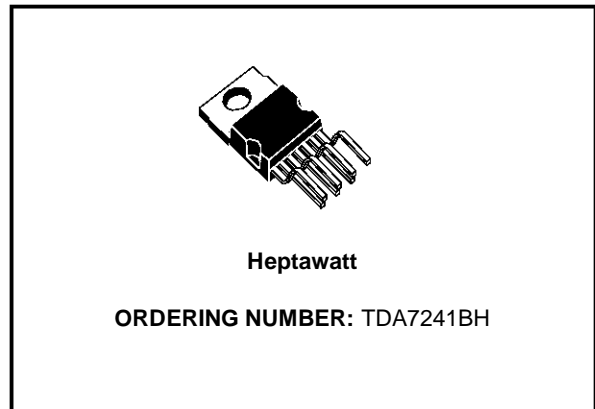


**20W BRIDGE AMPLIFIER FOR CAR RADIO**

- VERY LOW STAND-BY CURRENT
- GAIN = 32dB
- OUTPUT PROTECTED AGAINST SHORT CIRCUITS TO GROUND AND ACROSS LOAD
- COMPACT HEPTAWATT PACKAGE
- DUMP TRANSIENT
- THERMAL SHUTDOWN
- LOUDSPEAKER PROTECTION
- HIGH CURRENT CAPABILITY
- LOW DISTORTION / LOW NOISE



