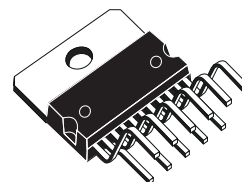


## 25 +25W STEREO AMPLIFIER WITH MUTE & ST-BY

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

### DESCRIPTION

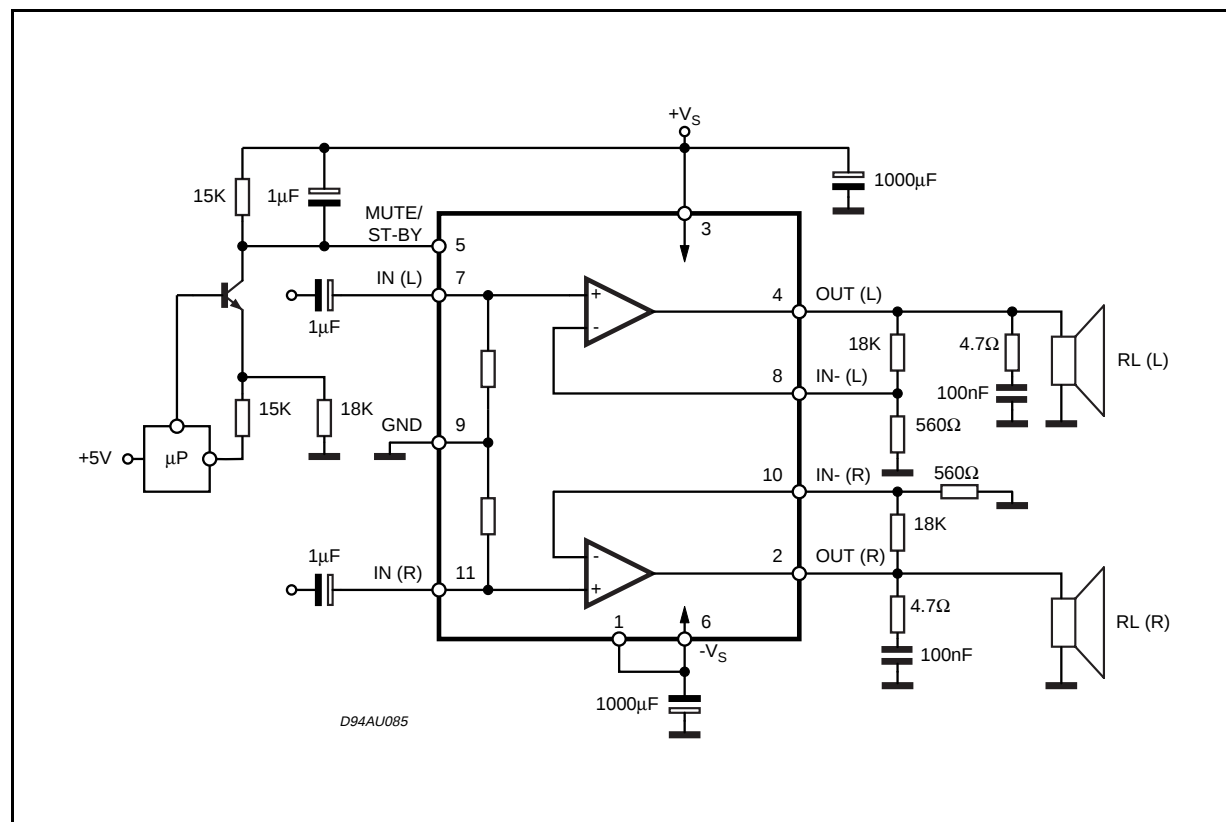
The TDA7265 is class AB dual Audio power amplifier assembled in the Multiwatt package, specially designed for high quality sound application as Hi-Fi music centers and stereo TV sets.



Multiwatt11

ORDERING NUMBER: TDA7265

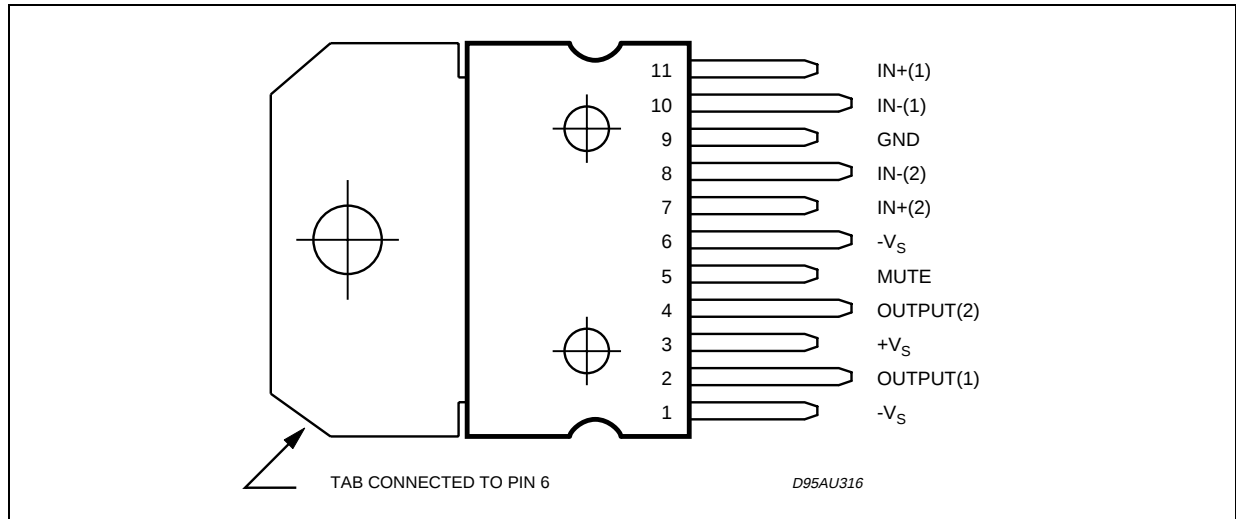
**Figure 1:** Typical Application Circuit in Split Supply



