

20+20W STEREO AMPLIFIER WITH STAND-BY

- WIDE SUPPLY VOLTAGE RANGE
- HIGH OUTPUT POWER
28+28W TYP. MUSIC POWER
20+20W @ THD = 10%, $R_L = 4\Omega$, $V_S = 28V$
- HIGH CURRENT CAPABILITY (UP TO 3.5A)
- STAND-BY FUNCTION
- AC SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION

DESCRIPTION

The TDA7262 is class AB dual Hi-Fi Audio power amplifier assembled in Multiwatt package, specially designed for high quality stereo application as Hi-Fi music centers and TV sets.

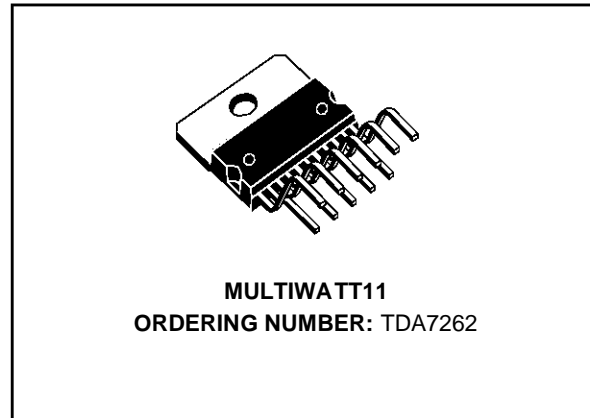
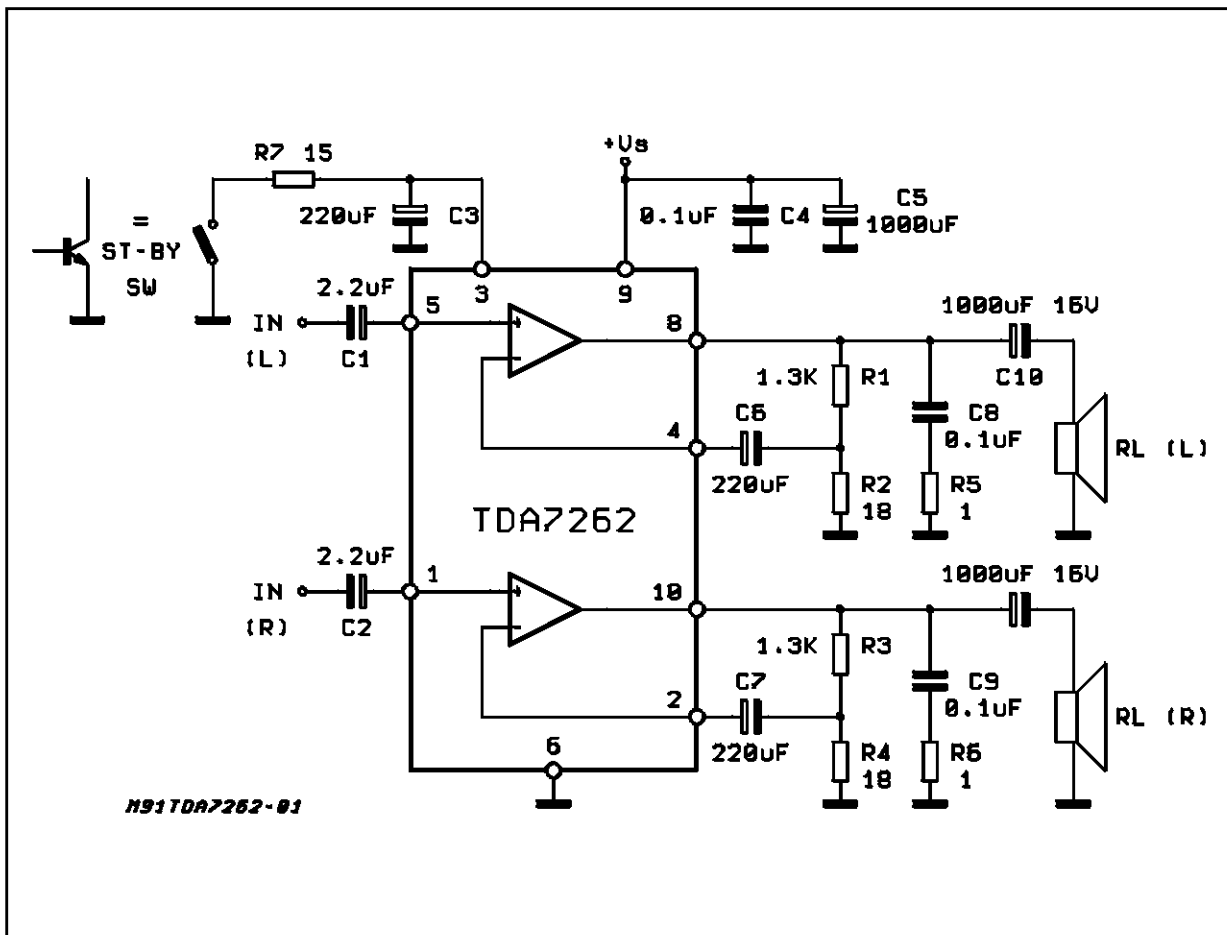


