



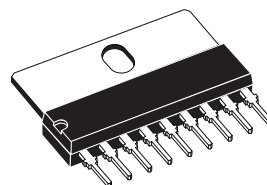
## TDA2007A

### 6 + 6W STEREO AMPLIFIER

- HIGH OUTPUT POWER
- HIGH CURRENT CAPABILITY
- AC SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION

#### DESCRIPTION

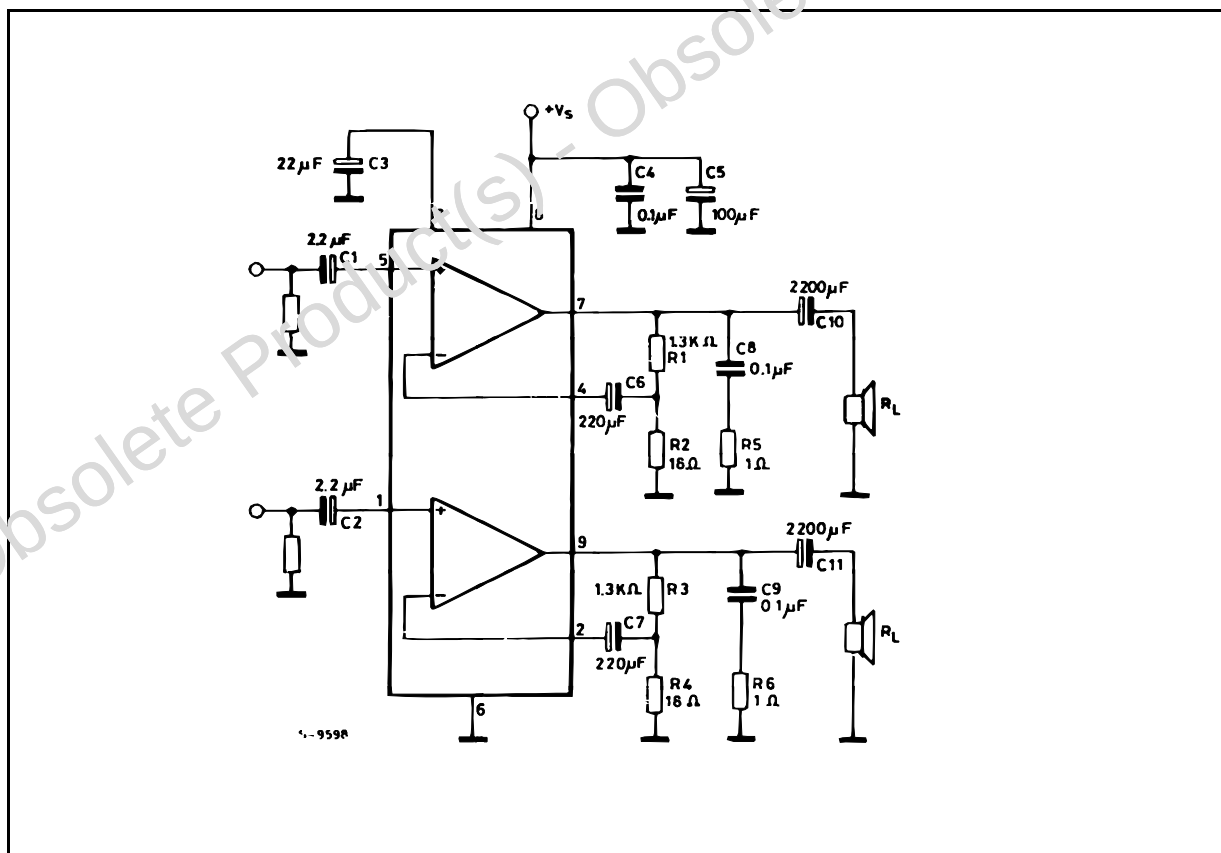
The TDA2007A is a class AB dual Audio power amplifier assembled in single in line 9 pins package, specially designed for stereo application in music centers TV receivers and portable radios.