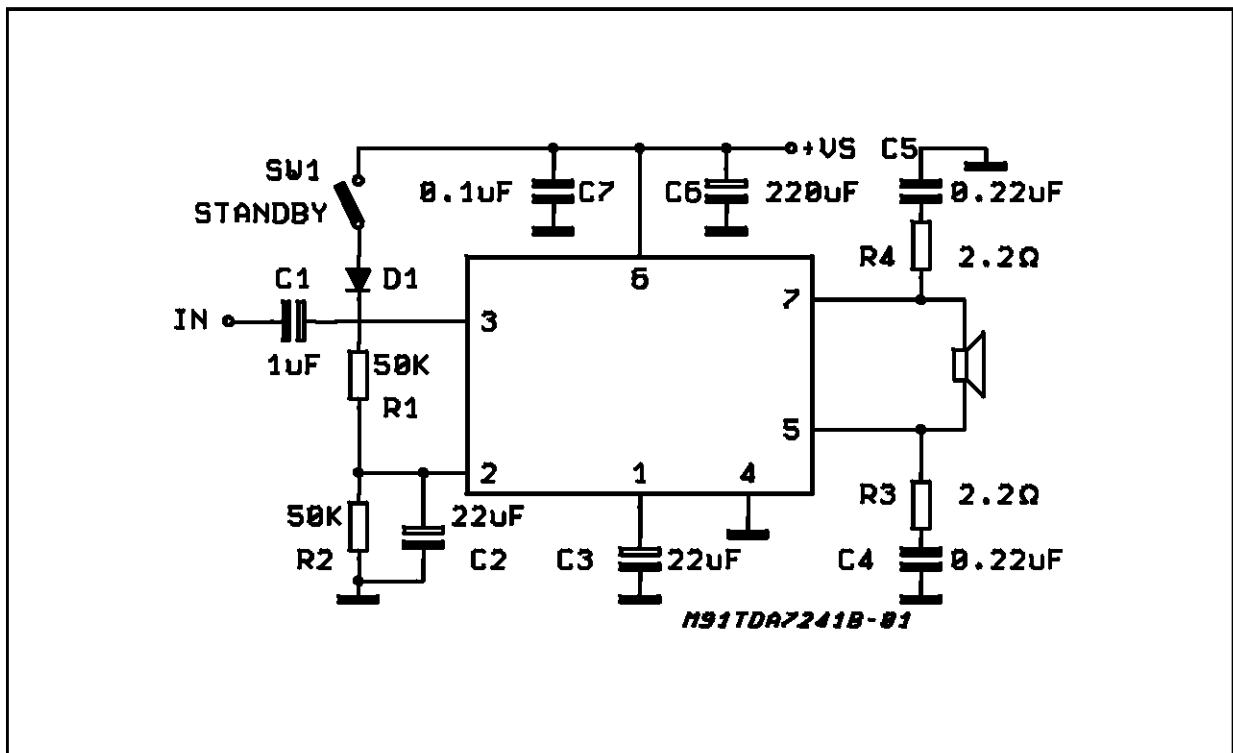
**DESCRIPTION**

The TDA7241B is a 20W bridge audio amplifier IC designed specially for car radio applications. Thanks to the low external part count and compact Heptawatt 7-pin power package the TDA7241B occupies little space on the printed circuit board.

Reliable operation is guaranteed by a compre-

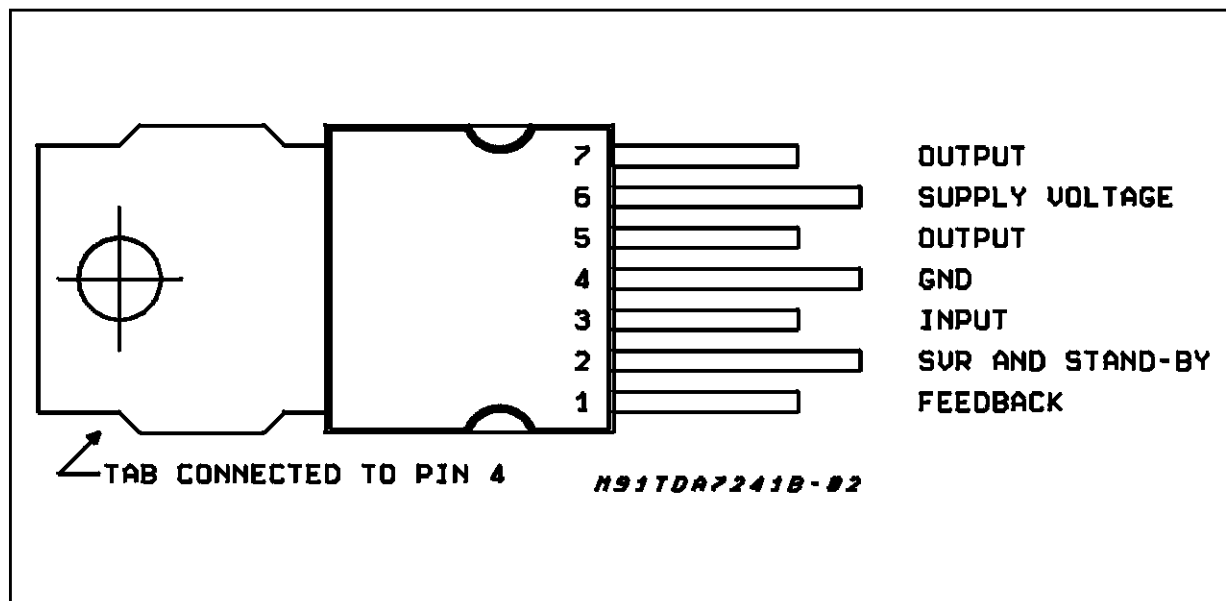
hensive array of on-chip protection features. These include protection against AC and DC output short circuits (to ground and across the load), load dump transients, and junction overtemperature. Additionally, the TDA7241B protects the loudspeaker when one output is short-circuited to ground.

**Figure 1:** Test and Application Circuit



## TDA7241B

### PIN CONNECTION (Top view)



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_S$	Operating Supply Voltage	18	V
$V_S$	DC Supply Voltage	28	V
$V_S$	Peak Supply Voltage ( $t = 50\text{ms}$ )	40	V
$I_O$	Peak Output Current (non repetitive $t = 0.1\text{ms}$ )	4.5	A
$I_O$	Peak Output Current (repetitive $f \geq 10\text{Hz}$ )	3.5	A
$P_{\text{tot}}$	Power Dissipation at $T_{\text{case}} = 85^\circ\text{C}$	16	W
$T_{\text{stg}}, T_j$	Storage and Junction Temperature	-40 to 150	$^\circ\text{C}$