Figure 1: Stereo Application Circuit with Stand-By

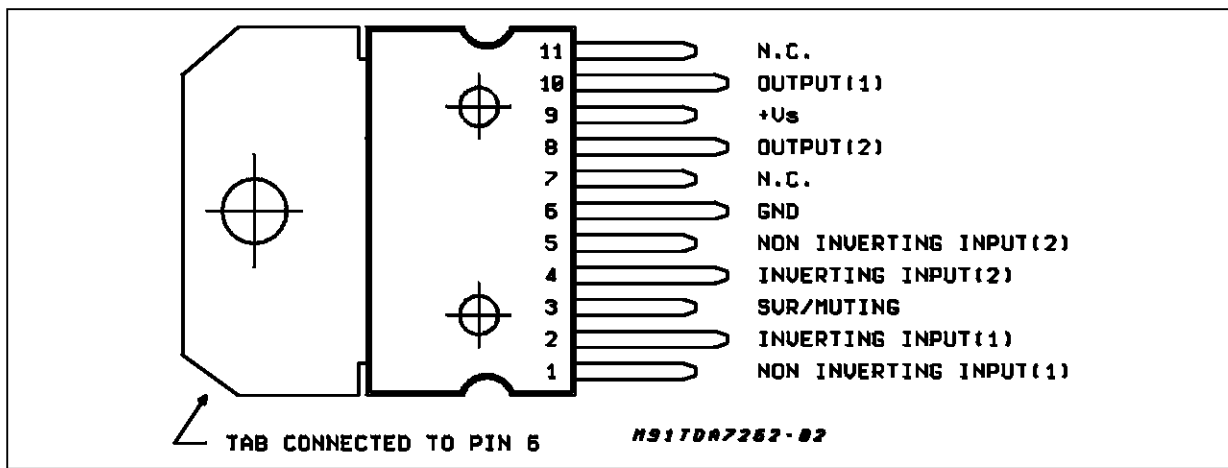


TDA7262

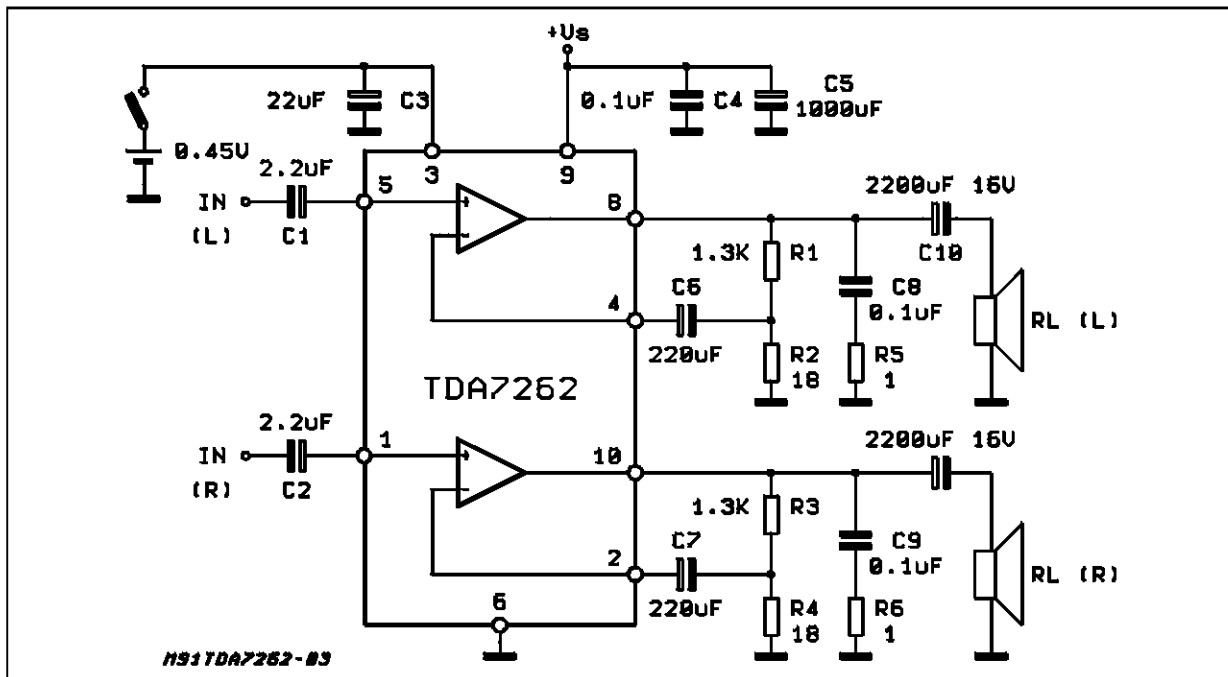
ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|----------------|---|------------|------------------|
| V_S | Supply Voltage | 35 | V |
| I_o | Output Peak Current (repetitive $f > 20\text{Hz}$) | 3.5 | A |
| I_o | Output Peak Current (non repetitive, $t > 100\mu\text{s}$) | 4.5 | A |
| P_{tot} | Power Dissipation ($T_{case} = 70^\circ\text{C}$) | 30 | W |
| T_{stg}, T_j | Storage and Junction Temperature | -40 to 150 | $^\circ\text{C}$ |

PIN CONNECTION



TEST CIRCUIT



THERMAL DATA

| Symbol | Description | Value | Unit |
|------------------|----------------------------------|-------|----------|
| $R_{th\ j-case}$ | Thermal Resistance Junction-case | Max | 2.5 °C/W |

ELECTRICAL CHARACTERISTICS (Refer to the stereo test circuit, $V_S = 28V$; $f = 1KHz$; $T_{amb} = 25^\circ C$, unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Unit |
|--------------|---|---|------|------------|------|------------|
| V_S | Supply Voltage | | 8 | | 32 | V |
| V_O | Quiescent Output Voltage | $V_S = 32V$ | | 15.5 | | V |
| I_d | Total Quiescent Current | $V_S = 28V$ $V_S = 32V$ | | 65 70 | 120 | mA mA |