## ABSOLUTE MAXIMUM RATINGS

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

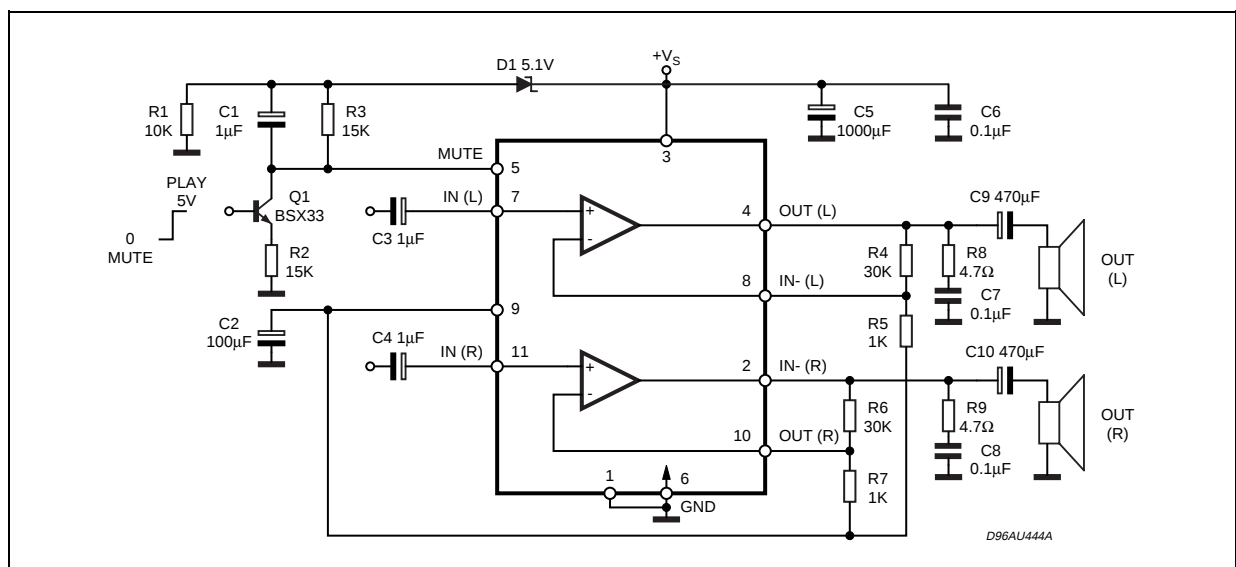
### PIN CONNECTION (Top view)



## THERMAL DATA

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

### Fig 2: Typical Application Circuit in Single Supply



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

| Symbol                       | Parameter                                  | Test Condition                                                                        | Min.    | Typ.     | Max.     | Unit               |
|------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------|---------|----------|----------|--------------------|
| $V_S$                        | Supply Range                               |                                                                                       | $\pm 5$ |          | $\pm 25$ | 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%; $R_L = 8\Omega$ ;<br>$V_S = \pm 22.5V$                                     |         | 32       |          | W                  |
| $P_O$                        | Output Power                               | THD = 10%<br>$R_L = 8\Omega$ ;<br>$V_S \pm 16V$ ; $R_L = 4\Omega$                     | 20      | 25<br>25 |          | W<br>W             |
|                              |                                            | THD = 1%<br>$R_L = 8\Omega$ ;<br>$V_S \pm 16V$ ; $R_L = 4\Omega$                      |         | 20<br>20 |          | W<br>W             |
| THD                          | Total Harmonic Distortion                  | $R_L = 8\Omega$ ; $P_O = 1W$ ; $f = 1KHz$                                             |         | 0.01     |          | %                  |
|                              |                                            | $R_L = 8\Omega$ ;<br>$P_O = 0.1$ to $15W$ ;<br>$f = 100Hz$ to $15KHz$                 |         |          | 0.7      | %                  |
|                              |                                            | $R_L = 4\Omega$ ; $P_O = 1W$ ; $f = 1KHz$                                             |         | 0.02     |          | %                  |
|                              |                                            | $R_L = 4\Omega$ ; $V_S \pm 16V$ ;<br>$P_O = 0.1$ to $12W$ ;<br>$f = 100Hz$ to $15KHz$ |         |          | 1        | %                  |
| $C_T$                        | Cross Talk                                 | $f = 1KHz$<br>$f = 10KHz$                                                             |         | 70<br>60 |          | dB<br>dB           |
| SR                           | Slew Rate                                  |                                                                                       |         | 10       |          | V/ $\mu s$         |
| $G_{OL}$                     | Open Loop Voltage Gain                     |                                                                                       |         | 80       |          | dB                 |
| $e_N$                        | Total Input Noise                          | A Curve<br>$f = 20Hz$ to $22KHz$                                                      |         | 3<br>4   | 8        | $\mu V$<br>$\mu V$ |
| $R_i$                        | Input Resistance                           |                                                                                       | 15      | 20       |          | K $\Omega$         |
| SVR                          | Supply Voltage Rejection<br>(each channel) | $f_r = 100Hz$ $V_r = 0.5V$                                                            |         | 60       |          | dB                 |
| $T_j$                        | Thermal Shut-down<br>Junction Temperature  |                                                                                       |         | 145      |          | $^\circ C$         |
| 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

