

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.

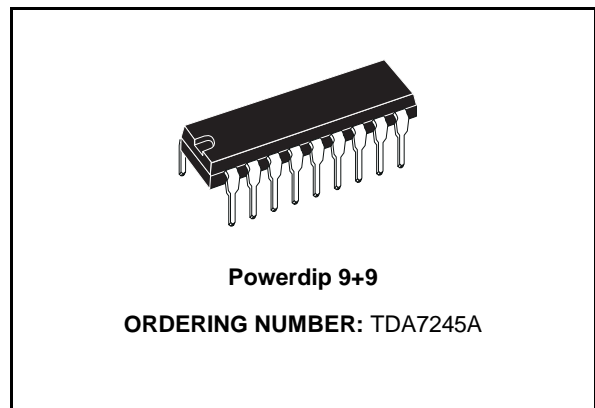
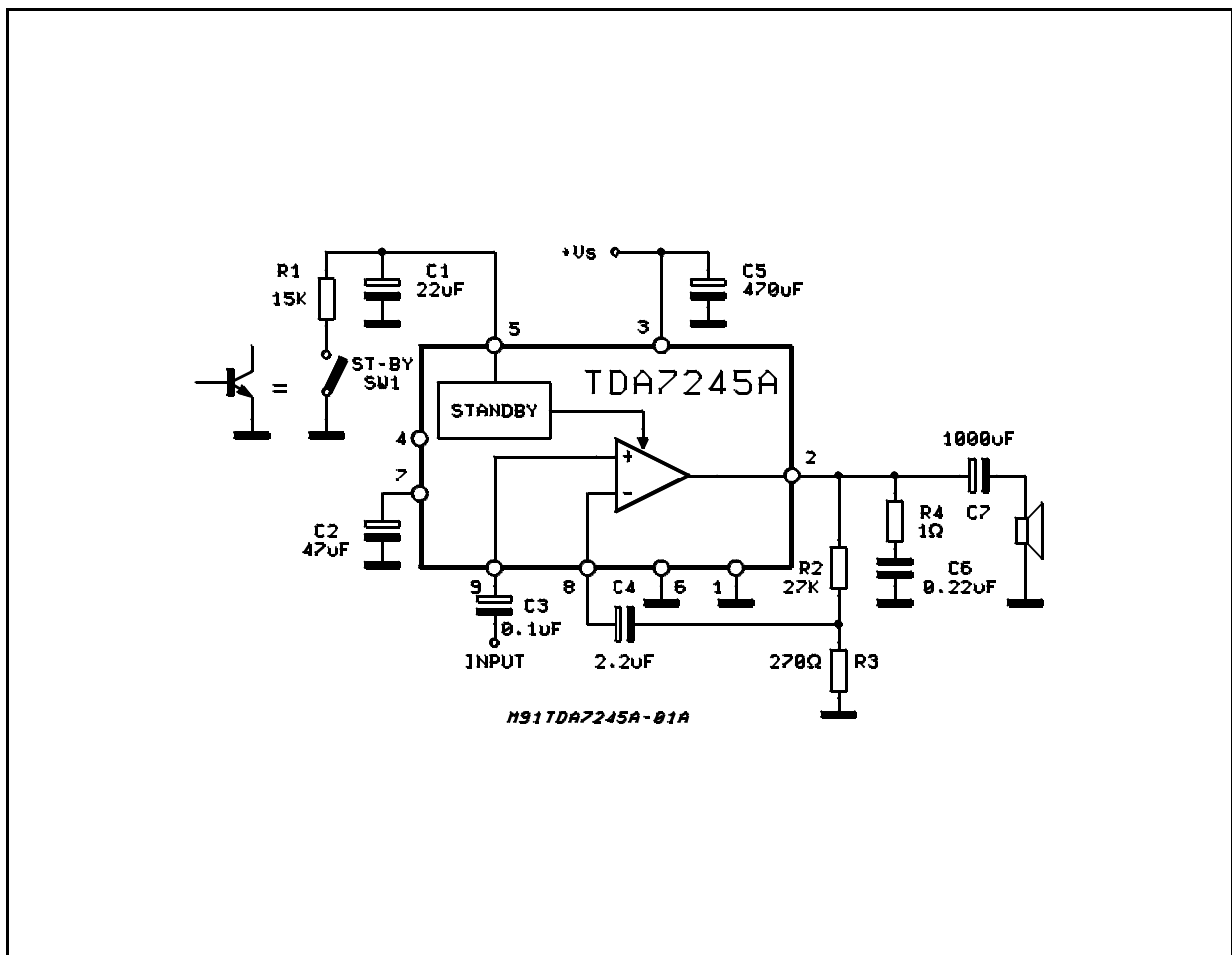