| P_O | Output Power (each channel) | Music Power STD rules ($T = 1s$) $V_S = 32V$; $d = 10\%$; $R_L = 4\Omega$ | | 28 | | W |
| | | $d = 10\%$ $R_L = 4\Omega$ $R_L = 8\Omega$ | 10 | 22 13 | | W W |
| | | $d = 1\%$ $R_L = 4\Omega$ $R_L = 8\Omega$ | | 18 10 | | W W |
| d | Total Harmonic Distortion | $f = 100Hz$ to $10KHz$ $P_O = 0.1$ to $14W$; $R_L = 4\Omega$ $P_O = 0.1$ to $8W$; $R_L = 8\Omega$ | | 0.2 0.1 | | % % |
| CT | Cross Talk | $R_L = 4\Omega$ $R_S = 100\Omega$ $f = 1KHz$ | | 60 | | dB |
| | | $f = 10KHz$ | | 50 | | dB |
| V_i | Input Saturation Voltage | (Vrms) | 300 | | | mV |
| R_i | Input Resistance | $f = 1KHz$; non inverting Input | 70 | 200 | | K Ω |
| f_L | Low Frequency roll-off (-3dB) | $R_L = 4\Omega$ | | 40 | | Hz |
| f_H | High Frequency roll-off (-3dB) | $R_L = 4\Omega$ | | 80 | | KHz |
| G_V | Closed Loop Voltage Gain | $f = 1KHz$ | 35.5 | 36 | 36.5 | dB |
| ΔG_V | Closed Loop Gain match | | | 0.5 | | dB |
| e_N | Total Input Noise Voltage | A Curve; $R_S = 10K\Omega$ | | 1.5 | | μV |
| | | $f = 22Hz$ to $22KHz$; $R_S = 10K\Omega$ | | 2.5 | 8 | μV |
| SVR | Supply Voltage Rejection (each channel) | $R_S = 0$ to $10K\Omega$; $f_r = 100Hz$ $V_r = 0.5V$ | | 55 | | dB |
| T_j | Thermal Shutdown Junction Temperature | | | 145 | | $^\circ C$ |