SIP9

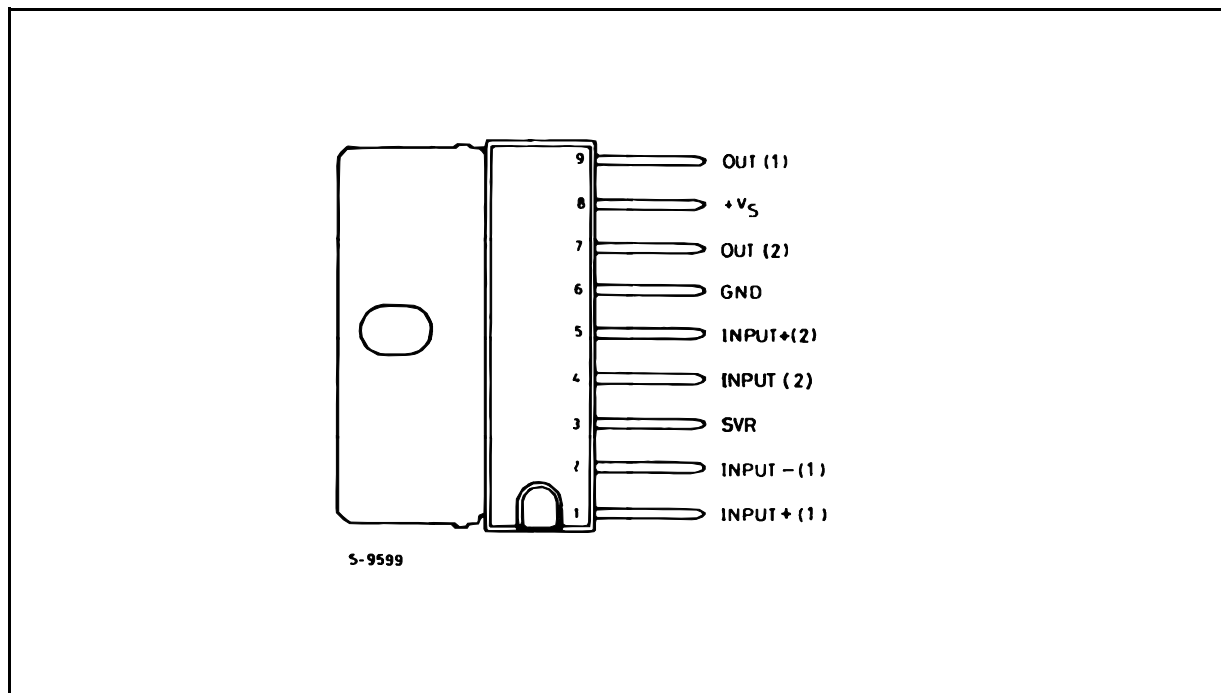
ORDERING NUMBER: TDA2007A

#### STEREO TEST CIRCUIT

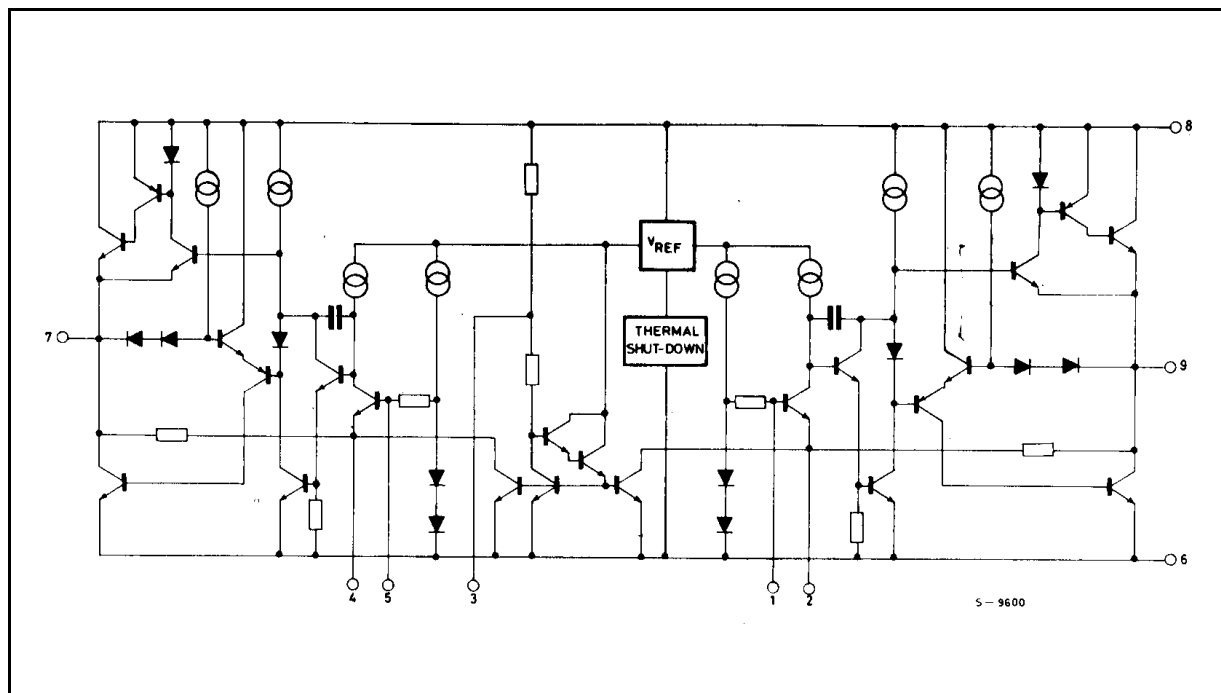


## TDA2007A

### PIN CONNECTION (top view)



### SCHEMATIC DIAGRAM



### THERMAL DATA

| Symbol           | Parameter                              | Value   | Unit          |
|------------------|----------------------------------------|---------|---------------|
| $R_{th\ j-case}$ | Thermal Resistance Junction-case       | Max. 8  | $^{\circ}C/W$ |
| $R_{th\ j-amb}$  | Thermal Resistance Junction-to-ambient | Max. 70 | $^{\circ}C/W$ |

## ABSOLUTE MAXIMUM RATINGS

| Symbol                | Parameter                                                  | Value      | Unit             |
|-----------------------|------------------------------------------------------------|------------|------------------|
| $V_S$                 | Supply Voltage                                             | 28         | V                |
| $I_O$                 | Output Peak Current (repetitive $f \geq 20\text{Hz}$ )     | 3          | A                |
| $I_O$                 | Output Peak Current (non repetitive $t = 100\mu\text{s}$ ) | 3.5        | A                |
| $P_{\text{tot}}$      | Power Dissipation at $T_{\text{case}} = 70^\circ\text{C}$  | 10         | W                |
| $T_{\text{stg}}, T_j$ | Storage and Junction Temperature                           | -40 to 150 | $^\circ\text{C}$ |

**ELECTRICAL CHARACTERISTICS** (refer to the stereo application circuit,  $T_{\text{amb}} = 25^\circ\text{C}$ ,  $V_S = 18\text{V}$ ,  $G_V = 36\text{dB}$ , unless otherwise specified)

