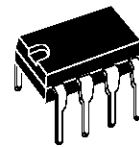


DUAL LOW-VOLTAGE POWER AMPLIFIER

- SUPPLY VOLTAGE DOWN TO 1.8V
- LOW CROSSOVER DISTORSION
- LOW QUIESCENT CURRENT
- BRIDGE OR STEREO CONFIGURATION



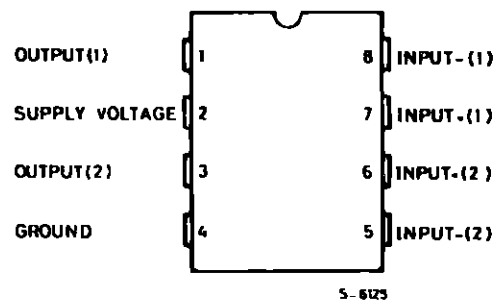
MINIDIP

ORDERING NUMBER : TDA2822M

DESCRIPTION

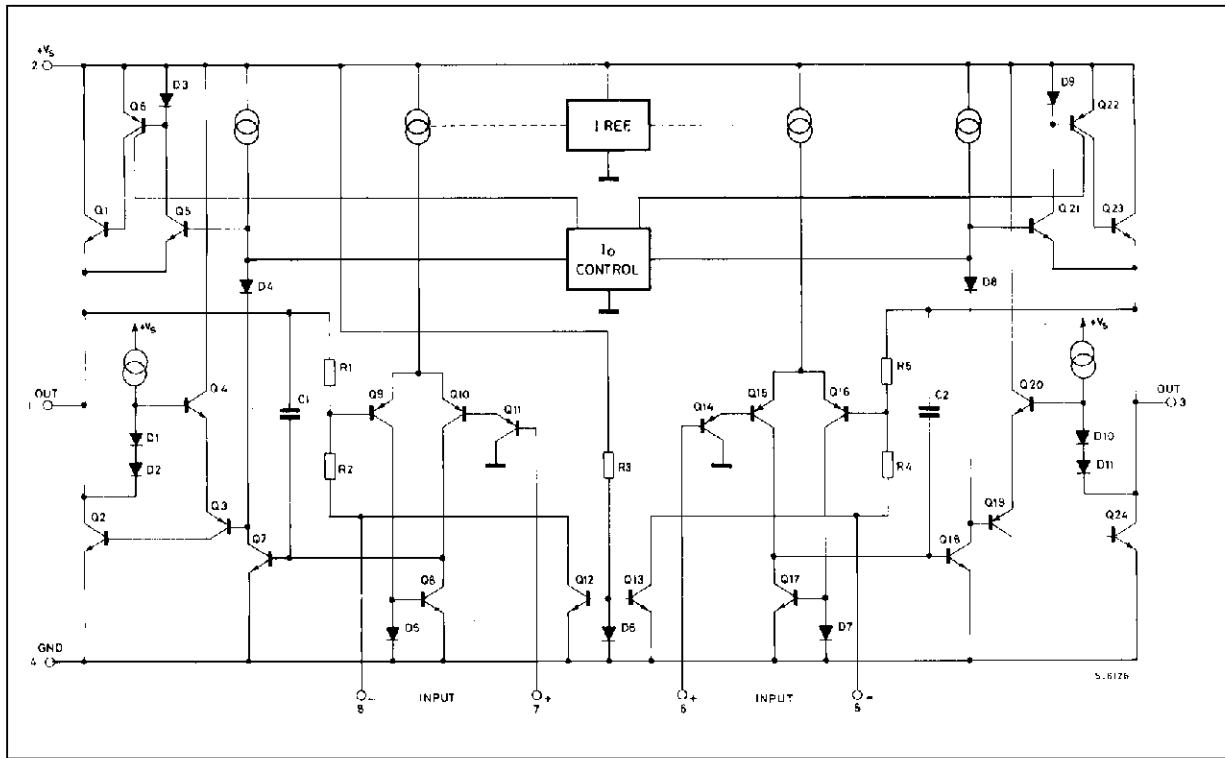
The TDA2822M is a monolithic integrated circuit in 8 lead Minidip package. It is intended for use as dual audio power amplifier in portable cassette players and radios.

PIN CONNECTION (Top view)



TDA2822M

SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|----------------|---|-------------|------------------|
| V_s | Supply Voltage | 15 | V |
| I_o | Peak Output Current | 1 | A |
| P_{tot} | Total Power Dissipation at $T_{amb} = 50\text{ }^\circ\text{C}$ at $T_{case} = 50\text{ }^\circ\text{C}$ | 1 1.4 | W W |
| T_{stg}, T_j | Storage and Junction Temperature | - 40, + 150 | $^\circ\text{C}$ |

THERMAL DATA

| Symbol | Parameter | Value | Unit |
|------------------|---|-------|--------------------|
| $R_{th\ j-amb}$ | Thermal Resistance Junction-ambient Max. | 100 | $^\circ\text{C/W}$ |
| $R_{th\ j-case}$ | Thermal Resistance Junction-pin (4) Max. | 70 | $^\circ\text{C/W}$ |