Figure 1: Test and Application Circuit



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 $T_{amb} = 80^\circ C$ at $T_{case} = 70^\circ C$	1 6	W W
T_{stg}, T_j	Storage and junction Temperature	-40 to 150	$^\circ C$

PIN CONNECTION (Top view)

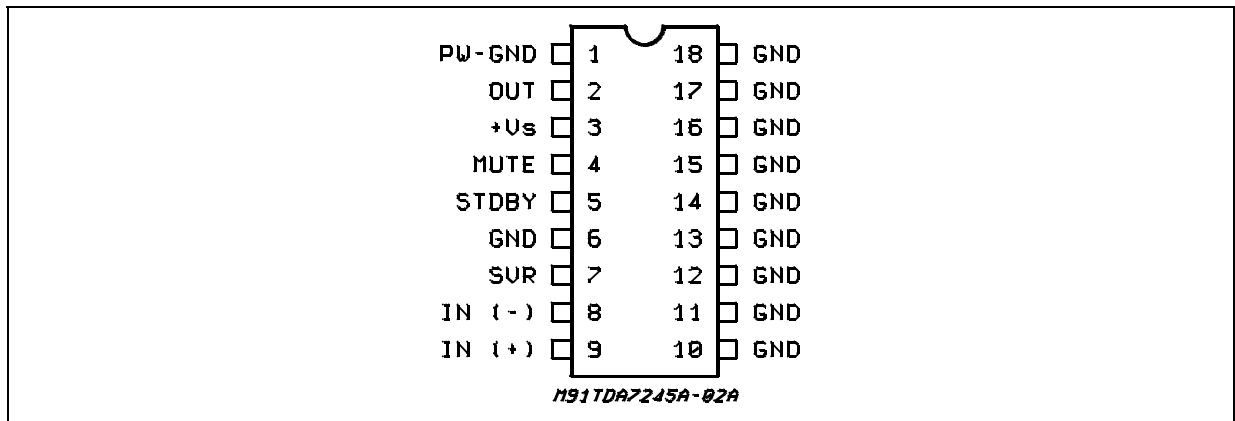
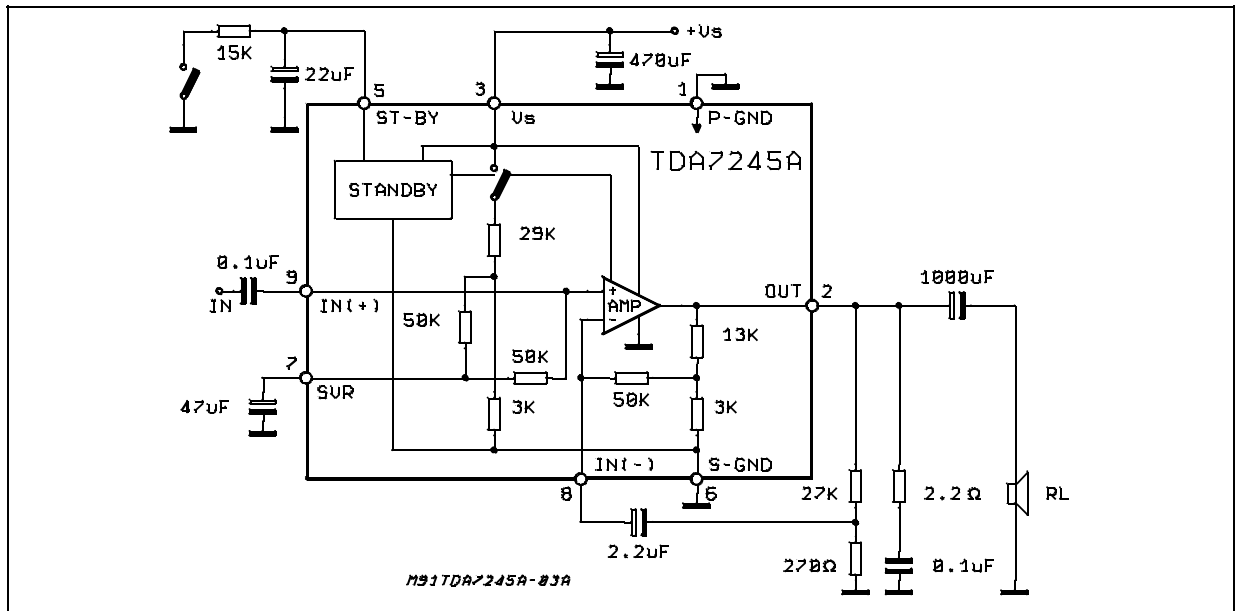