| Symbol       | Parameter                               | Test Condition                                                                                                                                                                                   | Min.       | Typ.        | Max. | Unit                           |
|--------------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|------|--------------------------------|
| $V_S$        | Supply Voltage                          |                                                                                                                                                                                                  | 8          |             | 26   | V                              |
| $V_O$        | Quiescent Output Voltage                |                                                                                                                                                                                                  |            | 8.5         |      | V                              |
| $I_d$        | Total Quiescent Drain Current           |                                                                                                                                                                                                  |            | 50          | 90   | mA                             |
| $P_O$        | Output Power (each channel)             | $f = 100\text{Hz to } 6\text{KHz}$<br>$d = 0.5\%$<br>$V_S = 18\text{V}$ $R_L = 4\Omega$<br>$V_S = 22\text{V}$ $R_L = 8\Omega$                                                                    | 5.5<br>5.5 | 6<br>6      |      | W<br>W                         |
| $d$          | Distortion (each channel)               | $f = 1\text{KHz}$ , $V_S = 18\text{V}$ , $R_L = 4\Omega$<br>$P_O = 100\text{mW to } 3\text{W}$<br>$f = 1\text{KHz}$ , $V_S = 22\text{V}$ , $R_L = 8\Omega$<br>$P_O = 100\text{mW to } 3\text{W}$ |            | 0.1<br>0.05 |      | %<br>%                         |
| CT           | Cross Talk ( $^{\circ\circ\circ}$ )     | $R_L = \infty$ , $R_g = 10\text{K}\Omega$<br>$f = 1\text{KHz}$<br>$f = 10\text{KHz}$                                                                                                             | 50<br>40   | 60<br>50    |      | dB<br>dB                       |
| $V_i$        | Input Saturation Voltage (rms)          |                                                                                                                                                                                                  | 300        |             |      | mV                             |
| $R_i$        | Input Resistance                        | $f = 1\text{KHz}$                                                                                                                                                                                | 70         | 200         |      | $\text{K}\Omega$               |
| $f_L$        | Low Frequency Roll Off (-3dB)           | $R_L = 4\Omega$ , $C_{10} = C_{11} = 2200\mu\text{F}$                                                                                                                                            |            | 40          |      | Hz                             |
| $f_H$        | Low Frequency Roll Off (-3dB)           |                                                                                                                                                                                                  |            | 80          |      | KHz                            |
| $G_V$        | Voltage Gain (closed loop)              | $f = 1\text{KHz}$                                                                                                                                                                                | 35.5       | 36          | 36.5 | dB                             |
| $\Delta G_V$ | Closed Loop Gain Matching               |                                                                                                                                                                                                  |            | 0.5         |      | dB                             |
| $e_N$        | Total Input Noise Voltage               | $R_g = 10\text{k}\Omega$ ( $^{\circ}$ )<br>$R_g = 10\text{k}\Omega$ ( $^{\circ\circ}$ )                                                                                                          |            | 1.5<br>2.5  |      | $\mu\text{V}$<br>$\mu\text{V}$ |
| SVR          | Supply Voltage Rejection (each channel) | $R_g = 10\text{K}\Omega$<br>$f_{\text{ripple}} = 100\text{Hz}$ , $V_{\text{ripple}} = 0.5\text{V}$                                                                                               |            | 55          |      | dB                             |
| $T_j$        | Thermal Shut-down Junction Temperature  |                                                                                                                                                                                                  |            | 145         |      | $^\circ\text{C}$               |

( $^{\circ}$ ) Curve A. ( $^{\circ\circ}$ ) 22Hz to 22KHz.

Figure 1 : Stereo Test Circuit ( $G_v = 36 \text{ dB}$ ).