ELECTRICAL CHARACTERISTICS ($V_S = 6V$, $T_{amb} = 25^\circ C$, unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--|--|--|-------------------------------|--|---------|--------------------|
| STEREO (test circuit of Figure 1) | | | | | | |
| V_S | Supply Voltage | | 1.8 | | 15 | V |
| V_o | Quiescent Output Voltage | $V_S = 3V$ | | 2.7 1.2 | | V V |
| I_d | Quiescent Drain Current | | | 6 | 9 | mA |
| I_b | Input Bias Current | | | 100 | | nA |
| P_o | Output Power (each channel) ($f = 1kHz$, $d = 10\%$) | $R_L = 32\Omega$ $V_S = 9V$ $V_S = 6V$ $V_S = 4.5V$ $V_S = 3V$ $V_S = 2V$ $R_L = 16\Omega$ $V_S = 6V$ $R_L = 8\Omega$ $V_S = 9V$ $V_S = 6V$ $R_L = 4\Omega$ $V_S = 6V$ $V_S = 4.5V$ $V_S = 3V$ | 90 15 170 300 450 | 300 120 60 20 5 220 1000 380 650 320 110 | | mW |
| d | Distortion ($f = 1kHz$) | $R_L = 32\Omega$ $P_o = 40mW$ $R_L = 16\Omega$ $P_o = 75mW$ $R_L = 8\Omega$ $P_o = 150mW$ | | 0.2 0.2 0.2 | | % % % |
| G_v | Closed Loop Voltage Gain | $f = 1kHz$ | 36 | 39 | 41 | dB |
| ΔG_v | Channel Balance | | | | ± 1 | dB |
| R_i | Input Resistance | $f = 1kHz$ | 100 | | | k Ω |
| e_N | Total Input Noise | $R_s = 10k\Omega$ B = Curve A B = 22Hz to 22kHz | | 2 2.5 | | μV μV |
| SVR | Supply Voltage Rejection | $f = 100Hz$, $C_1 = C_2 = 100\mu F$ | 24 | 30 | | dB |
| C_s | Channel Separation | $f = 1kHz$ | | 50 | | dB |

BRIDGE (test circuit of Figure 2)

| | | | | | | |
|----------|--|--|-------------------------|--|----------|--------------------|
| V_S | Supply Voltage | | 1.8 | | 15 | V |
| I_d | Quiescent Drain Current | $R_L = \infty$ | | 6 | 9 | mA |
| V_{os} | Output Offset Voltage (between the outputs) | $R_L = 8\Omega$ | | | ± 50 | mV |
| I_b | Input Bias Current | | | 100 | | nA |
| P_o | Output Power ($f = 1kHz$, $d = 10\%$) | $R_L = 32\Omega$ $V_S = 9V$ $V_S = 6V$ $V_S = 4.5V$ $V_S = 3V$ $V_S = 2V$ $R_L = 16\Omega$ $V_S = 9V$ $V_S = 6V$ $V_S = 3V$ $R_L = 8\Omega$ $V_S = 6V$ $V_S = 4.5V$ $V_S = 3V$ $R_L = 4\Omega$ $V_S = 4.5V$ $V_S = 3V$ $V_S = 2V$ | 320 50 900 200 | 1000 400 200 65 8 2000 800 120 1350 700 220 1000 350 80 | | mW |
| d | Distortion | $P_o = 0.5W$, $R_L = 8\Omega$, $f = 1kHz$ | | 0.2 | | % |
| G_v | Closed Loop Voltage Gain | $f = 1kHz$ | | 39 | | dB |
| R_i | Input Resistance | $f = 1kHz$ | 100 | | | k Ω |
| e_N | Total Input Noise | $R_s = 10k\Omega$ B = Curve A B = 22Hz to 22kHz | | 2.5 3 | | μV μV |
| SVR | Supply Voltage Rejection | $f = 100Hz$ | | 40 | | dB |
| B | Power Bandwidth ($-3dB$) | $R_L = 8\Omega$, $P_o = 1W$ | | 120 | | kHz |

Figure 1 : Test Circuit (Stereo)

