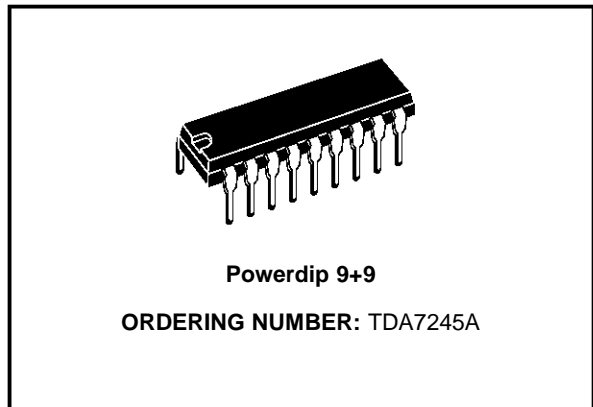


**6W AUDIO AMPLIFIER WITH STAND-BY**

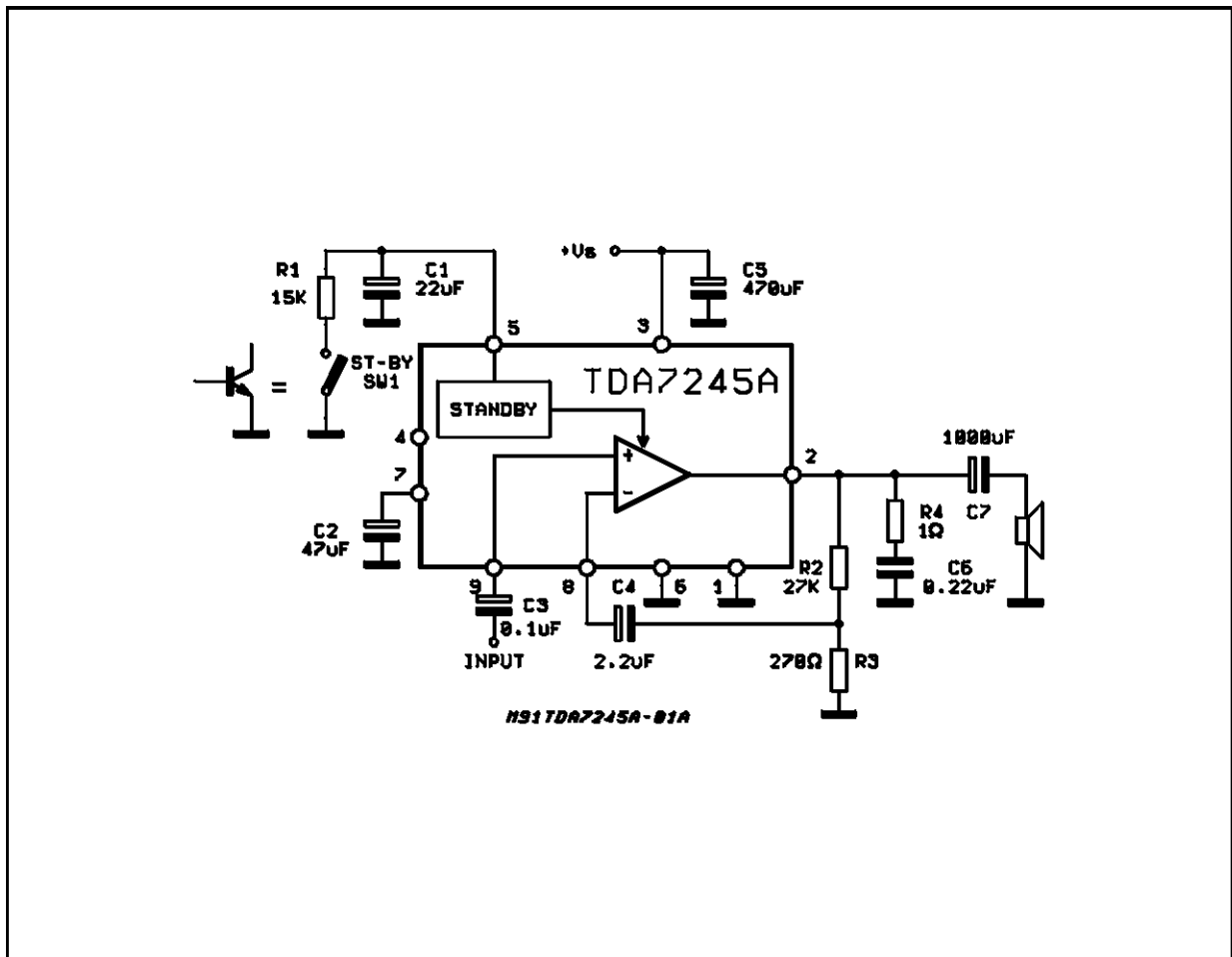
- STAND-BY FUNCTION
- SUPPLY VOLTAGE RANGE UP TO 30V
- MUSIC POWER = 16W ( $R_L = 4\Omega$ ,  $d = 10\%$ )
- THERMAL PROTECTION