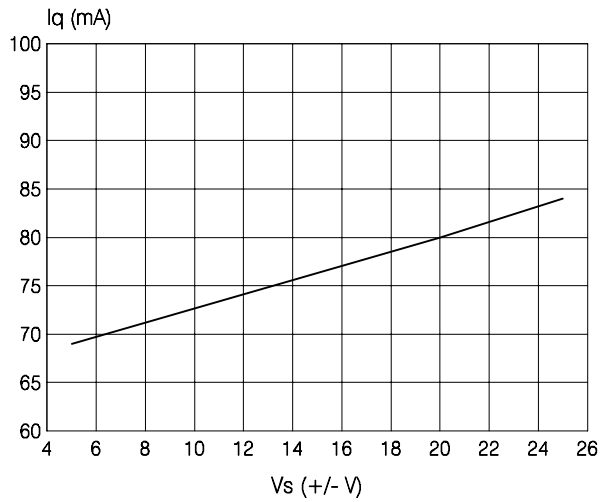


Figure 4: Frequency Response

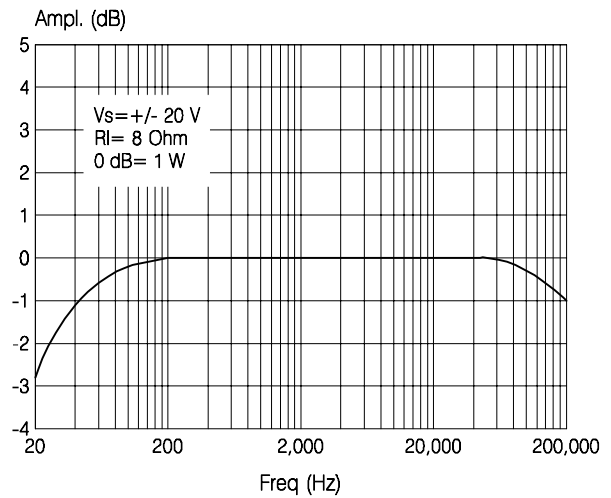


Figure 5: Output Power vs. Supply Voltage

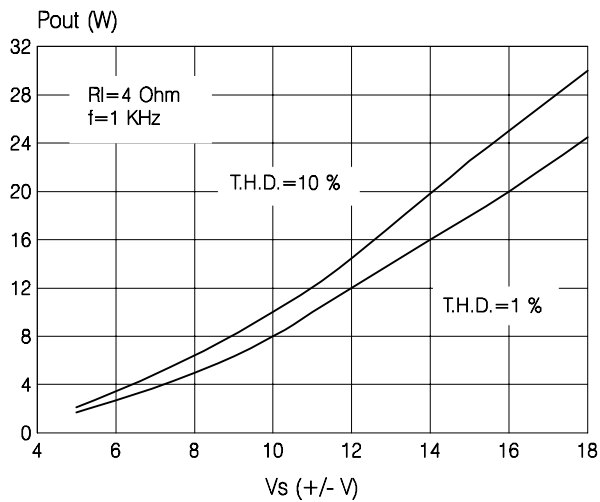


Figure 6: T.H.D. vs. Output Power

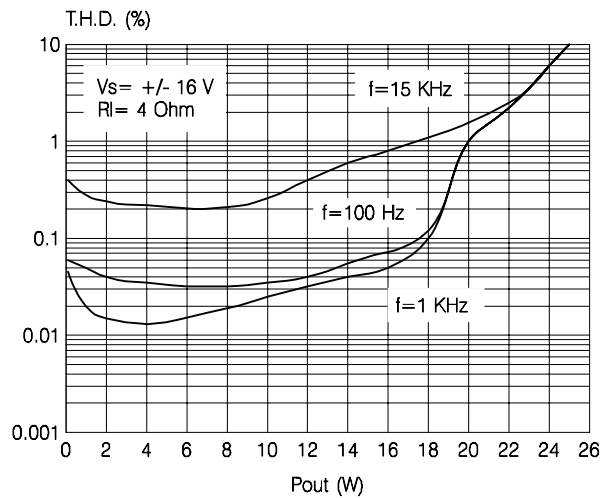


Figure 7: Output Power vs. Supply Voltage

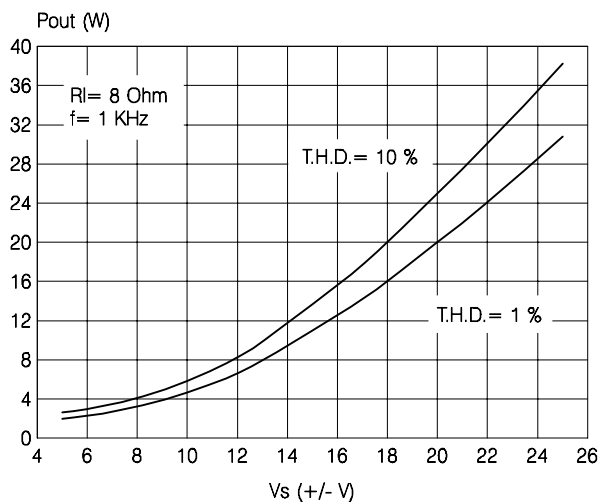