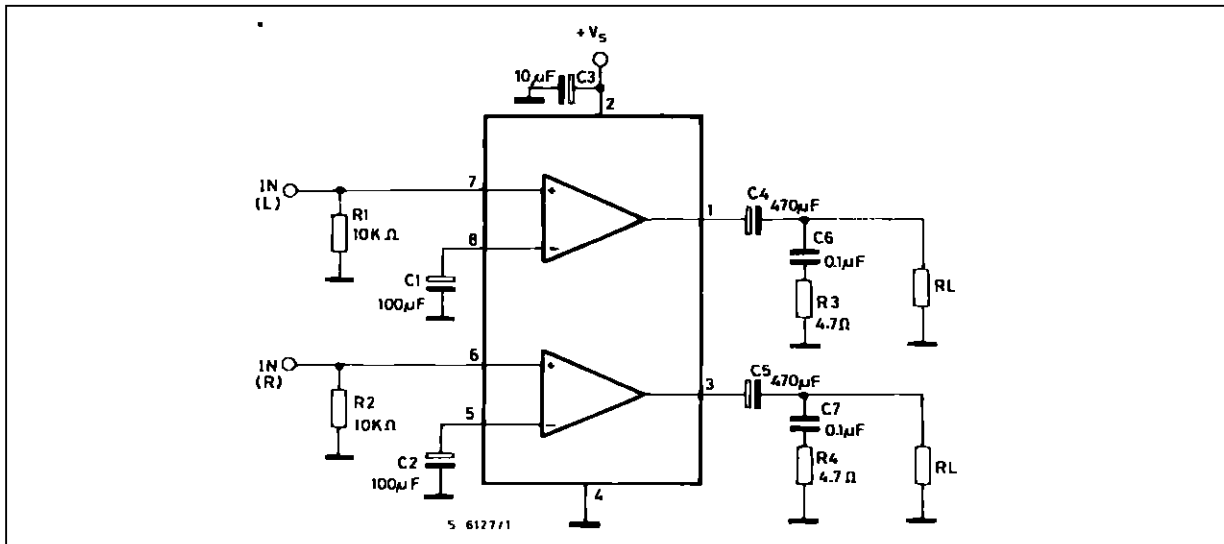


Figure 2 : Test Circuit (Bridge)

