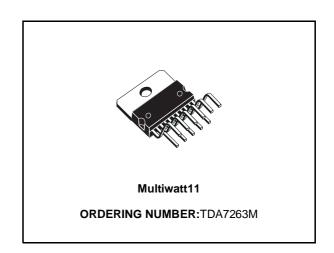


12 +12W STEREO AMPLIFIER WITH MUTING

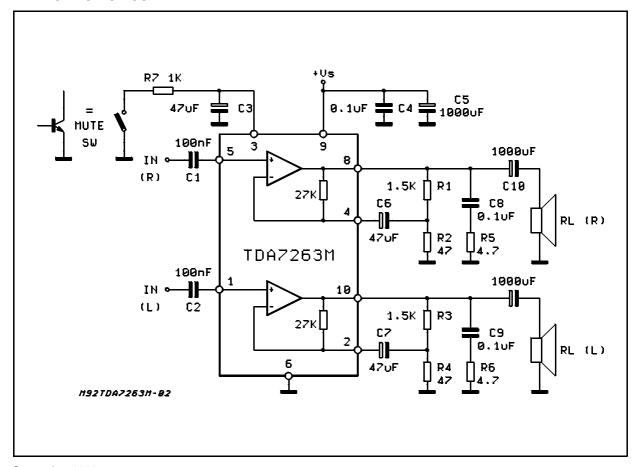
- WIDE SUPPLY VOLTAGE RANGE
- HIGH OUTPUT POWER 12+12W @ V_S =28V, R_L = 8Ω, THD=10%
- MUTE FACILITY (POP FREE) WITH LOW CONSUMPTION
- AC SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION

DESCRIPTION

The TDA7263M 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.



APPLICATION CIRCUIT



September 2003

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|---------------------|--|------------|------|
| Vs | Supply Voltage without load | 35 | V |
| Ιο | Output Peak Current (repetitive f >20Hz) | 2 | Α |
| P _{tot} | Total Power Dissipation (T _{case} = 70°C) | 30 | W |
| T _{op} | Operating Temperature Range | 0 to 70 | °C |
| T _{stq,Tj} | Storage & Junction Temperature | -40 to 150 | °C |

PIN CONNECTION (Top view)

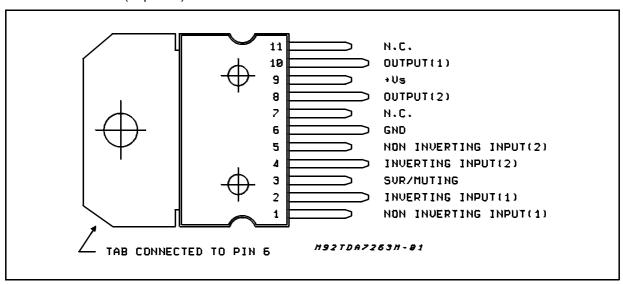
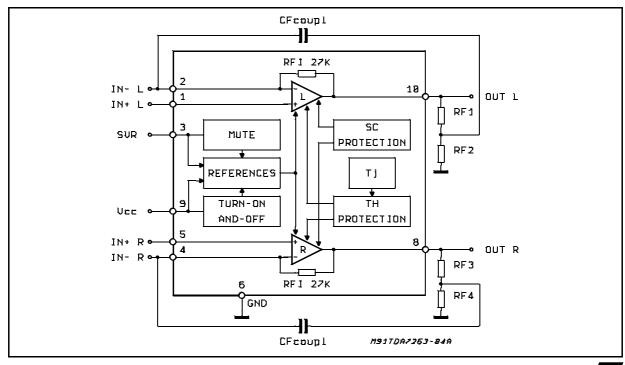


Figure 1: Block Diagram



THERMAL DATA

| Symbol | Parameter | Value | Unit |
|------------------------|---|-------|------|
| R _{th j-case} | Thermal resistance junction to case Max | 2.5 | °C/W |

ELECTRICAL CHARACTERISTICS (Refer to the stereo test and application circuit, $V_S = 28V$; $R_L = 8_{\Omega}$; $G_V = 30 dB$; f = 1 KHz; $T_{amb} = 25^{\circ}C$ unless otherwise specified.)