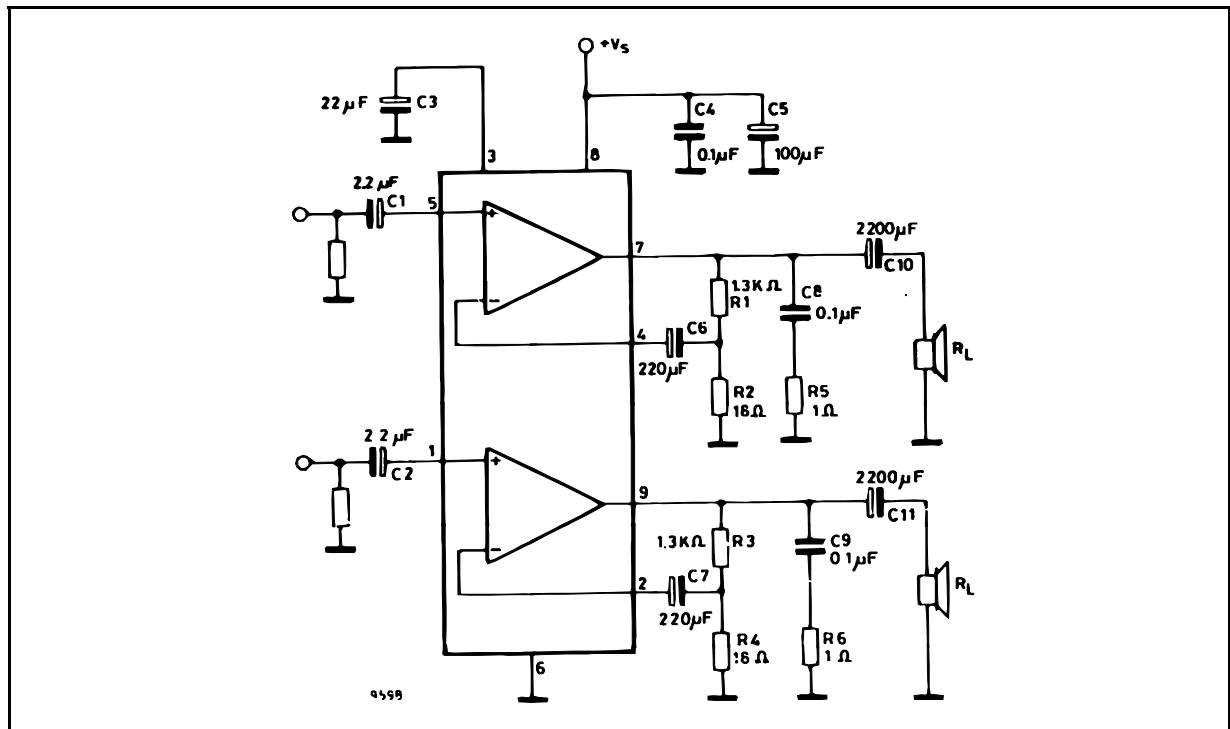
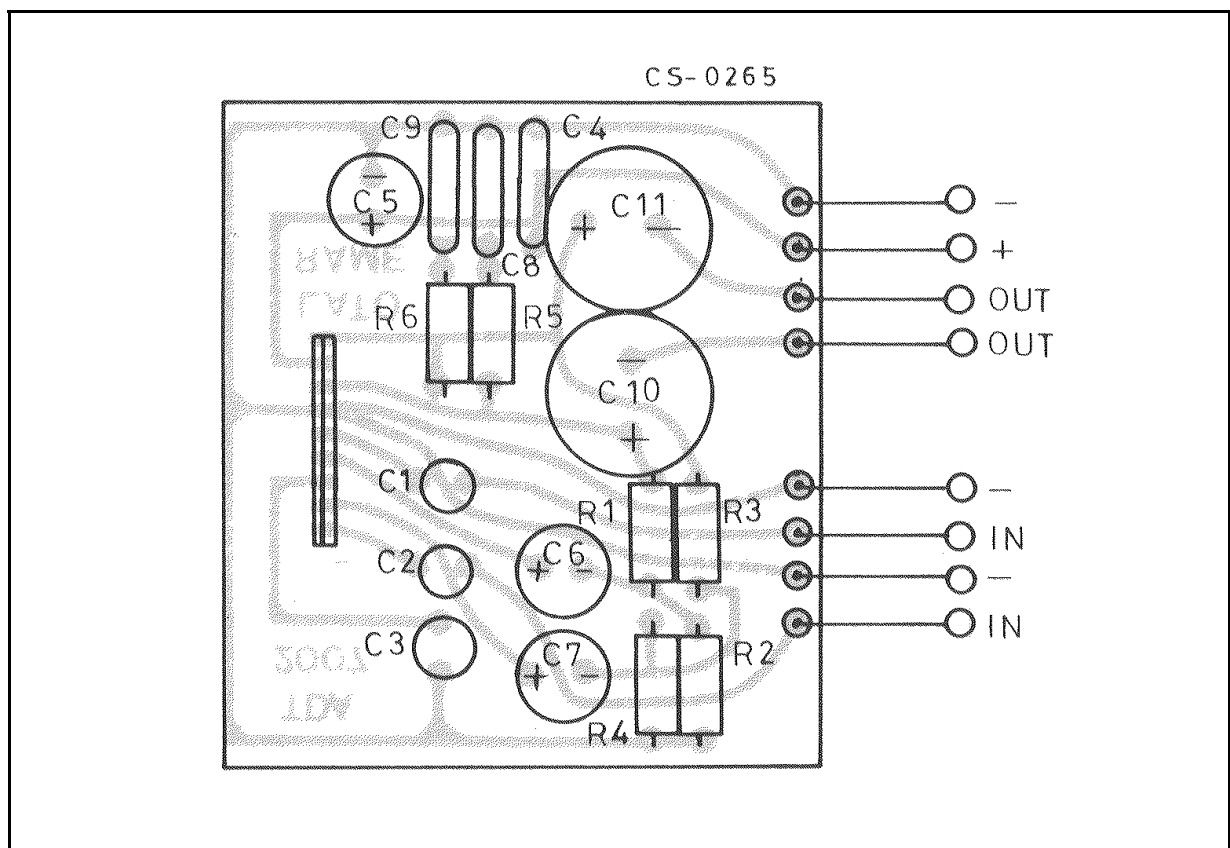