### THERMAL DATA

Symbol	Description	Value	Unit
$R_{\text{th j-case}}$	Thermal Resistance Junction-case	Max 4	$^\circ\text{C/W}$

**ELECTRICAL CHARACTERISTICS** (Refer to the circuit of Fig. 1;  $V_S = 14.4V$ ;  $R_{th}$  (heatsink) =  $4^{\circ}C/W$ ,  $T_{amb} = 25^{\circ}C$ , unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_S$	Supply Range				18	V
$I_d$	Total Quiescent Current	$R_L = 4\Omega$			80	mA
$V_{OS}$	Output Offset Voltage				100	mV
$P_O$	Output Power	$f = 1KHz$ $d = 10\%$ $R_L = 2\Omega$ $R_L = 4\Omega$ $R_L = 8\Omega$	18	26 20 12		W
d	Distortion	$R_L = 4\Omega$ $f = 1KHz$ $P_O = 50mW$ to $12W$		0.1	0.5	%
		$R_L = 8\Omega$ $f = 1KHz$ $P_O = 50mW$ to $6W$		0.05		%
$G_V$	Voltage Gain	$f = 1KHz$	31	32	33	dB
SVR	Supply Voltage Rejection	$f = 100Hz$ $R_g = 10K\Omega$	40	50		dB
$E_n$	Total Input Noise	B = Curve A $R_g = 10K\Omega$		2		$\mu V$
		B = 22Hz to 22KHz $R_S = 10K\Omega$		3	10	mV
$\eta$	Efficiency	$R_L = 4\Omega$ $f = 1KHz$ $P_O = 20W$		65		%
$I_{sb}$	Stand-by Current				100	$\mu A$
$R_i$	Input Resistance	$f = 1KHz$	70			$K\Omega$
$V_i$	Input Sensitivity	$f = 1KHz$ $P_O = 2W$ $R_L = 4\Omega$		70		mV
$f_L$	Low Frequency Roll Off (-3dB)	$P_O = 15W$ $R_L = 4\Omega$		30		Hz
$f_H$	High Frequency Roll Off (-3dB)	$P_O = 15W$ $R_L = 4\Omega$	25			KHz
$A_S$	Stand-by Attenuation	$V_O = 2V_{rms}$	70	90		dB
$V_{TH}(pin.2)$	Stand-by Threshold				1	V
$T_{sd}$	Thermal Shutdown Junction Temp.			150		$^{\circ}C$