| Symbol | Parameter | Test Condition | Min. | Тур. | Max. | Unit | |
|--------------------|---|--|------|-----------|------------|--------|--|
| Vs | Supply Voltage | | 10 | | 30 | V | |
| Vo | Quiescent Output Voltage | | | 13.5 | | V | |
| Iq | Total Quiescent Current | | | 70 | 95 | mA | |
| Po | Output Power (RMS) | d = 10% Tamb = 85°C d = 1% | 10 | 12 9.5 | | W W | |
| d | Total Harmonic Distortion | $P_O = 1W$, $f = 1kHz$ $f = 100Hz$ to 10KHz; $P_O = 0.1$ to 8W | | 0.02 | 0.2 0.5 | % | |
| CT | Cross Talk | $R_S = 10K\Omega$; $f = 1KHz$ | | 70 | | dB | |
| | | $R_S = 10K\Omega$; $f = 10KHz$ | | 60 | | dB | |
| R _I | Input Resistance | | 100 | 200 | | ΚΩ | |
| fL | Low Frequency Roll-off (-3dB) | | | 40 | | Hz | |
| f _H | High Frequency Roll-off (-3dB) | | | 80 | | KHz | |
| en | Total Input Noise Voltage | A Curve; Rs = $10K\Omega$ | | 1.5 | | mV | |
| | | $f = 22Hz$ to $22KHz$; $R_S = 10K\Omega$ | | 3 | 10 | μV | |
| SVR | Supply Voltage Rejection (each channel) | $R_S = 10K\Omega$; $f = 100Hz$; $Vr = 0.5V$ | 45 | 60 | | dB | |
| Tj | Thermal Shutdown Junction Temperature | | | 145 | | °C | |
| MUTE FUN | MUTE FUNCTION | | | | | | |
| VT _{MUTE} | Mute Threshold | | 1 | 1.6 | | V | |
| VT_{PLAY} | Play Threshold | | | 4.5 | | V | |
| ATT _{AM} | Mute Attenuation | | 70 | 100 | | dB | |
| I _{qMUTE} | Quiescent Current @ Mute | | | 7 | 10 | mA | |

TYPICAL CHARACTERISTICS (referred to the typical Application Circuit, $V_S = 28V$, $R_L = 8\Omega$, unless otherwise specified)

Figure 1: Output Power vs. Supply Voltage

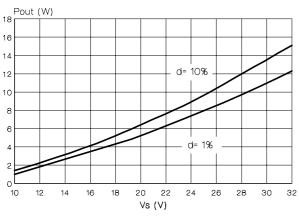
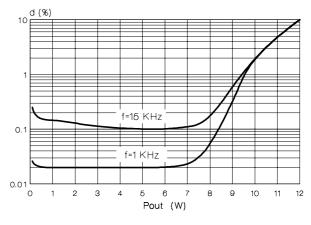


Figure 2: Distortion vs. Output Power



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Figure 3: Quiescent Current vs. Supply Voltage

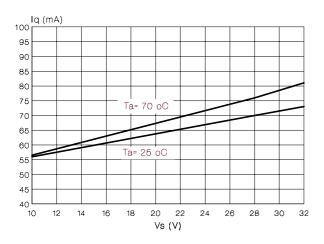


Figure 4: Supply Voltage Rejection vs. Frequency

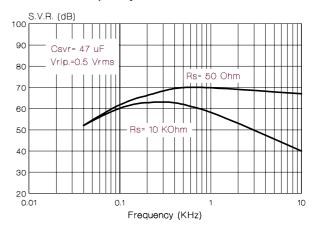


Figure 5: Crosstalk vs. Frequency

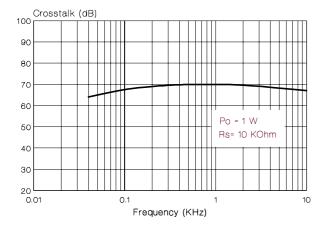


Figure 6: Output Attenuation & Quiescent Current vs. V_{pin3}

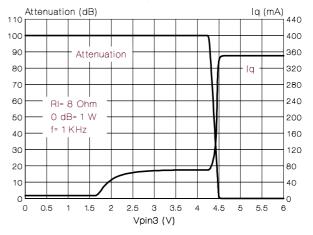
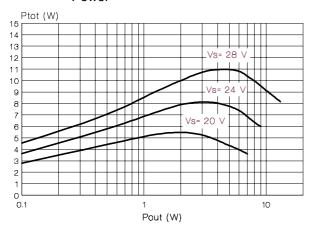