Figure 2 : P.C. Board and Components layout of the Circuit of Fig.1 (1 : 1 scale).



## APPLICATION SUGGESTION

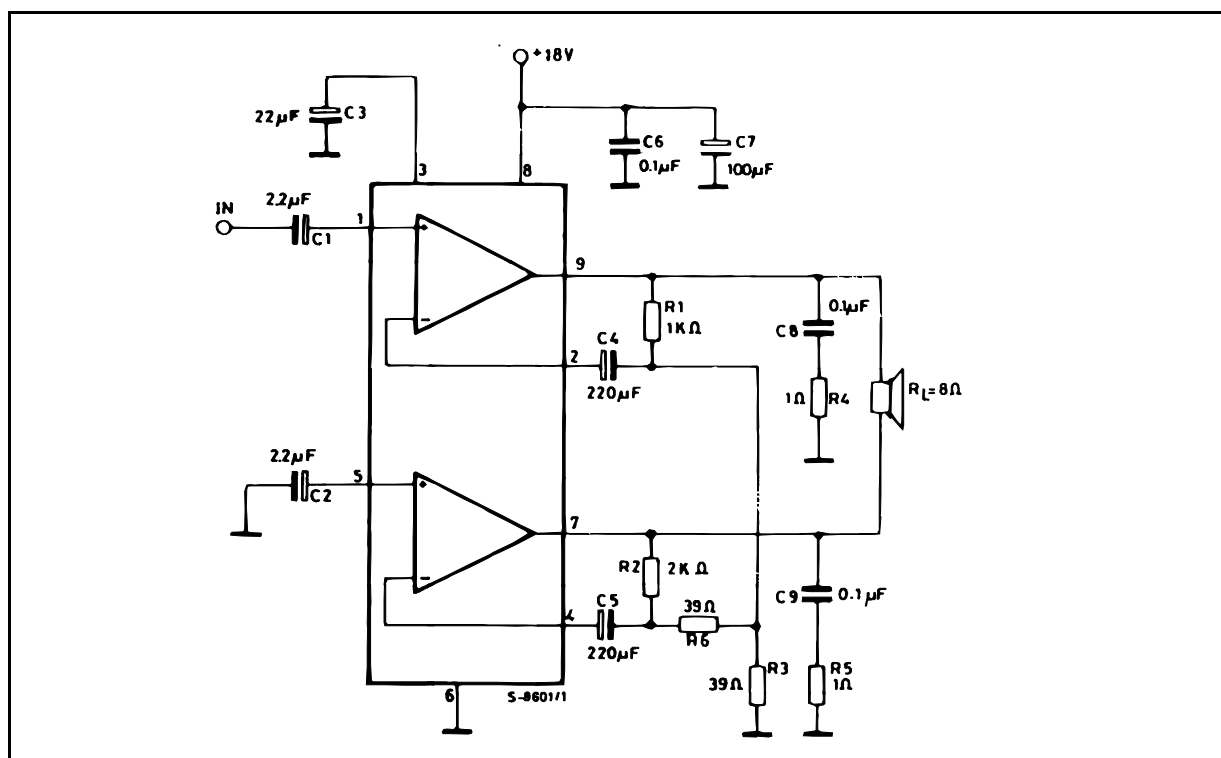
The recommended values of the components are those shown on application circuit of fig.1. Different values can be used ; the following table can help the designer.