**DESCRIPTION**

The TDA7245A is a monolithic integrated circuit in 9+9 POWERDIP package, intended for use as low frequency power amplifier in a wide range of applications in radio and TV sets.



**Figure 1: Test and Application Circuit**



# TDA7245A

## ABSOLUTE MAXIMUM RATINGS

| Symbol         | Parameter  | Value      | Unit       |
|----------------|--|------------|------------|
| $V_S$          | Supply Voltage                                       | 30         | V          |
| $I_O$          | Output Peak Current (non repetitive $t = 100\mu s$ ) | 3          | A          |
| $I_O$          | Output Peak Current (repetitive, $f > 20Hz$ )        | 2.5        | A          |
| $P_{tot}$      | Power Dissipation at $T_{amb} = 80^\circ C$          | 1          | W          |
|                | at $T_{case} = 70^\circ C$                           | 6          | W          |
| $T_{stg}, T_j$ | Storage and junction Temperature                     | -40 to 150 | $^\circ C$ |

## PIN CONNECTION (Top view)

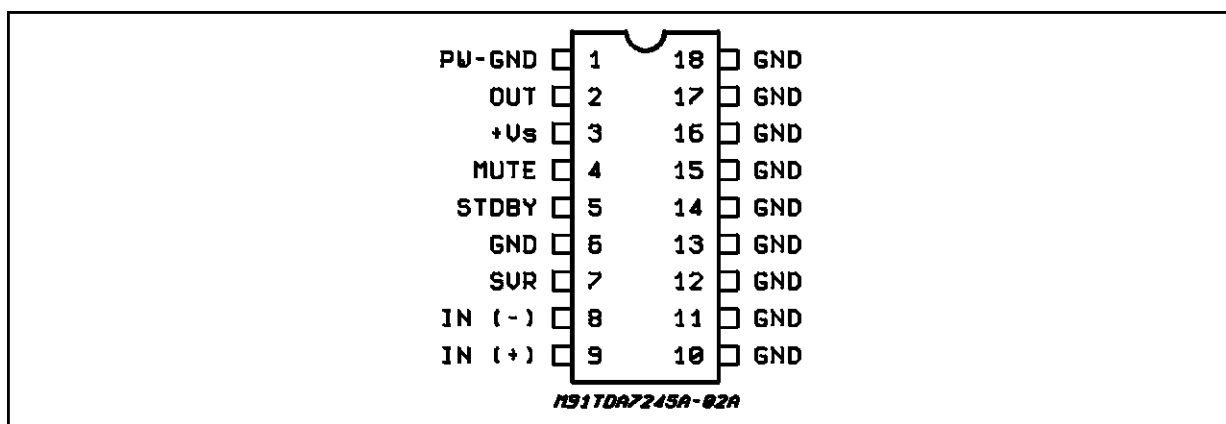
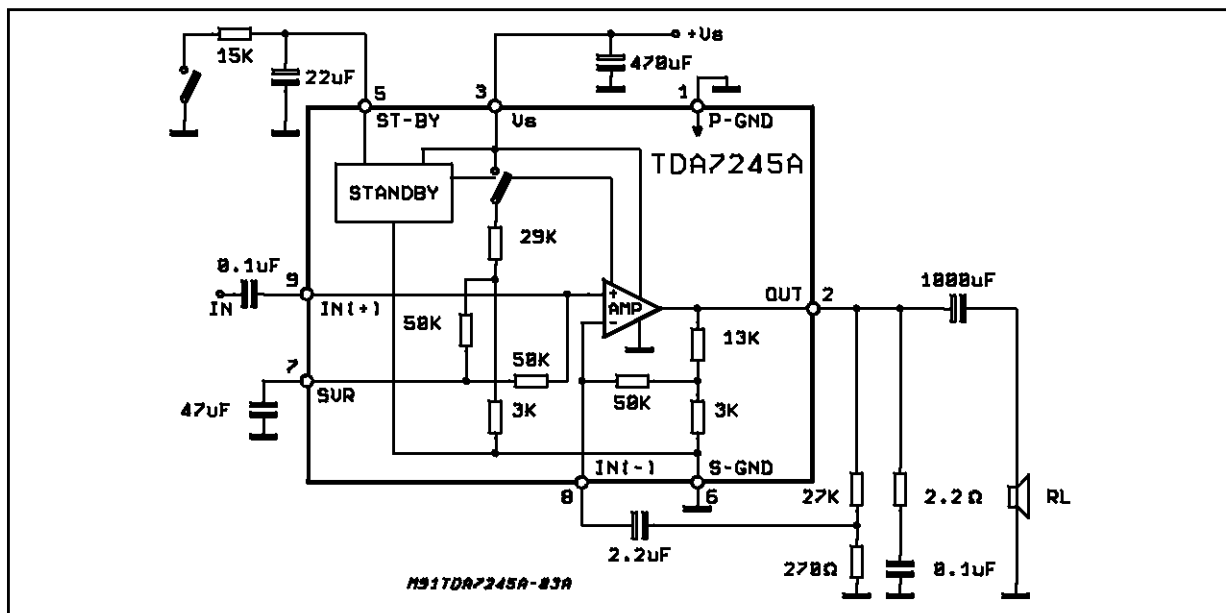