Figure 7: Total Power Dissipation vs. Output Power



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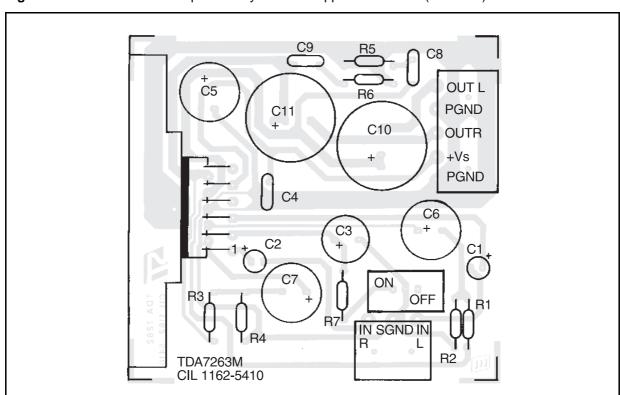
APPLICATION SUGGESTION

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 | 1.5ΚΩ | Close loop gain setting (*) | Increase of gain | Decrease of gain |
| R2 and R4 | 47Ω | Close loop gain setting (*) | Decrease of gain | Increase of gain |
| R5 and R6 | 4.7Ω | Frequency stability | Danger of oscillations | |
| C1 and C2 | 100nF | Input DC decoupling | Higher SVR | Higher low frequency cutoff |
| C3 | 47μF | - Ripple Rejection - Mute time constant | Increase of the Switch-on time | - Degradation of SVR - Worse turn-off pop by muting |
| C4 | 100nF | Supply Voltage Bypass | | Danger of oscillations |
| C5 | 1000μF | Supply Voltage Bypass | | |
| C6 and C7 | 47μF | Feedback input DC decoupling | Increase of the Switch-on time | Decrease of the Switch-on time |
| C8 and C9 | 0.1μF | Frequency stability | | Danger of oscillations |
| C10 and C11 | 1000μF | Output DC decoupling | | Higher low-frequency cut-off |

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

Figure 8: P. C. Board and Component Layout of the Application Circuit (1:1 scale).



BUILT-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

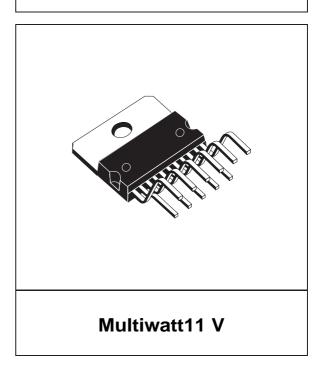
circuit. There is no device damage in the case of excessive junction temperature; all that happens is that Po (and therefore Ptot) and Io are reduced.

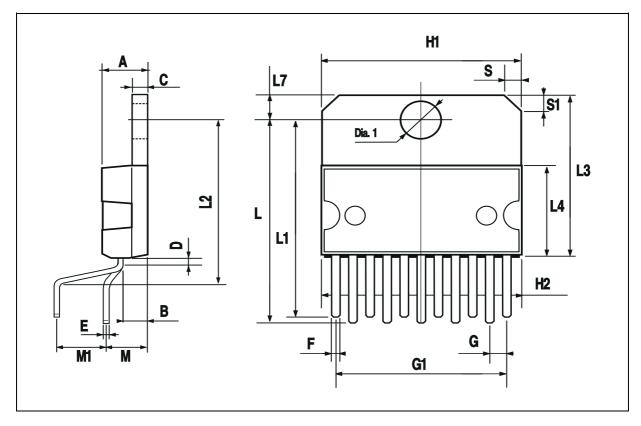
SHORT CIRCUIT (AC CONDITIONS)

The TDA7263M can withstand accidental short circuits across the speaker made by a wrong connection during normal play operation.

| DIM. | mm | | | inch | | |
|------|-------|------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| Α | | | 5 | | | 0.197 |
| В | | | 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 |
| М | 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





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