STAND-BY FUNCTION

| | | | | | | |
|-------|----------------------------|-----------------------------|------|-----|---|----|
| V_3 | Stand-By Threshold | $V_S = 32V$ | 0.45 | 0.9 | | V |
| A_M | Stand-By Attenuation | $V_S = 32V$; $V_3 < 0.45V$ | 60 | 100 | | dB |
| I_M | Stand-By Quiescent Current | $V_S = 32V$; $V_3 < 0.45V$ | | 3 | 5 | mA |

APPLICATION SUGGESTION

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

| Component | Recomm. Value | Purpose | Larger than | Smaller than |
|-------------|------------------|--|--------------------------------|--|
| R1 and R3 | 1.3KΩ | Close loop gain setting (*) | Increase of gain | Decrease of gain |
| R2 and R4 | 18Ω | | Decrease of gain | Increase of gain |
| R5 and R6 | 1Ω | Frequency stability | Danger of oscillations | |
| C1 and C2 | 2.2μF | Input DC decoupling | higher turn-on delay | - worse turn-ON pop - higher low freq. cutoff. Increase of noise |
| C3 | 22μF (**) | - Ripple rejection - Stand-by time constant | Increase of the Switch-on time | - Degradation of SVR - worse turn-OFF pop by stand-by |
| C4 | 100nF | Supply setting | | Danger of oscillations |
| C5 | 1000μF | Supply setting | | worse turn-OFF pop |
| C6 and C7 | 220μF | Feedback input DC decoupling | | |
| C8 and C9 | 0.1μF | Frequency stability | | Danger of oscillations |
| C10 and C11 | 1000μF to 2200μF | Output DC decoupling | | Higher low-frequency cut-off |

(*) Closed loop gain must be higher than 26dB.

(**) 220μF in case of stand-by utilization.