Figure 2: Schematic Diagram



## THERMAL DATA

| Symbol           | Description                         | Value  | Unit         |
|------------------|-------------------------------------|--------|--------------|
| $R_{th\ j-case}$ | Thermal Resistance junction-case    | Max 15 | $^\circ C/W$ |
| $R_{th\ j-amb}$  | Thermal Resistance junction-ambient | Max 70 | $^\circ C/W$ |

**ELECTRICAL CHARACTERISTICS** (Refer to the test circuit,  $T_{amb} = 25^{\circ}\text{C}$ ,  $V_S = 16.5\text{V}$ ,  $R_L = 4\Omega$ ,  $f = 1\text{kHz}$ ; unless otherwise specified).

| Symbol   | Parameter                              | Test Condition  | Min.         | Typ.                           | Max. | Unit                                 |
|----------|--|---|--------------|--------------------------------|------|--------------------------------------|
| $V_S$    | Supply Voltage                         |   | 12           |                                | 30   | V                                    |
| $V_O$    | Quiescent Output Voltage               | $V_S = 24\text{V}$  |              | 11.6                           |      | V                                    |
| $I_d$    | Quiescent Drain Current                | $V_S = 28\text{V}$  |              | 24                             | 35   | mA                                   |
| $P_O$    | Output Power                           | $d = 1\%$<br>$V_S = 16.5\text{V}$ , $R_L = 4\Omega$<br>$V_S = 20\text{V}$ , $R_L = 8\Omega$<br>$d = 10\%$<br>$V_S = 16.5\text{V}$ , $R_L = 4\Omega$<br>$V_S = 20\text{V}$ , $R_L = 8\Omega$<br>Music Power (*)<br>$V_S = 24\text{V}$ , $d = 10\%$ , $R_L = 4\Omega$ | 6.5          | 6<br>5<br>7.5<br>6.5<br>16     |      | W<br>W<br>W<br>W<br>W                |
| $d$      | Harmonic Distortion                    | $P_O = 50\text{mW}$ to $4\text{W}$<br>$f = 1\text{KHz}$<br>$f = 10\text{KHz}$<br><br>$V_S = 20\text{V}$ , $R_L = 8\Omega$ ,<br>$P_O = 50\text{mW}$ to $3.5\text{W}$<br>$f = 1\text{KHz}$<br>$f = 10\text{KHz}$  |              | 0.15<br>0.8<br><br>0.12<br>0.5 | 0.5  | %<br>%<br><br>%<br>%                 |
| $R_I$    | Input Impedance                        | $f = 1\text{kHz}$   | 30           |                                |      | $\text{K}\Omega$                     |
| BW       | Small signal bandwidth (-3dB)          | $P_O = 1\text{W}$   | 20 to 40,000 |                                |      | Hz                                   |
| $G_V$    | Voltage Gain (open loop)               | $f = 1\text{KHz}$   |              | 75                             |      | dB                                   |
| $G_V$    | Voltage Gain (closed loop)             | $f = 1\text{KHz}$   | 39           | 40                             | 41   | dB                                   |
| $e_N$    | Total Input Noise                      | $B = 22 - 22,000\text{Hz}$<br>$R_s = 50\Omega$<br>$R_s = 1\text{k}\Omega$<br>$R_s = 10\text{k}\Omega$   |              | 1.7<br>2<br>3                  | 6    | mV<br>$\mu\text{V}$<br>$\mu\text{V}$ |
| S/N      | Signal to Noise Ratio                  | $P_O = 5\text{W}$ ; $R_S = 10\text{K}\Omega$  |              | 86                             |      | dB                                   |
| SVR      | Supply Voltage Rejection               | $V_S = 16.5\text{V}$ ; $R_L = 8\Omega$ ; $f = 100\text{Hz}$<br>$R_S = 10\text{k}\Omega$ ; $V_r = 0.5\text{Vrms}$  | 38           | 45                             |      | dB                                   |
| $T_{sd}$ | Thermal shut-down Junction Temperature |   |              | 150                            |      | $^{\circ}\text{C}$                   |