Figure 2: Schematic Diagram



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	$d = 1\%$ $V_S = 16.5\text{V}$, $R_L = 4\Omega$ $V_S = 20\text{V}$, $R_L = 8\Omega$ $d = 10\%$ $V_S = 16.5\text{V}$, $R_L = 4\Omega$ $V_S = 20\text{V}$, $R_L = 8\Omega$ Music Power (*) $V_S = 24\text{V}$, $d = 10\%$, $R_L = 4\Omega$	6.5	6 5 7.5 6.5 16		W W W W W
d	Harmonic Distortion	$P_O = 50\text{mW}$ to 4W $f = 1\text{KHz}$ $f = 10\text{KHz}$ $V_S = 20\text{V}$, $R_L = 8\Omega$, $P_O = 50\text{mW}$ to 3.5W $f = 1\text{KHz}$ $f = 10\text{KHz}$		0.15 0.8 0.12 0.5	0.5	% % % %
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	$B = 22 - 22,000\text{Hz}$ $R_s = 50\Omega$ $R_s = 1\text{k}\Omega$ $R_s = 10\text{k}\Omega$		1.7 2 3	6	mV μV μV
S/N	Signal to Noise Ratio	$P_O = 5\text{W}$; $R_S = 10\text{K}\Omega$		86		dB
SVR	Supply Voltage Rejection	$V_S = 16.5\text{V}$; $R_L = 8\Omega$; $f = 100\text{Hz}$ $R_S = 10\text{k}\Omega$; $V_r = 0.5\text{Vrms}$	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	μA
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