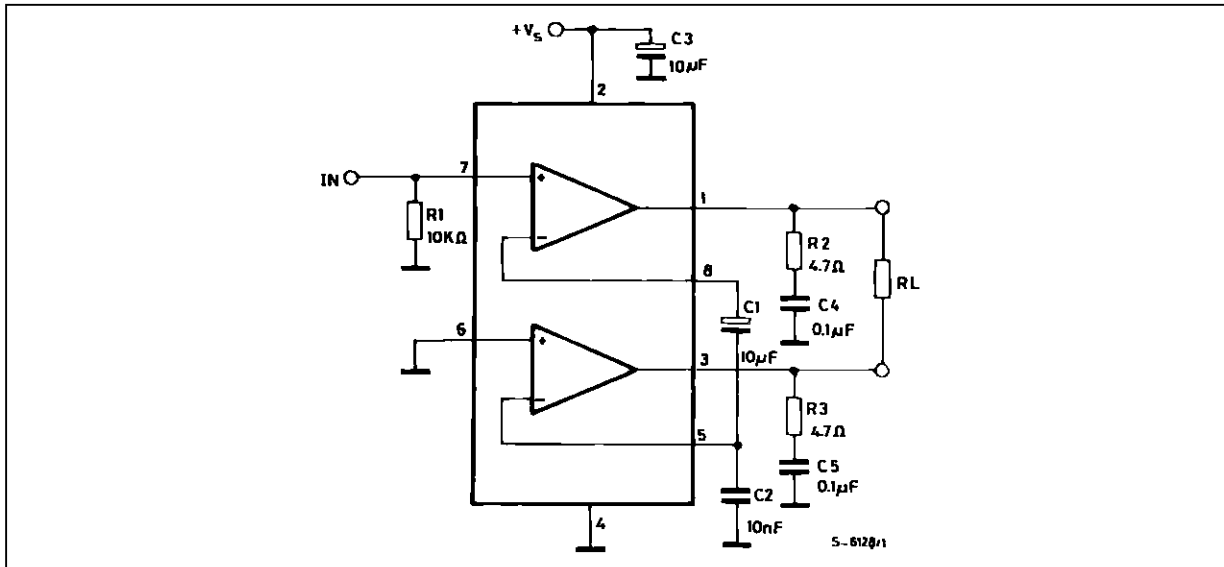


Figure 3 : P.C. Board and Components Layout of the Circuit of Figure 1

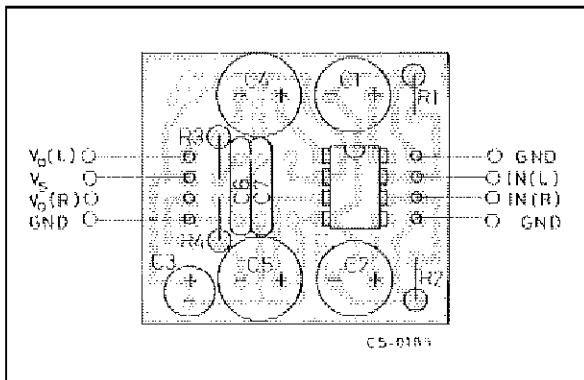


Figure 4 : P.C. Board and Components Layout of the Circuit of Figure 2

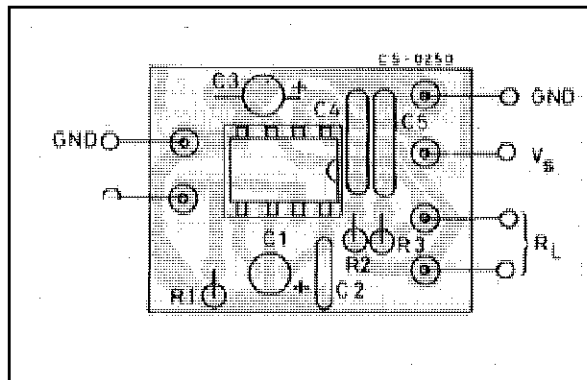


Figure 5 : Quiescent Current versus Supply Voltage

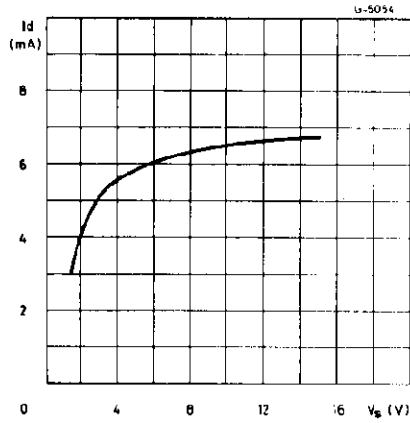


Figure 6 : Supply Voltage Rejection versus Frequency

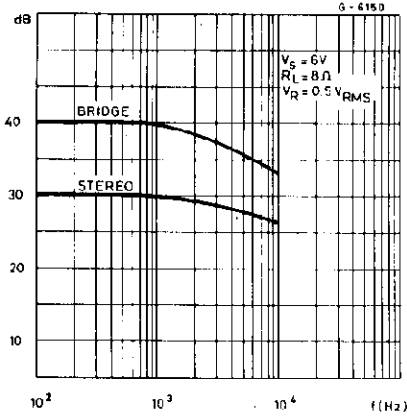


Figure 7 : Output Power versus Supply Voltage (THD = 10%, $f = 1\text{kHz}$ Stereo)

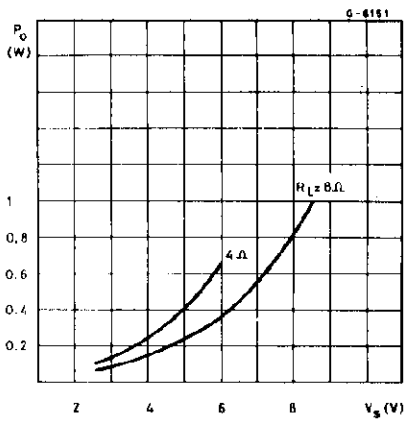