#### STAND-BY FUNCTION

| Symbol         | Parameter                    | Test Condition     | Min. | Typ. | Max. | Unit          |
|----------------|------------------------------|--------------------|------|------|------|---------------|
| $V_{st-by}$    | Pin 5 DC Voltage             | SW1 Open (play)    |      | 6.4  |      | V             |
| $I_{st-by}$    | Pin 5 Current                | SW1 Closed (st-by) |      | 160  | 280  | $\mu\text{A}$ |
| $ATT_{st-by}$  | Stand-by Attenuation         | $f = 1\text{kHz}$  | 70   | 90   |      | dB            |
| $V_t$          | Stand-by Threshold (pin 5)   |                    |      | 3.8  |      | V             |
| $I_{d\ st-by}$ | Quiescent Current @ Stand-by |                    |      | 2    | 4    | mA            |

#### Note (\*):

##### MUSIC POWER CONCEPT

MUSIC POWER is ( according to the IEC clauses n.268-3 of Jan 83) 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.

According to this definition our method of measurement comprises the following steps:

- 1) Set the voltage supply at the maximum operating value -20%
- 2) Apply a input signal in the form of a 1KHz tone burst of 1 sec duration; the repetition period of the signal pulses is > 60 sec
- 3) The output voltage is measured 1 sec from the start of the pulse
- 4) Increase the input voltage until the output signal show a THD = 10%
- 5) The music power is then  $V_{out}^2/R_1$ , where  $V_{out}$  is the output voltage measured in the condition of point 4) and  $R_1$  is the rated load impedance

The target of this method is to avoid excessive dissipation in the amplifier.