Figure 2: Ouput Power vs. Supply Voltage

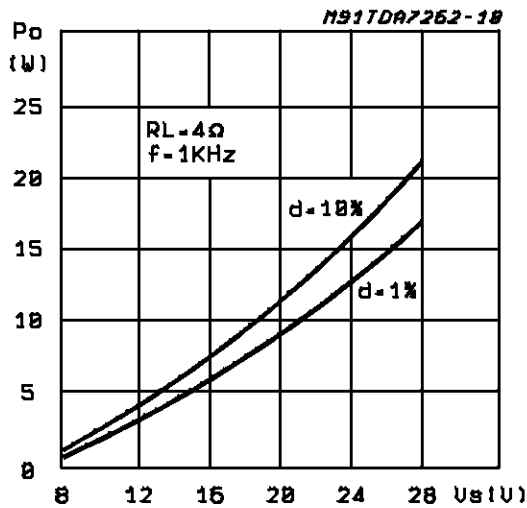


Figure 3: Ouput Power vs. Supply Voltage

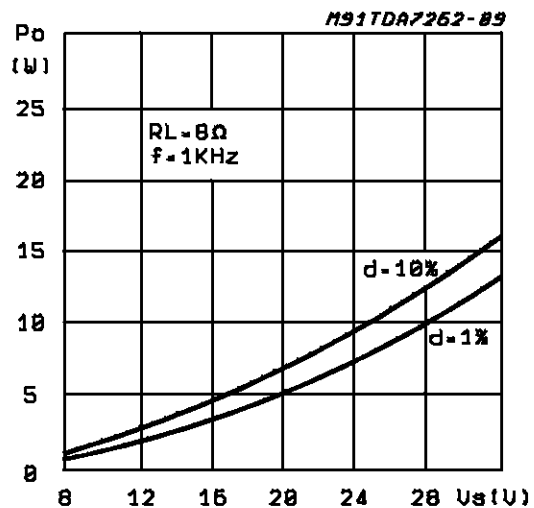


Figure 4: Distortion vs. Output Power

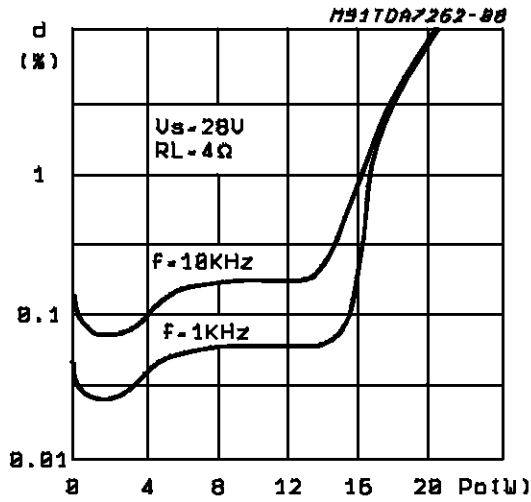


Figure 5: Distortion vs. Output Power

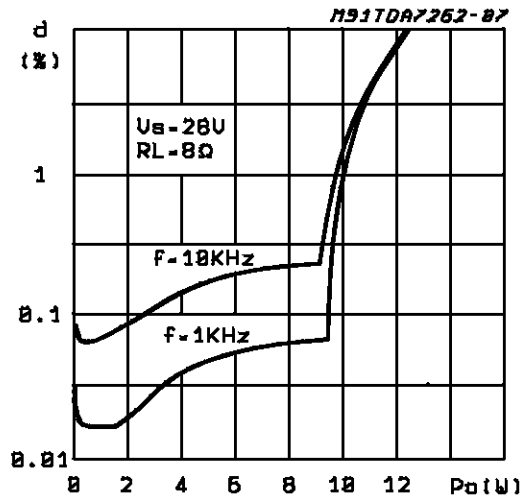


Figure 6: Quiescent Current vs. Supply Voltage

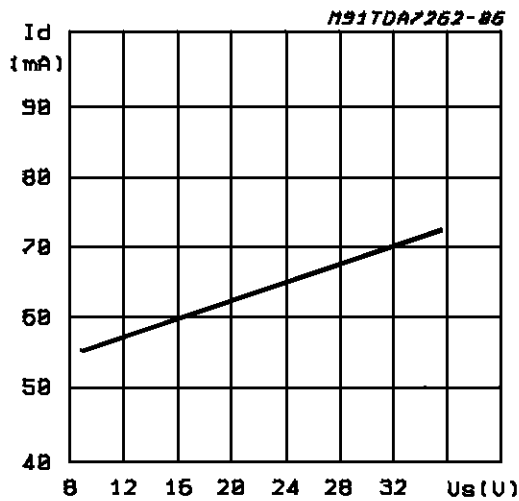


Figure 7: Supply Voltage Rejection vs. Frequency

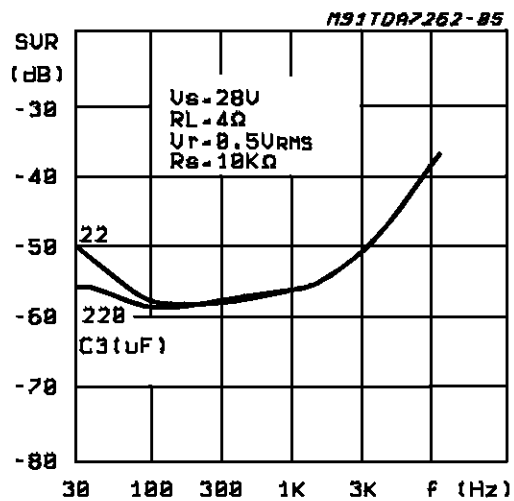


Figure 8: Output Attenuation vs. Vpin 3

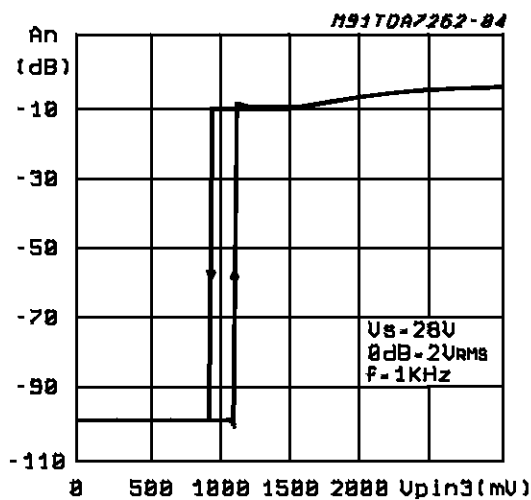


Figure 9: Total Power Dissipation & Efficiency vs. Output Power

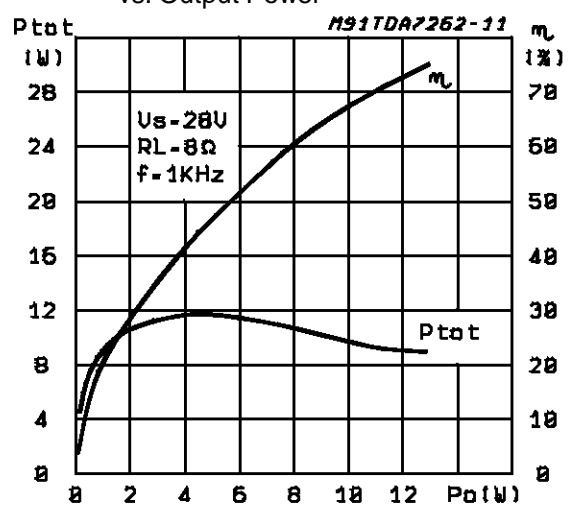


Figure 11: Total Power Dissipation & Efficiency vs. Output Power