Figure 8 : Distorsion versus Output Power (Stereo)

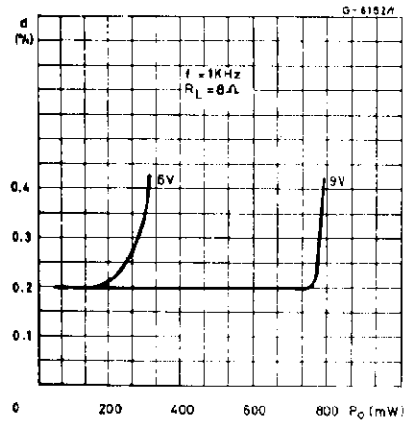


Figure 9 : Distorsion versus Output Power (Stereo)

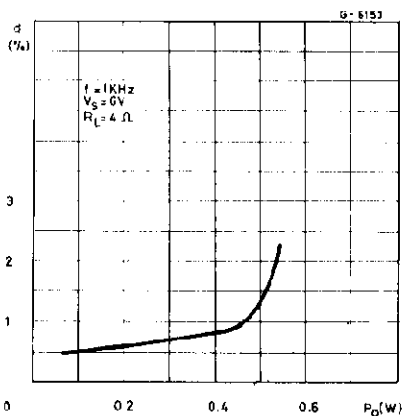


Figure 10 : Output Power versus Supply Voltage (Bridge)

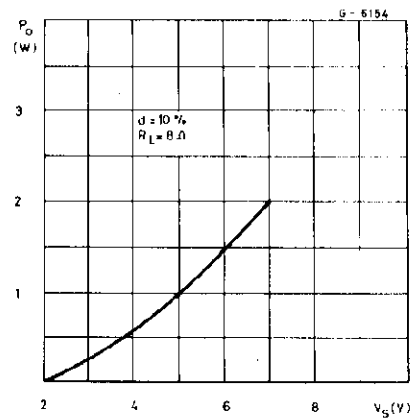


Figure 11 : Distorsion versus Output Power (Bridge)

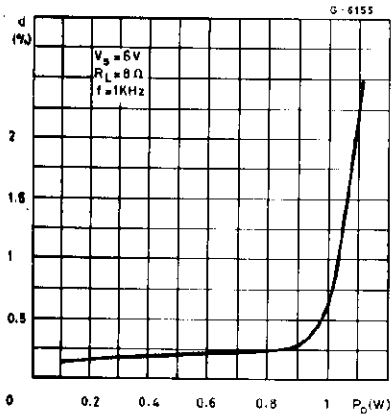


Figure 12 : Total Power Dissipation versus Output Power (Bridge)

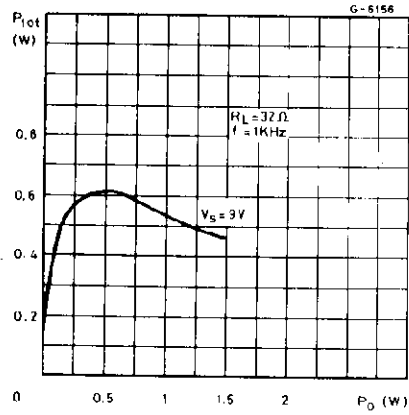


Figure 13 : Total Power Dissipation versus Output Power (Bridge)