Figure 8: T.H.D. vs. Output Power

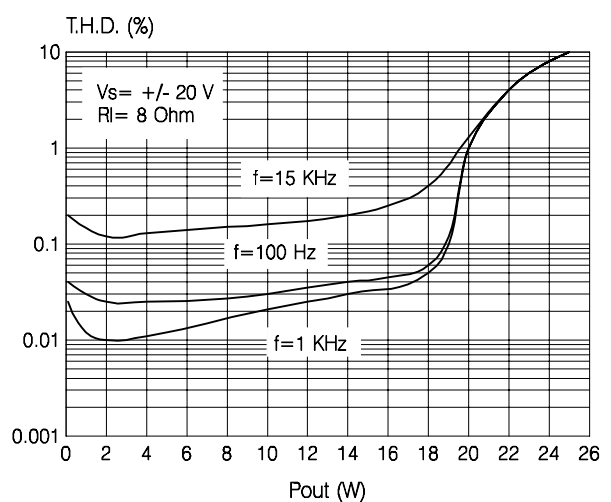


Figure 9: Quiescent Current vs. Pin # 5 Voltage

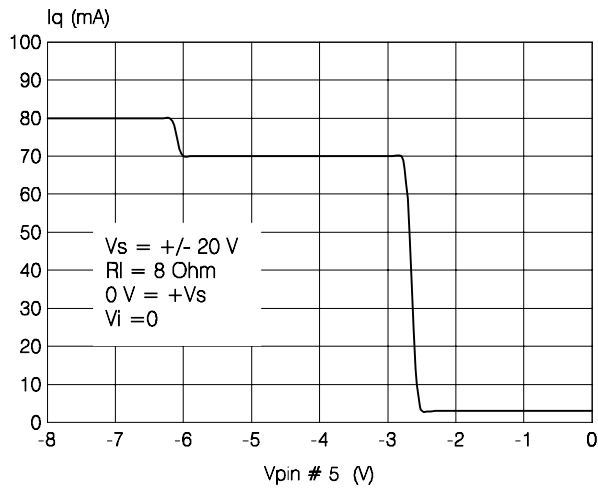


Figure 10: Attenuation vs. Pin # 5 Voltage

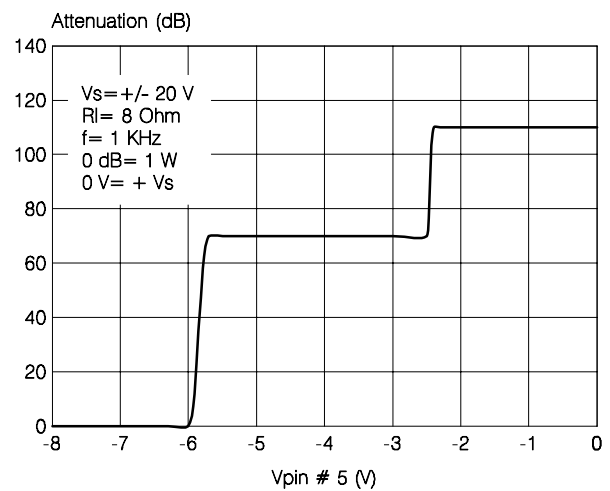


Figure 11: SVR vs. Frequency

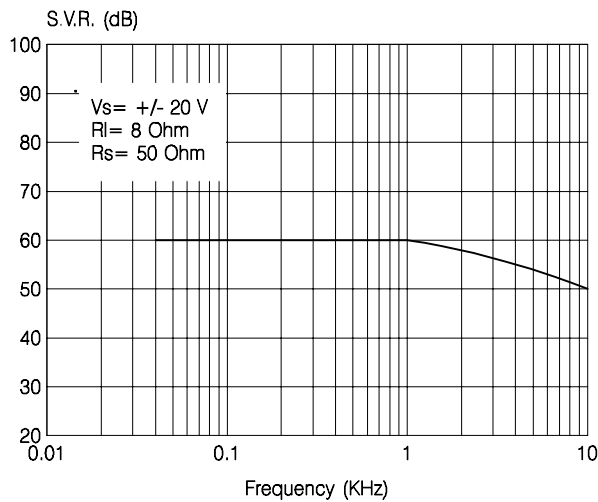


Figure 12: Crosstalk vs. Frequency

