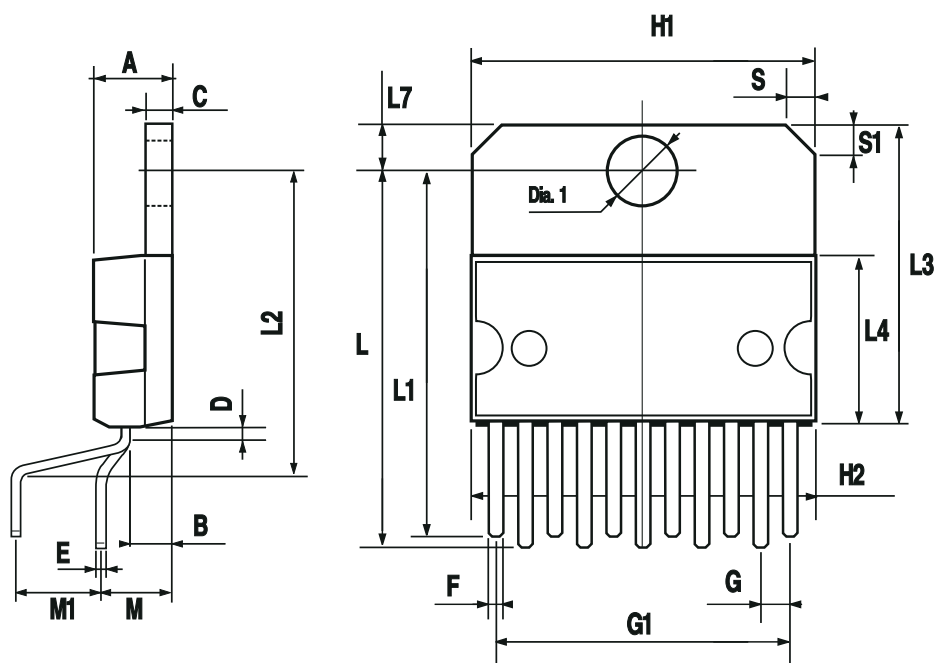
Figure 8. Multiwatt 11 Mechanical Data &amp; Package Dimensions

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 (Vertical)



0016035 H

**Table 7. Revision History**

Date	Revision	Description of Changes
November 2004	1	First Issue



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