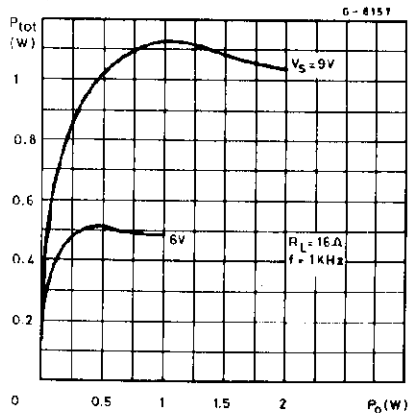


Figure 14 : Total Power Dissipation versus Output Power (Bridge)

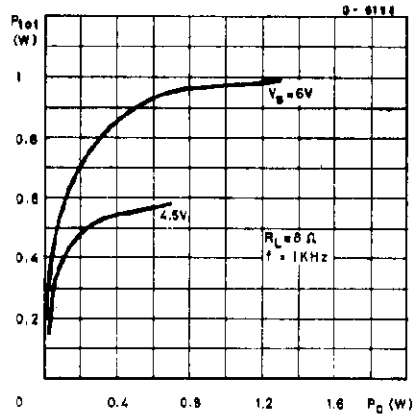


Figure 15 : Total Power Dissipation versus Output Power (Bridge)

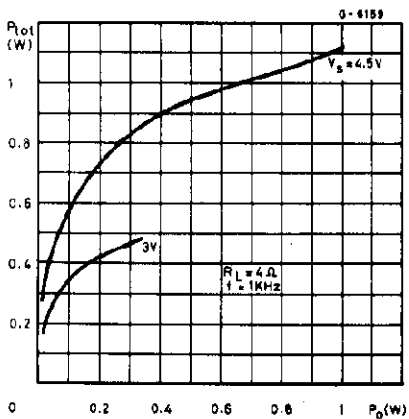


Figure 16 : Typical Application in Portable Players

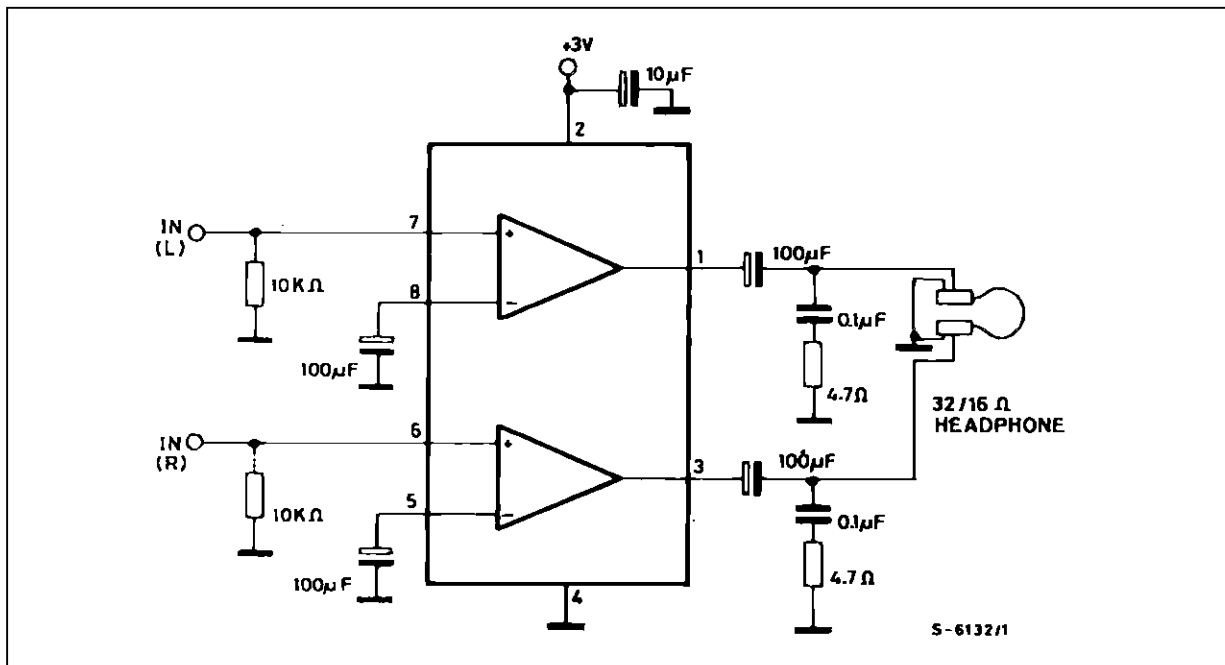
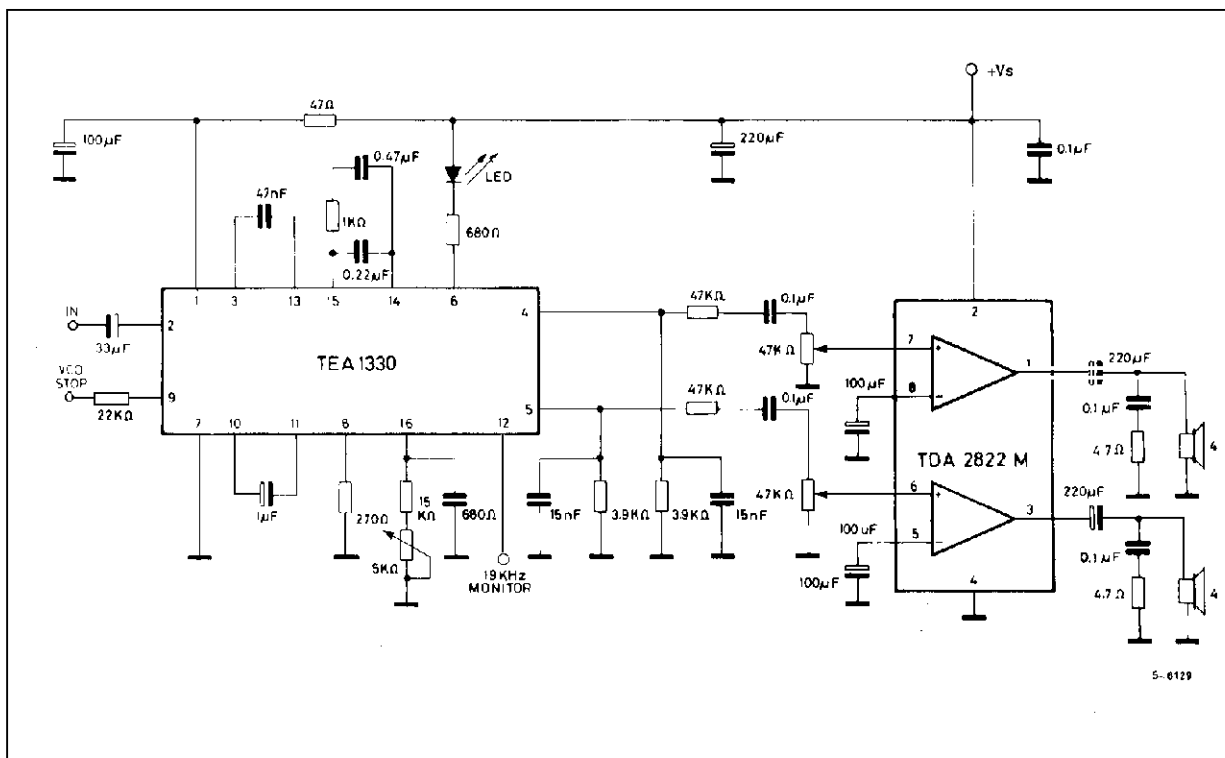