(\*) B = Curve (\*\*\*) B = 22Hz to 22KHz

**Figure 2:** P.C. Board and Component Layout of the Circuit of Fig. 1 (1:1 scale).

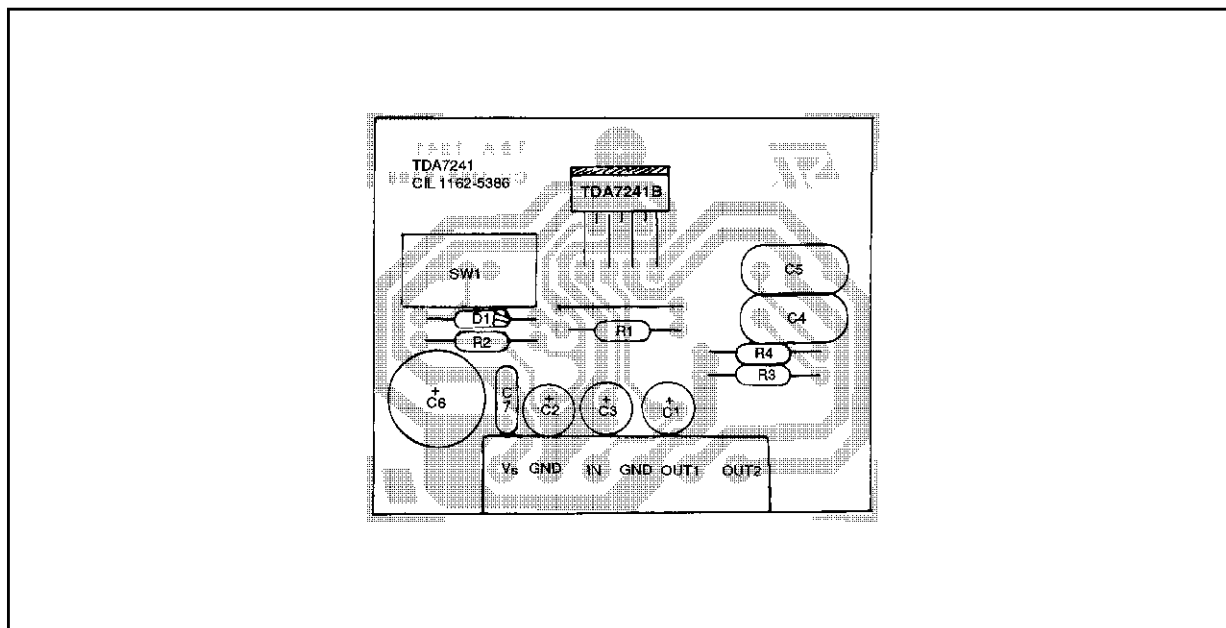


Figure 3: Output Power vs. Supply Voltage

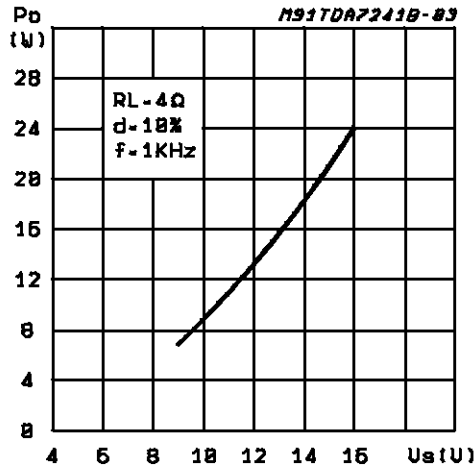


Figure 4: Output Power vs. Supply Voltage

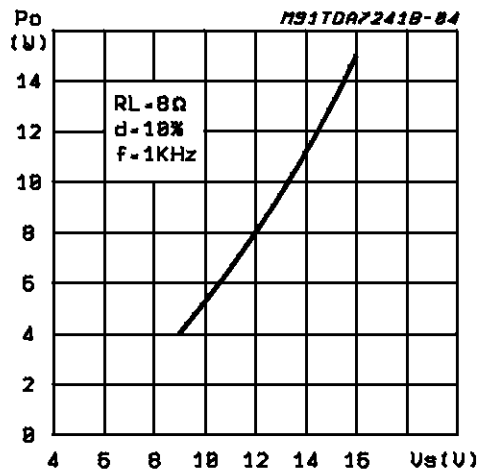


Figure 5: Distortion vs. Output Power

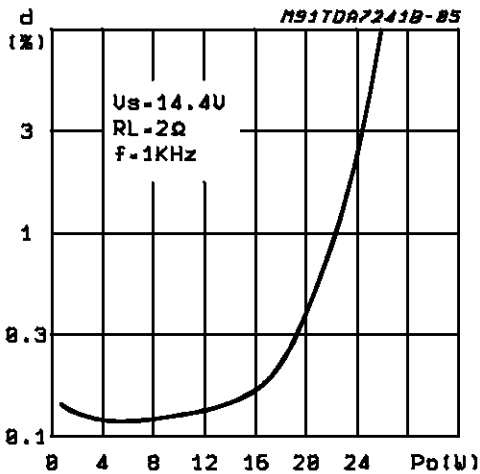


Figure 6: Distortion vs. Output Power