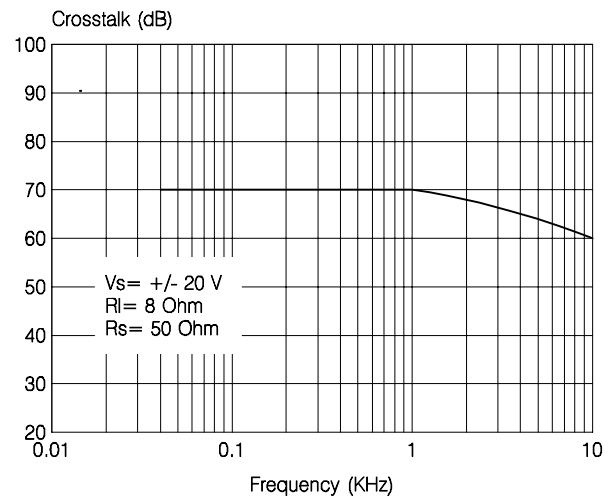


Figure 13: Power Dissipation vs. Output Power

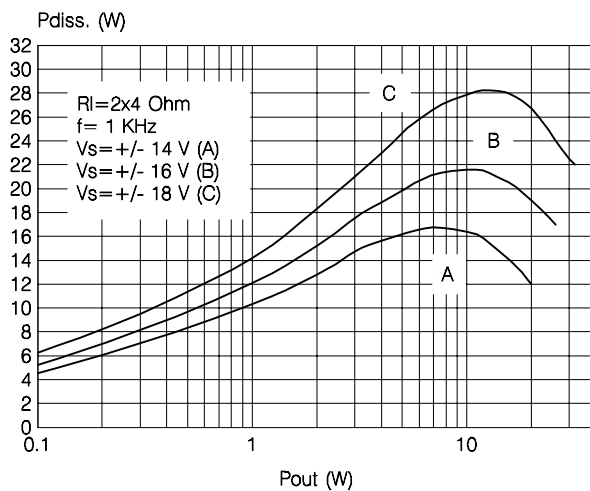
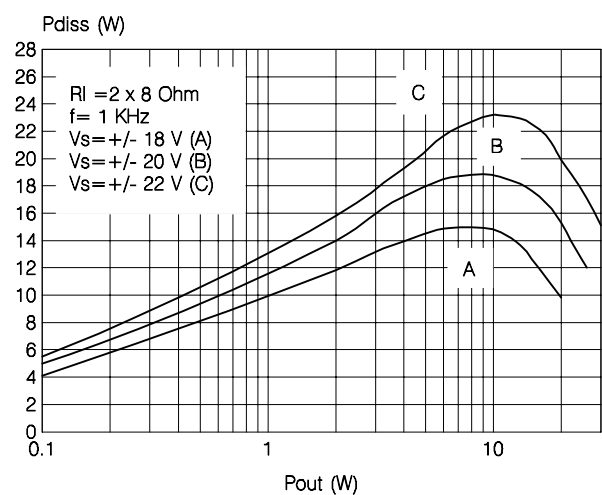


Figure 14: Power Dissipation vs. Output Power



**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

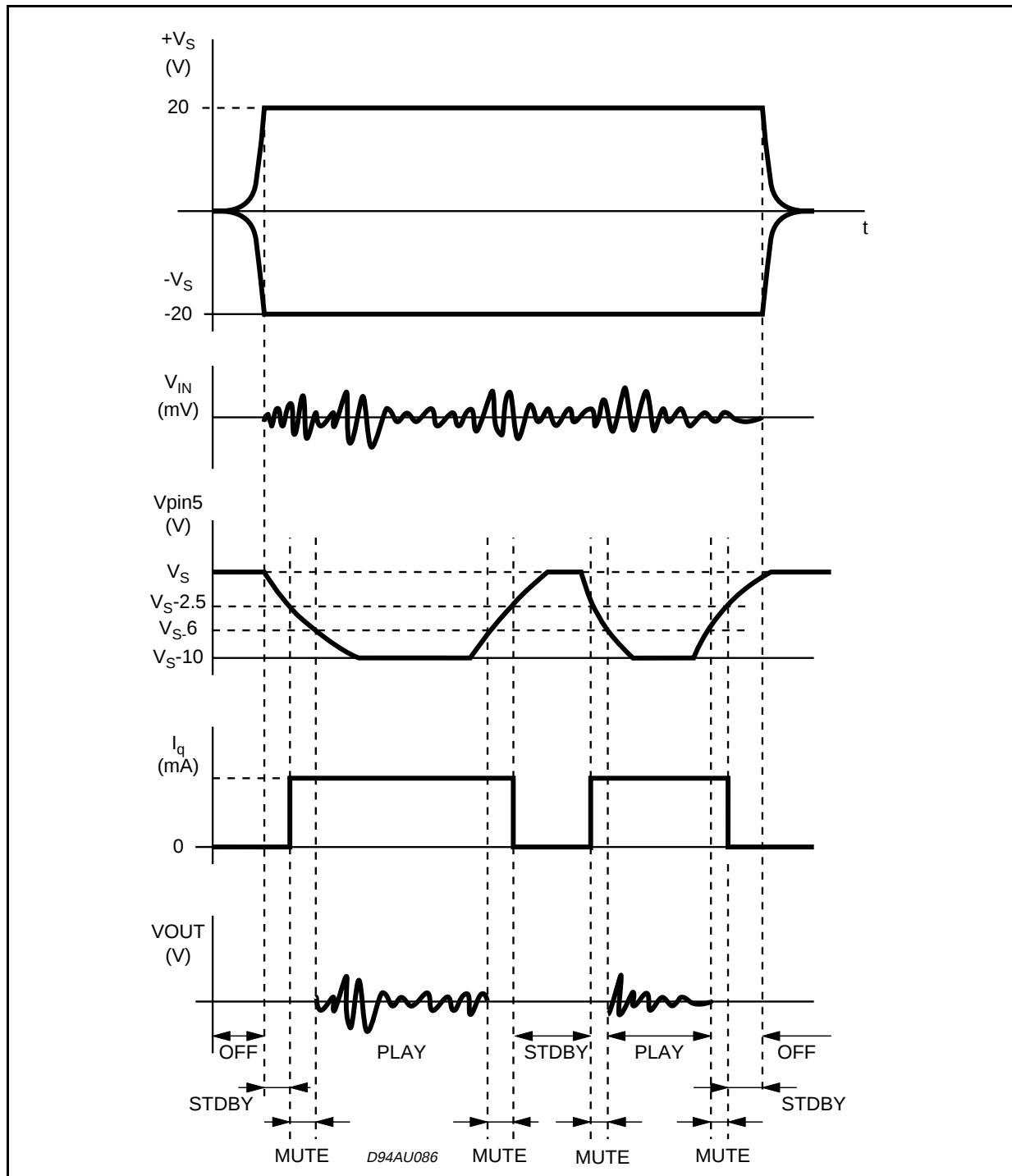


Figure 16: Test and Application Circuit (Stereo Configuration)