| Component   | Recommended value            | Purpose                      | Larger Than                                                 | Smaller Than                                                       |
|-------------|------------------------------|------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------|
| R1, R3      | 1.3K $\Omega$                | Close Loop Gain Setting (*)  | Increase of Gain                                            | Decrease of Gain                                                   |
| R2 and R4   | 18 $\Omega$                  |                              | Decrease of Gain                                            | Increase of gain                                                   |
| R5 and R6   | 1 $\Omega$                   | Frequency stability          | Danger of Oscillation at High Frequency with Inductive Load |                                                                    |
| C1 and C2   | 2.2 $\mu$ F                  | Input DC Decoupling          | High Turn-on Delay                                          | High Turn-on Pop<br>Higher Low Frequency Cutoff. Increase of Noise |
| C3          | 22 $\mu$ F                   | Ripple Rejection             | Better SVR Increase of the Switch-on Time                   | Degradation of SVR                                                 |
| C6 and C7   | 220 $\mu$ F                  | Feedback Input DC Decoupling |                                                             |                                                                    |
| C8 and C9   | 0.1 $\mu$ F                  | Frequency Stability          |                                                             | Danger of Oscillation                                              |
| C10 and C11 | 1000 $\mu$ F to 2200 $\mu$ F | Output DC Decoupling         |                                                             | Higher Low-frequency Cut-off                                       |

(\*) The closed loop gain must be higher than 26 dB.

## APPLICATION INFORMATION

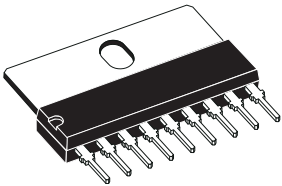
**Figure 3 : 12 W Bridge Amplifier ( $d = 0.5\%$ ,  $G_V = 40$  dB).**