Figure 17 : Application in Portable Radio Receivers



TDA2822M

Figure 18 : Portable Radio Cassette Players

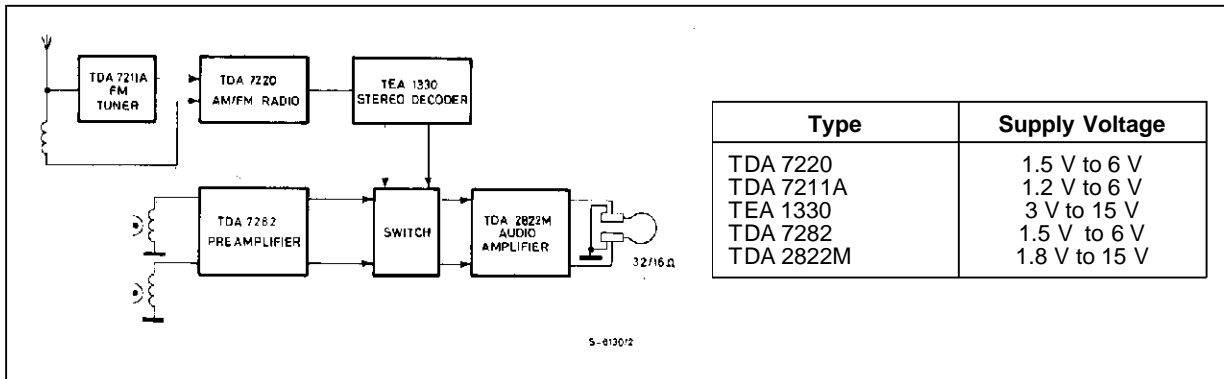


Figure 19 : Portable Stereo Radios

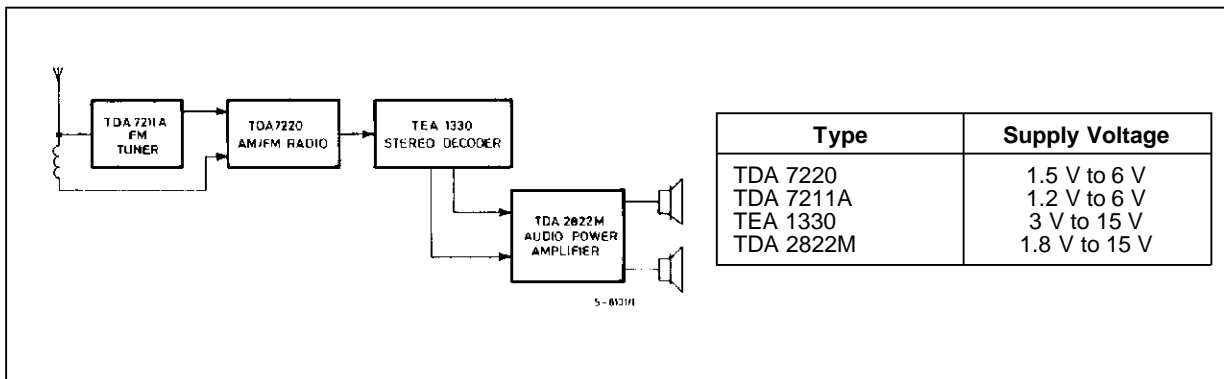


Figure 20 : Low Cost Application in Portable Players (using only one 100μF output capacitor)

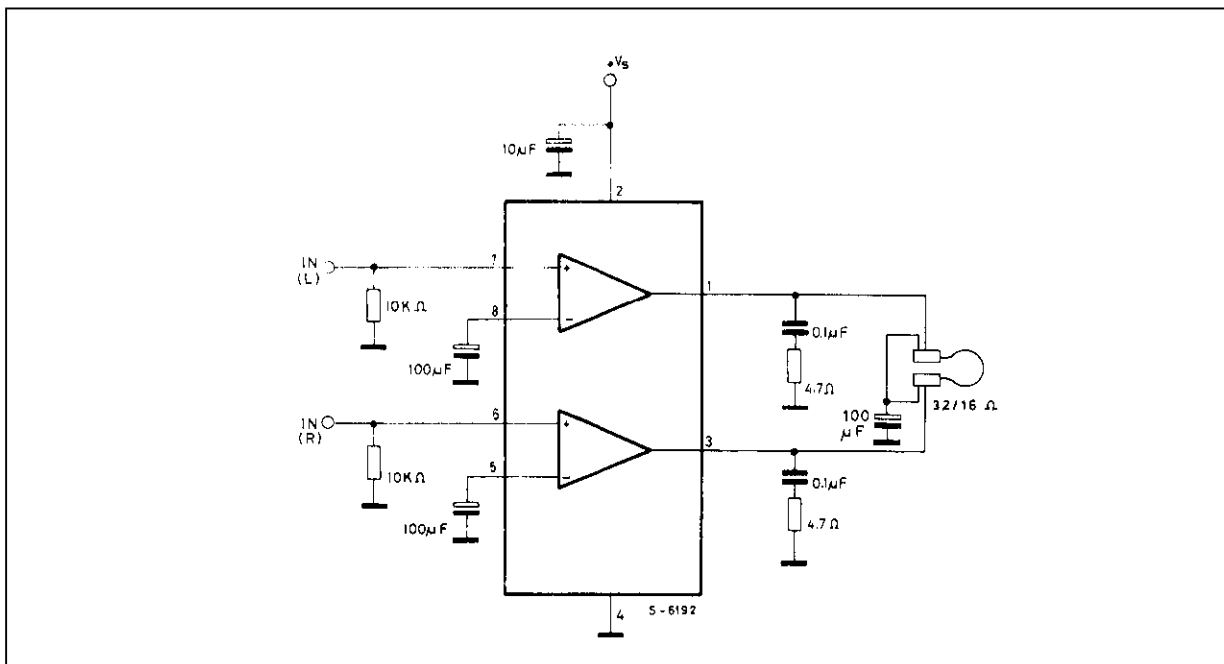
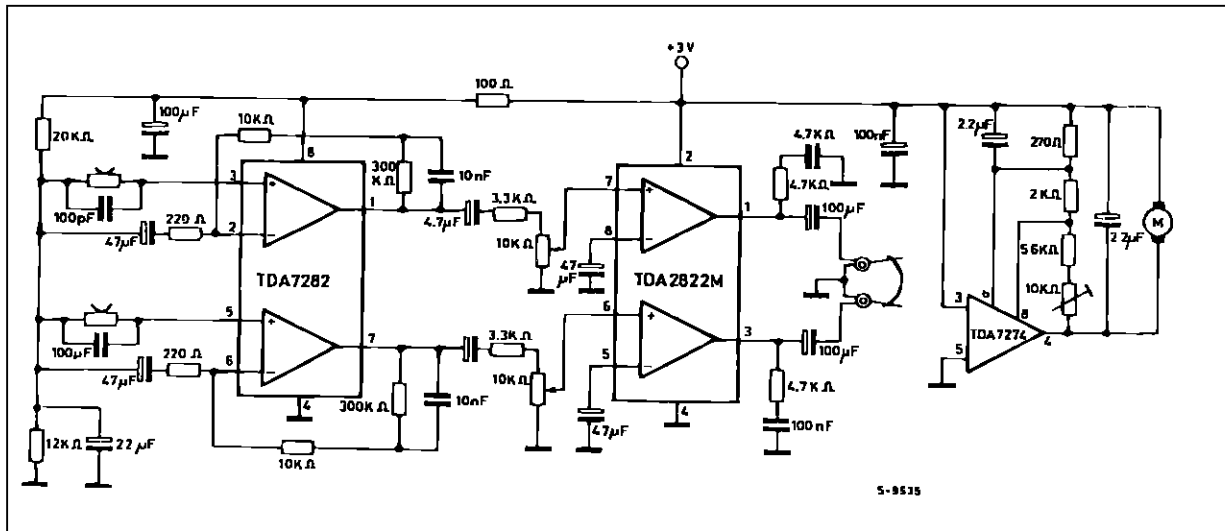