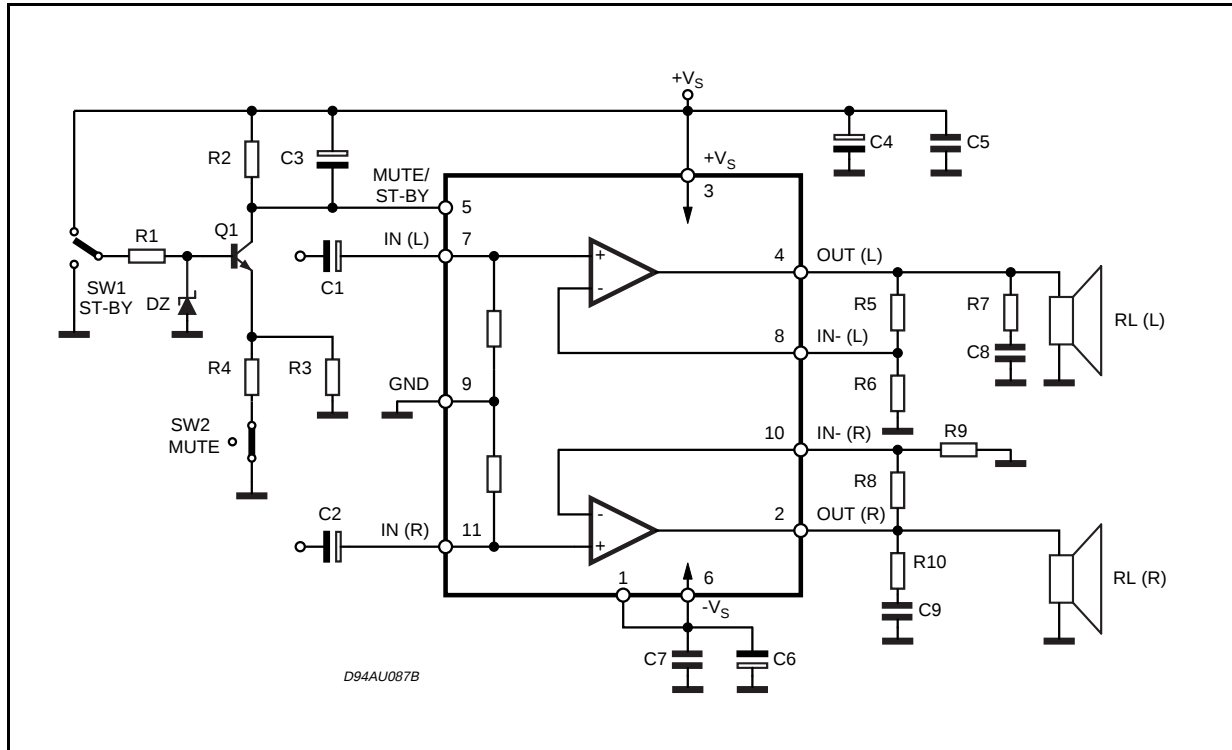
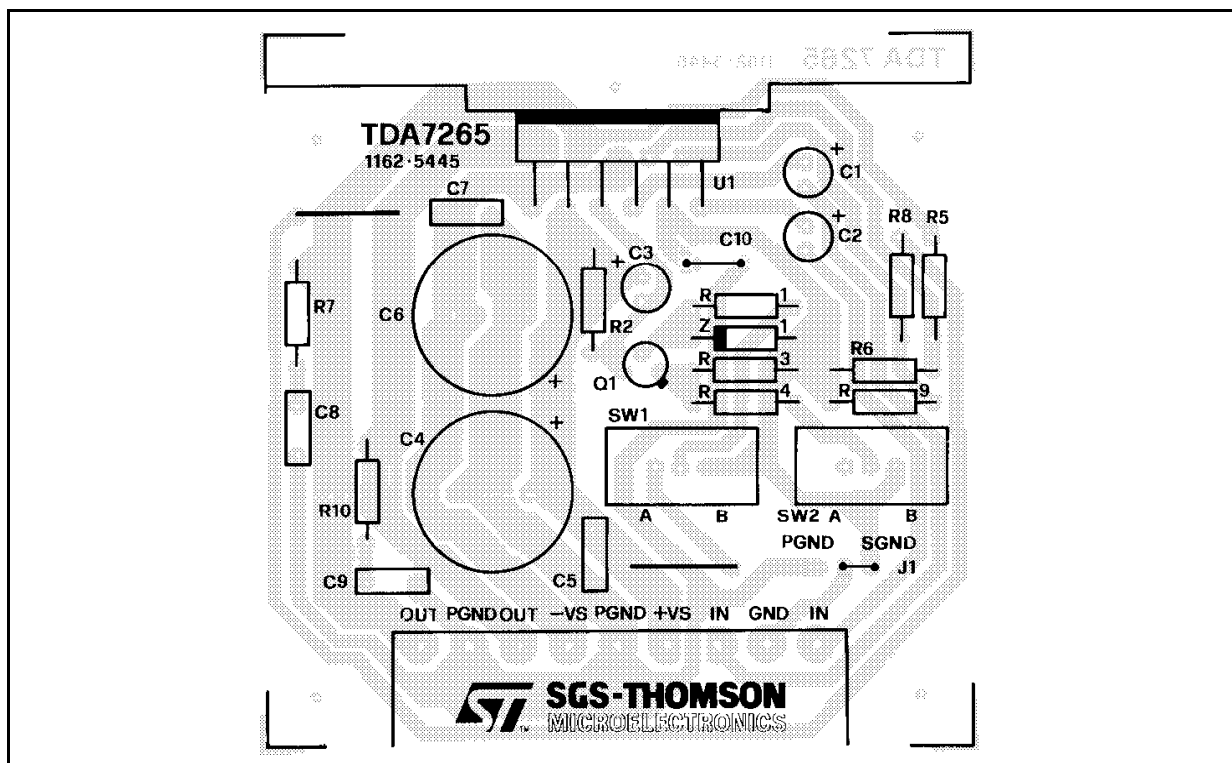