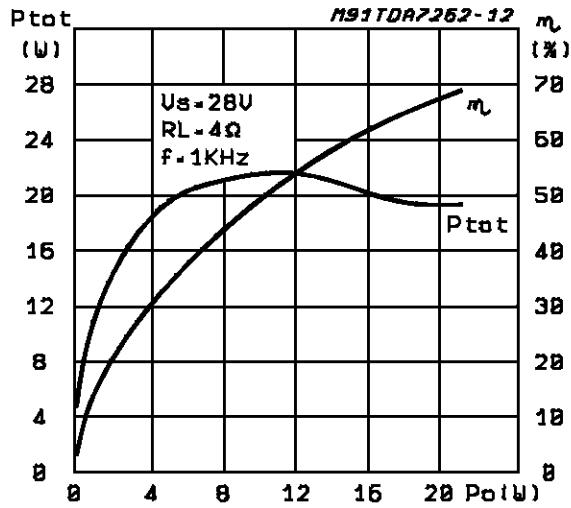
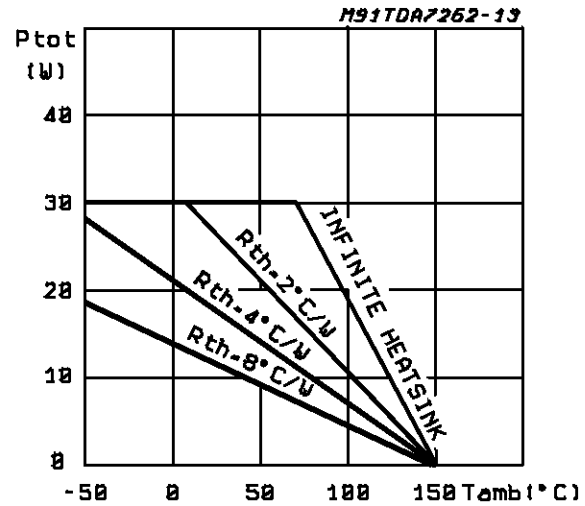


Figure 12



BUILD-IN PROTECTION SYSTEMS

Thermal shut-down

The presence of a thermal limiting circuit offers the following advantages:

- 1) an overload on the output (even if it is permanent), or an excessive ambient temperature can be easily withstood.
- 2) the heatsink can have a smaller factor of safety compared with that of a conventional circuit. There is no device damage in the case of excessive junction temperature; all that happens is that P_o (and therefore P_{tot}) and I_o are reduced. The maximum allowable power dissipation depends upon the size of the external heatsink (i.e. its thermal resistance); Figure 12 shows this dissipable power as a function of ambient temperature for different thermal resistance.