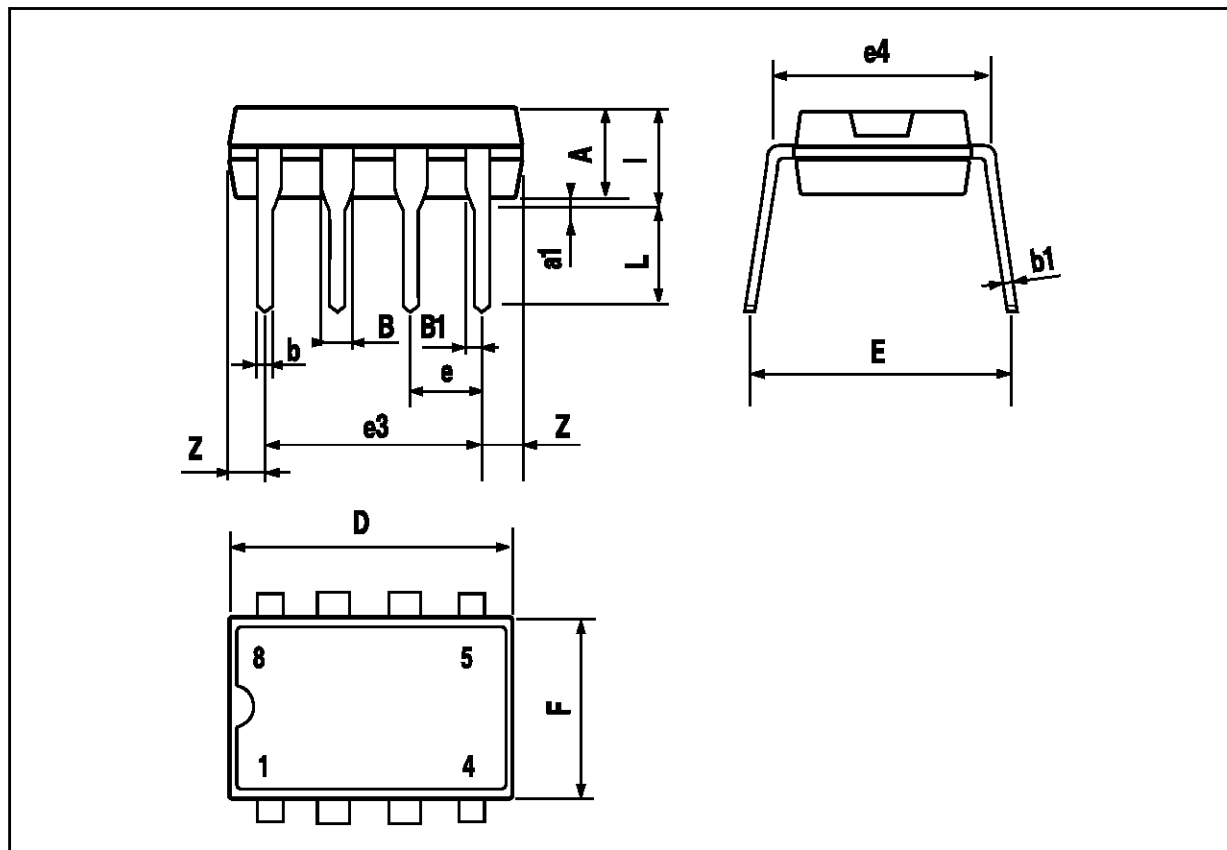
Figure 21 : 3V Stereo Cassette Player with Motot Speed Control



TDA2822M

MINIDIP PACKAGE MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|-------|------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | 3.32 | | | 0.131 | |
| a1 | 0.51 | | | 0.020 | | |
| B | 1.15 | | 1.65 | 0.045 | | 0.065 |
| b | 0.356 | | 0.55 | 0.014 | | 0.022 |
| b1 | 0.204 | | 0.304 | 0.008 | | 0.012 |
| D | | | 10.92 | | | 0.430 |
| E | 7.95 | | 9.75 | 0.313 | | 0.384 |
| e | | 2.54 | | | 0.100 | |
| e3 | | 7.62 | | | 0.300 | |
| e4 | | 7.62 | | | 0.300 | |
| F | | | 6.6 | | | 0.260 |
| I | | | 5.08 | | | 0.200 |
| L | 3.18 | | 3.81 | 0.125 | | 0.150 |
| Z | | | 1.52 | | | 0.060 |



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