Figure 17: PC Board and Components Layout of the figure 15 (1:1 scale)



**APPLICATIONS SUGGESTION**

(Demo Board Schematic)

The recommended values of the external compo-

nents 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         | 10K $\Omega$      | Mute Circuit                 | Increase of Dz Biasing Current        |                                       |
| R2         | 15K $\Omega$      | Mute Circuit                 | V <sub>pin # 5</sub> Shifted Downward | V <sub>pin # 5</sub> Shifted Upward   |
| R3         | 18K $\Omega$      | Mute Circuit                 | V <sub>pin # 5</sub> Shifted Upward   | V <sub>pin # 5</sub> Shifted Downward |
| R4         | 15K $\Omega$      | Mute Circuit                 | V <sub>pin # 5</sub> Shifted Upward   | V <sub>pin # 5</sub> Shifted Downward |
| R5, R8     | 18K $\Omega$      | Closed Loop Gain Setting (*) | Increase of Gain                      |                                       |
| R6, R9     | 560 $\Omega$      |                              | Decrease of Gain                      |                                       |
| R7, R10    | 4.7 $\Omega$      | Frequency Stability          | Danger of Oscillations                | Danger of Oscillations                |
| C1, C2     | 1 $\mu$ F         | Input DC Decoupling          |                                       | Higher Low Frequency Cutoff           |
| C3         | 1 $\mu$ F         | St-By/Mute Time Constant     | Larger On/Off Time                    | Smaller On/Off Time                   |
| C4, C6     | 1000 $\mu$ F      | Supply Voltage Bypass        |                                       | Danger of Oscillations                |
| C5, C7     | 0.1 $\mu$ F       | Supply Voltage Bypass        |                                       | Danger of Oscillations                |
| C8, C9     | 0.1 $\mu$ F       | Frequency Stability          |                                       |                                       |
| Dz         | 5.1V              | Mute Circuit                 |                                       |                                       |
| Q1         | BC107             | Mute Circuit                 |                                       |                                       |

(\*) Closed loop gain has to be =&gt; 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 recommend to use the TDA7265 in bridge with the supply voltage equal/lower than  $\pm 16V$  when the load is  $8\Omega$ ; with higher loads (i.e.  $16\Omega$ ), 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  $R_L=8\Omega$ ,  $V_s=\pm 16V$  the maximum output power obtainable is 50W at T.D.H.=10%.

The quiescent current remains unchanged with respect to the stereo configuration ( $\sim 80mA$  as typical at  $V_s=\pm 16V$ ).