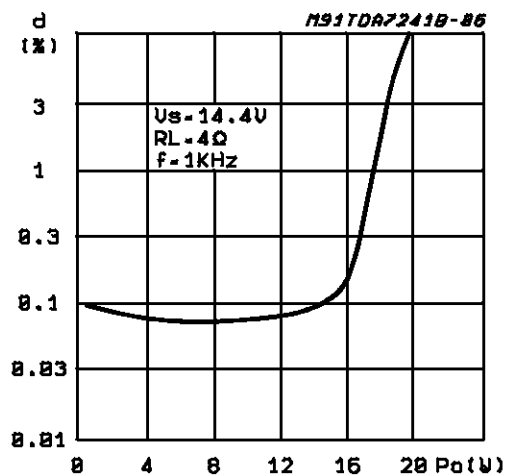


Figure 7: Distortion vs. Output Power

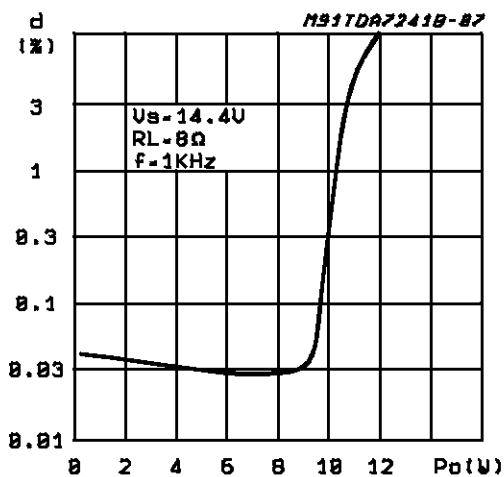


Figure 8: SVR vs. Frequency

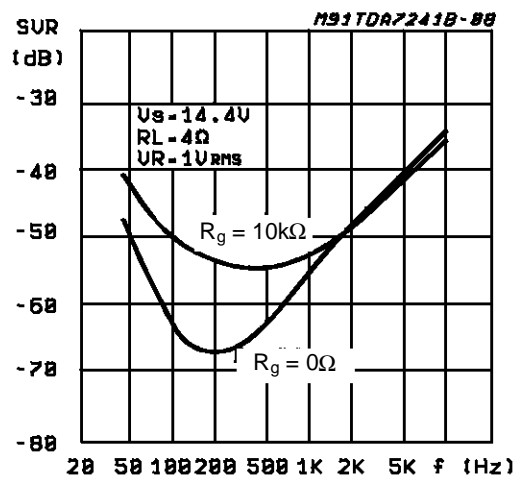


Figure 9: Power Dissipation and Efficiency vs. Output Power

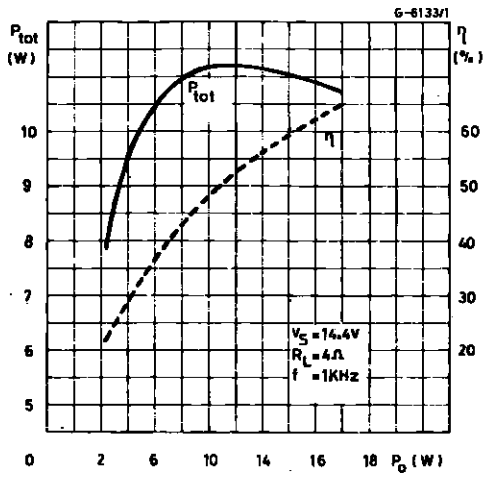
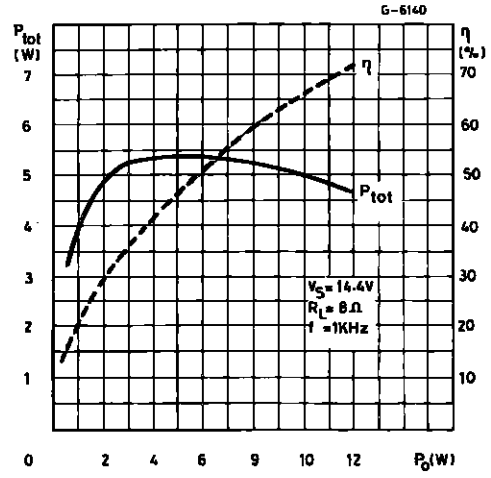
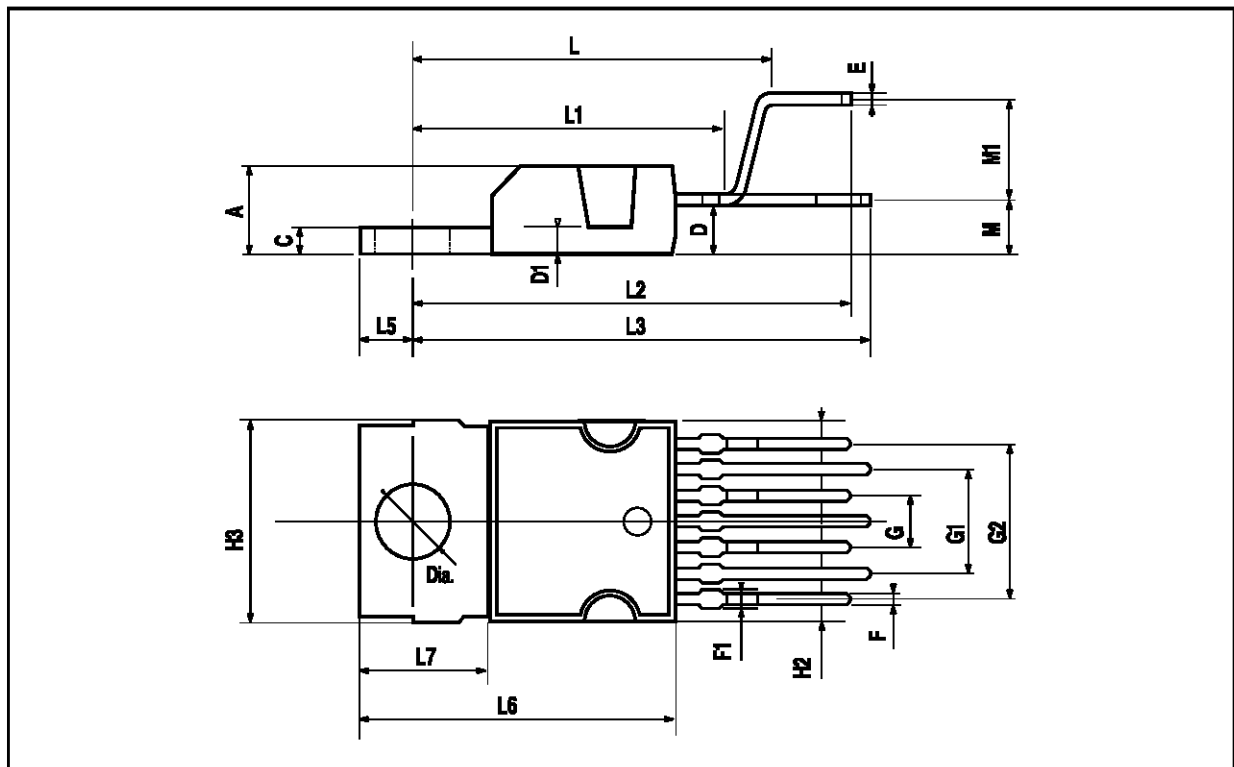


Figure 10: Power Dissipation and Efficiency vs. Output Power



HEPTAWATT PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
F	0.6		0.8	0.024		0.031
F1			0.9			0.035
G	2.41	2.54	2.67	0.095	0.100	0.105
G1	4.91	5.08	5.21	0.193	0.200	0.205
G2	7.49	7.62	7.8	0.295	0.300	0.307
H2			10.4			0.409
H3	10.05		10.4	0.396		0.409
L		16.97			0.668	
L1		14.92			0.587	
L2		21.54			0.848	
L3		22.62			0.891	
L5	2.6		3	0.102		0.118
L6	15.1		15.8	0.594		0.622
L7	6		6.6	0.236		0.260
M		2.8			0.110	
M1		5.08			0.200	
Dia	3.65		3.85	0.144		0.152



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