Figure 3: Output Power vs. Supply Voltage

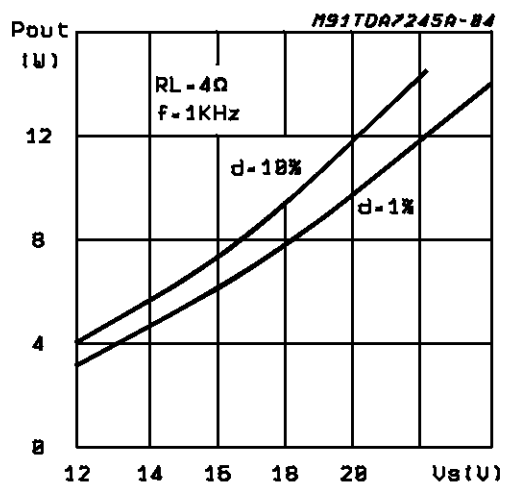
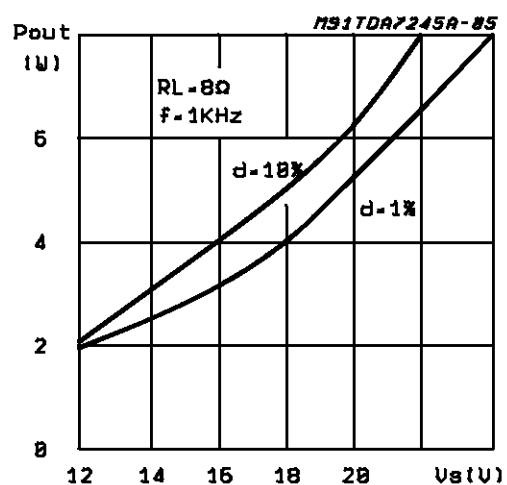
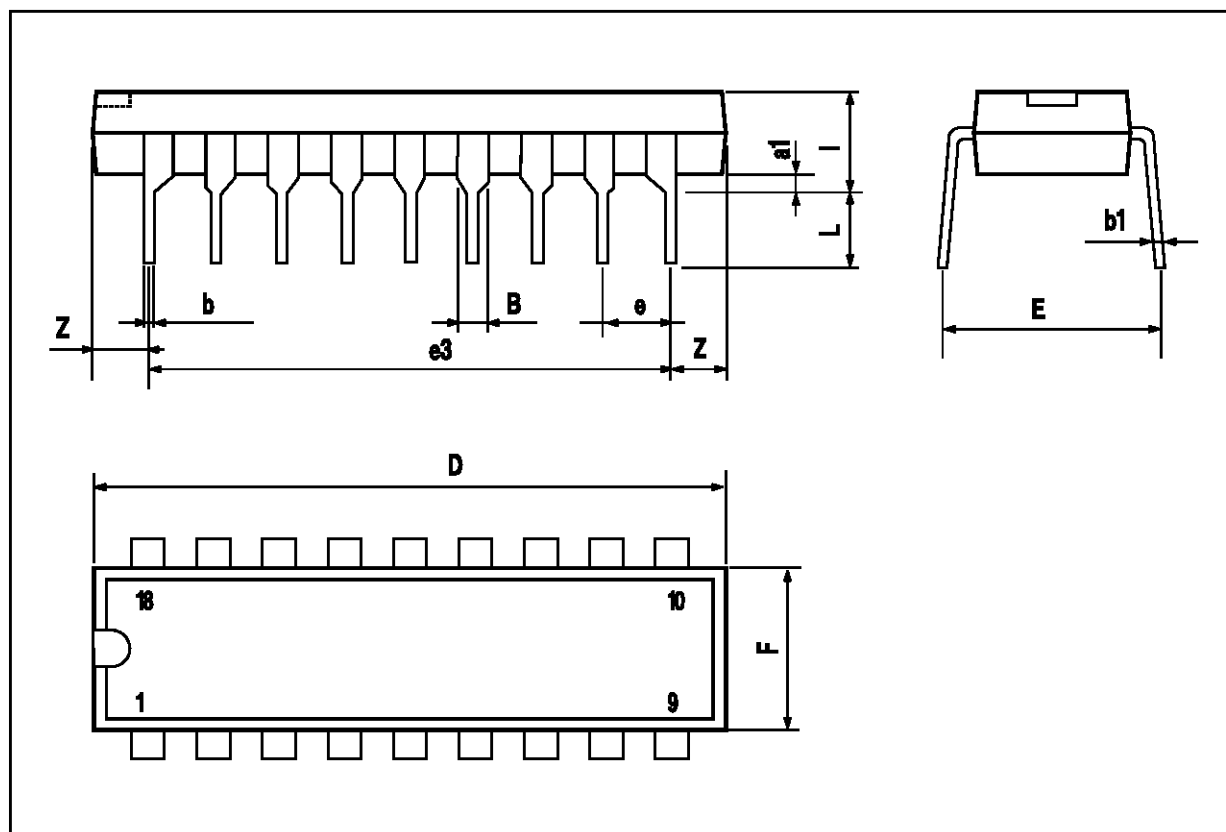


Figure 4: Output Power vs. Supply Voltage



## POWERDIP 18 PACKAGE MECHANICAL DATA

| DIM. | mm   |       |       | inch  |       |       |
|------|------|-------|-------|-------|-------|-------|
|      | MIN. | TYP.  | MAX.  | MIN.  | TYP.  | MAX.  |
| a1   | 0.51 |       |       | 0.020 |       |       |
| B    | 0.85 |       | 1.40  | 0.033 |       | 0.055 |
| b    |      | 0.50  |       |       | 0.020 |       |
| b1   | 0.38 |       | 0.50  | 0.015 |       | 0.020 |
| D    |      |       | 24.80 |       |       | 0.976 |
| E    |      | 8.80  |       |       | 0.346 |       |
| e    |      | 2.54  |       |       | 0.100 |       |
| e3   |      | 20.32 |       |       | 0.800 |       |
| F    |      |       | 7.10  |       |       | 0.280 |
| l    |      |       | 5.10  |       |       | 0.201 |
| L    |      | 3.30  |       |       | 0.130 |       |
| Z    |      |       | 2.54  |       |       | 0.100 |



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