Short circuit (AC Conditions)

The TDA7262 can withstand accidental short circuits across the speaker made by a wrong connection during normal play operation.

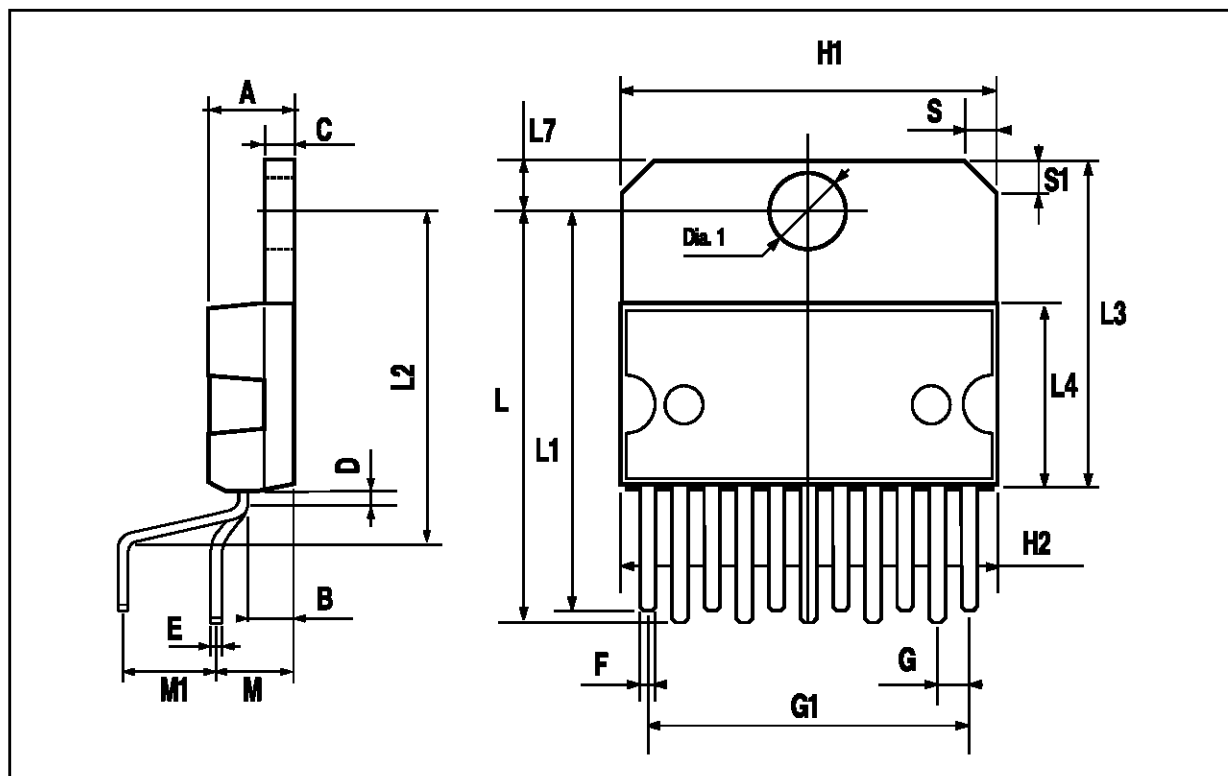
MOUNTING INSTRUCTIONS

The power dissipated in the circuit must be removed by adding an external heatsink.

Thanks to the MULTIWATT package attaching the heatsink is very simple, a screw or a compression spring (clip) being sufficient. between the heatsink and the package it is better to insert a layer of silicon grease, to optimize the thermal contact; no electrical isolation is needed between the two surfaces.

MULTIWATT11 PACKAGE MECHANICAL DATA

| 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 |



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