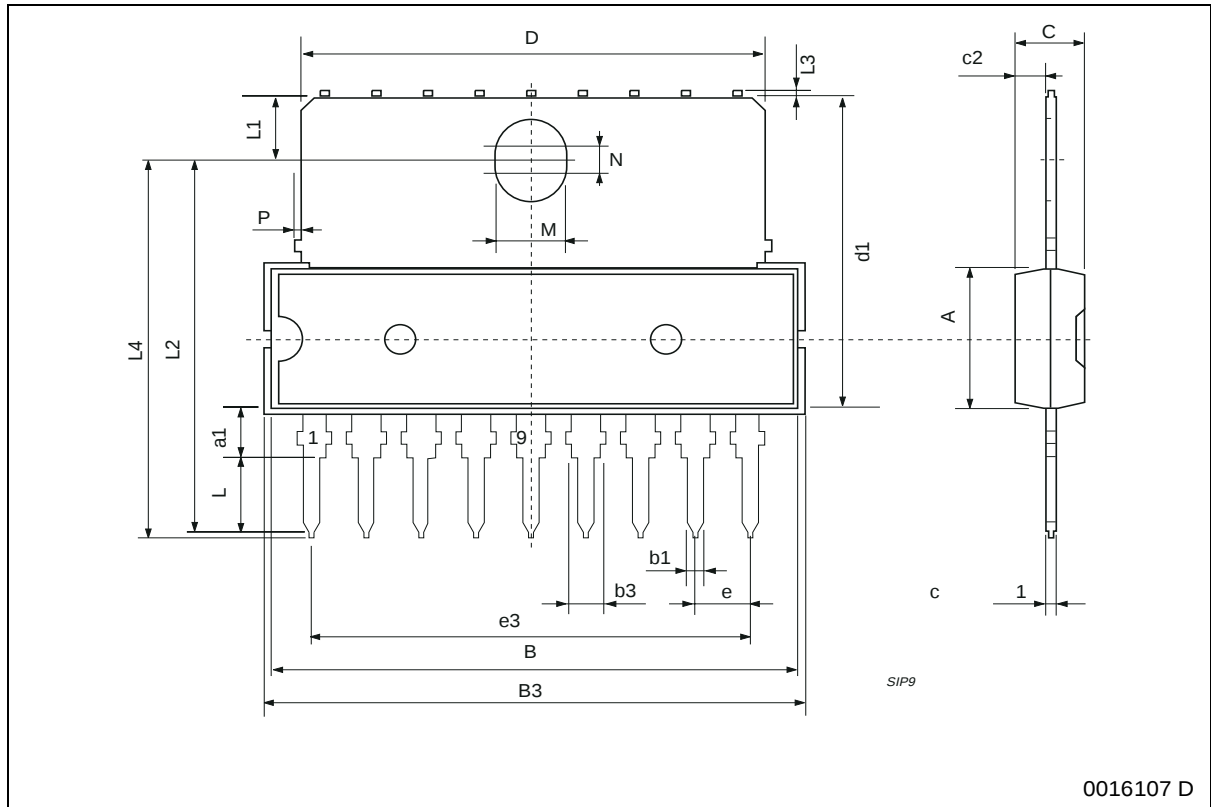
| DIM. | mm   |       |       | inch  |       |       |
|------|------|-------|-------|-------|-------|-------|
|      | MIN. | TYP.  | MAX.  | MIN.  | TYP.  | MAX.  |
| A    |      |       | 7.1   |       |       | 0.280 |
| a1   | 2.7  |       | 3     | 0.106 |       | 0.118 |
| B    |      |       | 23    |       |       | 0.90  |
| B3   |      |       | 24.8  |       |       | 0.976 |
| b1   |      | 0.5   |       |       | 0.020 |       |
| b3   | 0.85 |       | 1.6   | 0.033 |       | 0.063 |
| C    |      | 3.3   |       |       | 0.130 |       |
| c1   |      | 0.43  |       |       | 0.017 |       |
| c2   |      | 1.32  |       |       | 0.052 |       |
| D    |      |       | 21.2  |       |       | 0.835 |
| d1   |      | 14.5  |       |       | 0.571 |       |
| e    |      | 2.54  |       |       | 0.100 |       |
| e3   |      | 20.32 |       |       | 0.800 |       |
| L    | 3.1  |       |       | 0.122 |       |       |
| L1   |      | 3     |       |       | 0.118 |       |
| L2   |      | 17.6  |       |       | 0.693 |       |
| L3   |      |       | 0.25  |       |       | 0.010 |
| L4   | 17.4 |       | 17.85 | 0.685 |       | 0,702 |
| M    |      | 3.2   |       |       | 0.126 |       |
| N    |      | 1     |       |       | 0.039 |       |
| P    |      |       | 0.15  |       |       | 0.006 |

OUTLINE AND  
MECHANICAL DATA

Weight: 1.87gr



SIP9



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