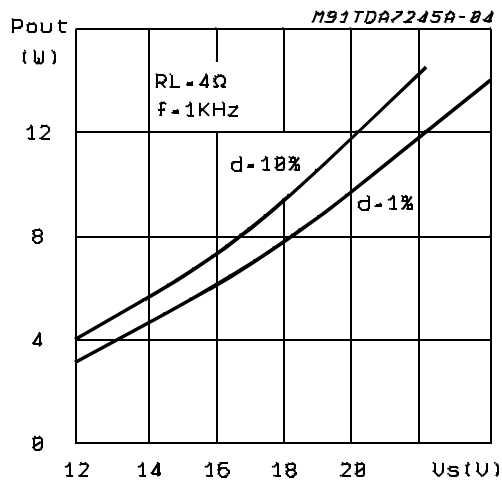
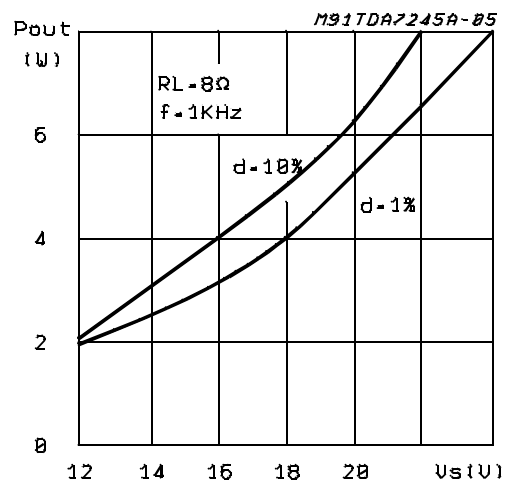
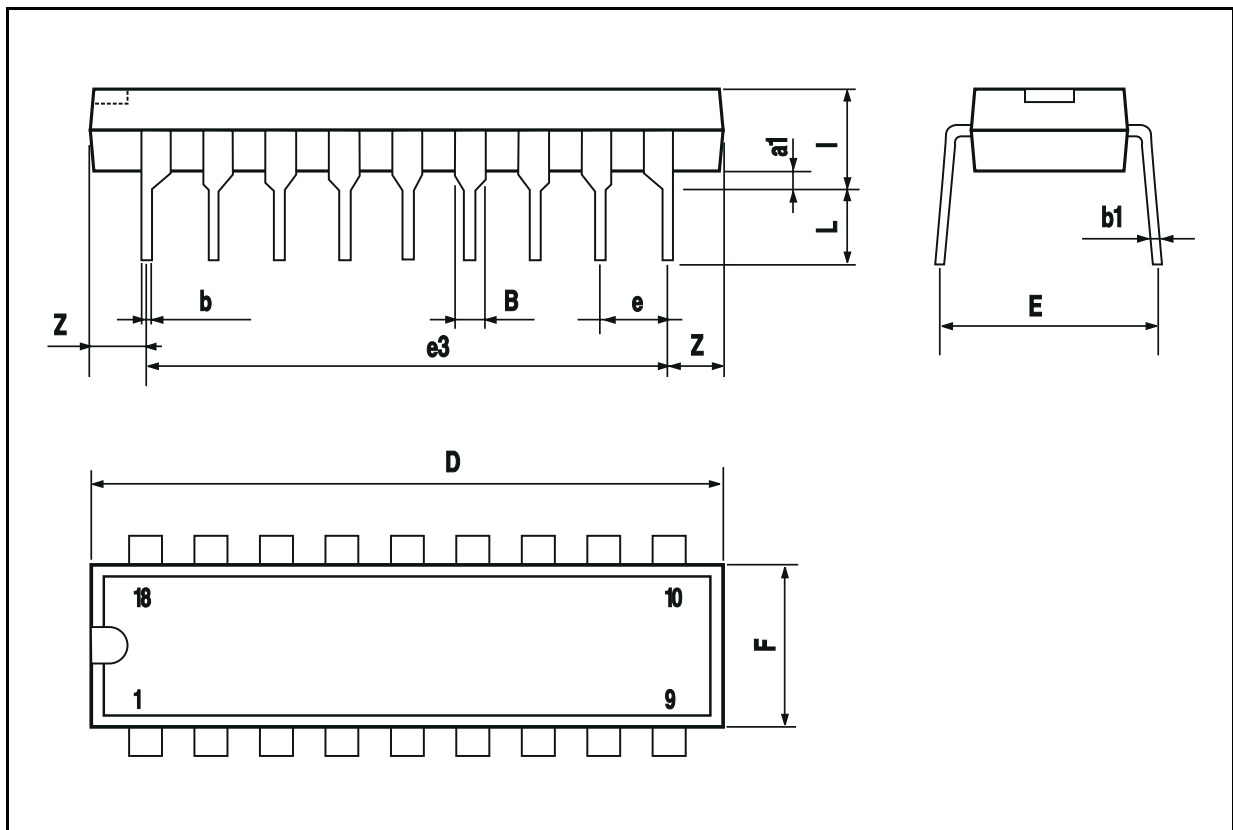


Figure 4: Output Power vs. Supply Voltage



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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