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

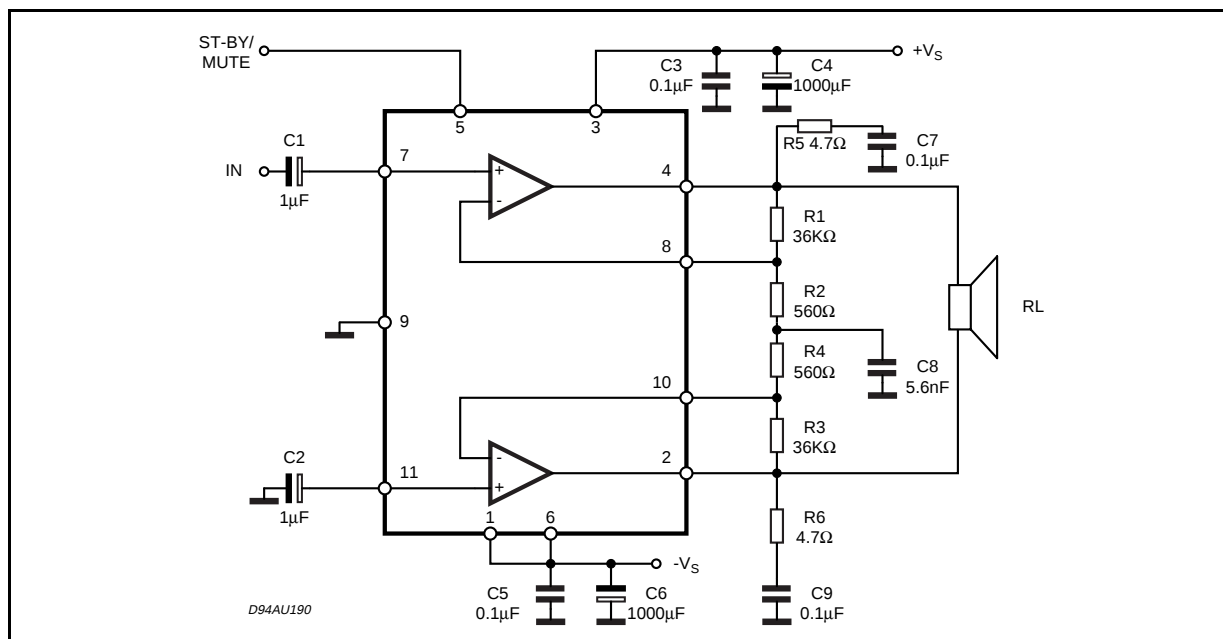


Figure 19: Distortion vs. Output Power

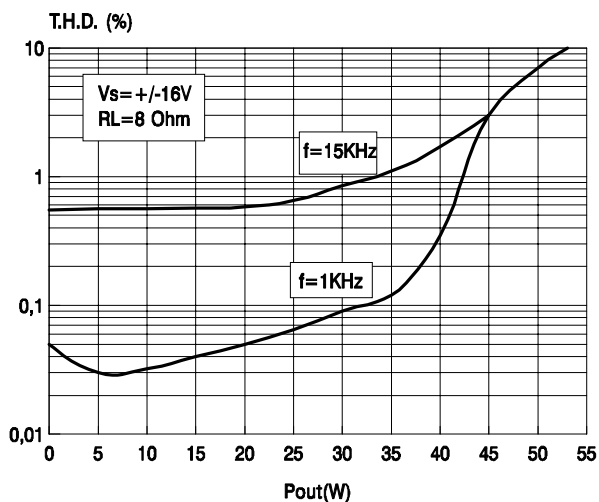
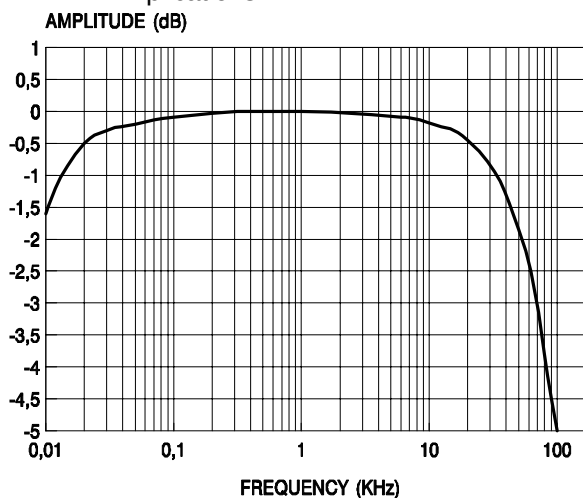
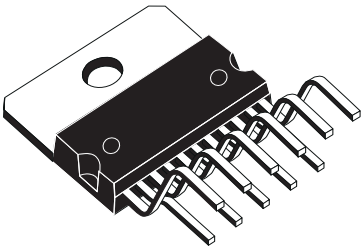


Figure 20: Frequency Response of the Bridge Applications

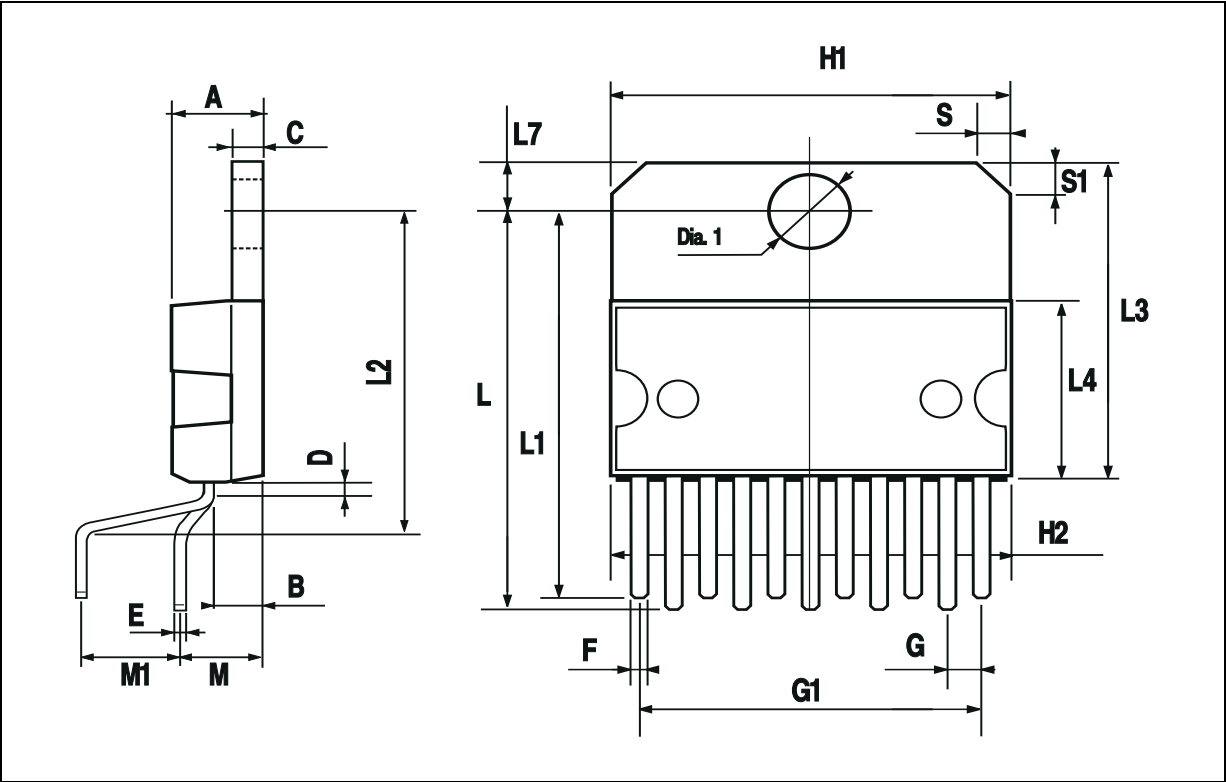


| DIM. | mm    |      |       | inch  |       |       |
|------|-------|------|-------|-------|-------|-------|
|      | MIN.  | TYP. | MAX.  | MIN.  | TYP.  | MAX.  |
| A    |       |      | 5     |       |       | 0.197 |
| B    |       |      | 2.65  |       |       | 0.104 |
| C    |       |      | 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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