

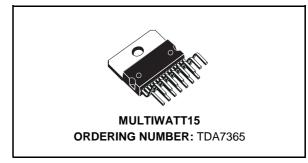


# 2 x 6W CAR RADIO AMPLIFIER PLUS SOLID STATE SWITCH

- OUTPUT POWER 2x6W/4 $\Omega$  @14.4V, 1KHz, 10%
- SOLID STATE POWER SWITCH INCLUDED (1A @ VDROP = 0.8V Typ.)
- MINIMUM EXTERNAL COMPONENT COUNT
  - INTERNALLY FIXED GAIN (40dB)
  - NO BOOTSTRAP CAPACITORS
  - NO EXTERNAL COMPENSATION
- ST-BY FUNCTION (CMOS COMPATIBLE)
- MUTE FUNCTION (CMOS COMPATIBLE)
- NO AUDIBLE POP DURING MUTE/ST-BY OPERATIONS
- LOW SUPPLY SELF MUTING

#### **PROTECTIONS**

- AC AUDIO OUTPUTS SHORT CIRCUIT TO GND
- DC AUDIO OUTPUTS SHORT CIRCUIT TO GND AND TO Vs AT POWER ON
- SWITCH OUTPUT INTERNAL CURRENT LIMITATION
- OVERRATING CHIP TEMPERATURE WITH SOFT THERMAL LIMITER
- LOAD DUMP
- FORTUITOUS OPEN GND



- REVERSE BATTERY
- ESD

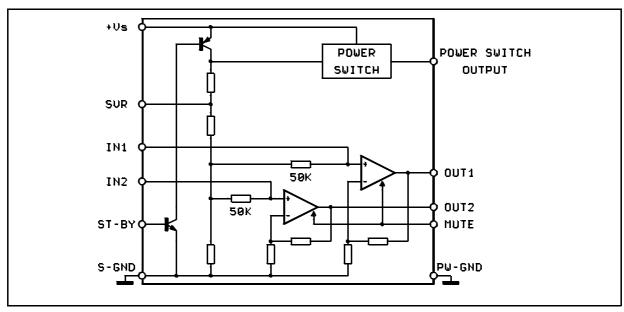
#### DESCRIPTION

The TDA7365 is a new technology Dual Audio Amplifier in Multiwatt15 package especially designed for stereo car radio applications.

Thanks to the fully complementary output configuration the TDA7365 delivers a rail to rail voltage swing with no need of boostrap capacitors

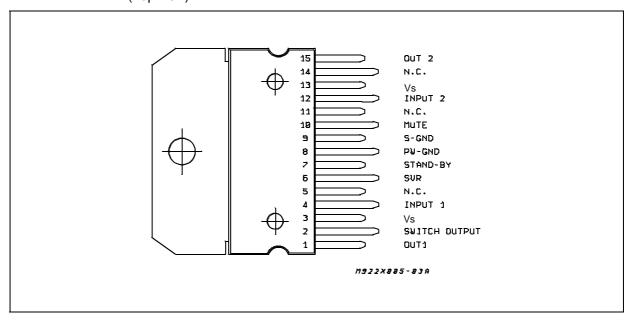
It includes a solid state switch, enabled by a ST-BY function common to the audio section, suitable for supplying both the signal processing part of the car radio set and the lamps. As a results the power-on operation is simplified, thereby saving cost and space in the whole power section.

#### **BLOCK DIAGRAM**



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# PIN CONNECTION (Top view)



# **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit	
Vs	DC Supply Voltage	28	V	
V <sub>OP</sub>	Operating Supply Voltage	18	V	
$V_{PEAK}$	Peak Supply Voltage (t = 50ms)	40	V	
lo	Audio Channels Output Peak Current (not rep. t = 100μs)	4	Α	
Ιο	Audio Channels Output Peak Current (rep. f > 10Hz)	3	Α	
Ιο	Switch Output Peak Current	(internally limited) 1.5	Α	
P <sub>tot</sub>	Power Dissipation (T <sub>case</sub> = 85°C)	32	W	
T <sub>stg</sub> , T <sub>j</sub>	Storage and Junction Temperature	-40 to 150	°C	

## THERMAL DATA

Symbol	Description	Value	Unit	
R <sub>th j-case</sub>	Thermal Resistance Junction-case	Max	2	°C/W

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**ELECTRICAL CHARACTERISTICS** (Refer to the test circuit;  $V_S = 14.4V$ ;  $R_L = 4\Omega$ ,  $T_{amb} = 25$ °C, f = 1kHz, unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Тур.	Max.	Unit
Vs	Supply Range		8		18	V
I <sub>d</sub>	Total Quiescent Drain Current	Power Switch Unloaded		80		mA
Po	Output Power	$R_L = 4\Omega$ ; THD = 10% each channel	5.5	6		W
		$R_L = 2\Omega$ ; THD = 10% each channel		9		W
d	Distortion P <sub>O</sub> = 0.1 to 3W			0.08	0.3	%
СТ	Cross Talk	$f = 1kHz; R_g = 0$ $f = 10kHz; R_g = 0$	50	55 50		dB dB
R <sub>IN</sub>	Input Impedance		40	50		ΚΩ
$G_V$	Voltage Gain		39	40	41	dB
$G_V$	Voltage Gain Match.				1	dB
E <sub>IN</sub>	Input Noise Voltage (*)	Rg = 0		1.2	5	μV
SVR	Supply Voltage Rejection	$R_g = 0$ ; $f = 100Hz$ ; $V_r = 0.5V_{rms}$	45	50		dB
ASB	Stand-by Attenuation		60	90		dB
I <sub>SB</sub>	ST-BY Current Consumption				100	μΑ
$V_{SB\ IN}$	ST-BY IN Threshold Voltage				1.5	V
V <sub>SB OUT</sub>	ST-BY OUT Threshold Voltage		3.5			V
$V_{MIN}$	MUTE IN Threshold Voltage				1.5	V
V <sub>M</sub> OUT	MUTE OUT Threshold Voltage		3.5			V

#### **POWER SWITCH CHARACTERISTICS**

Symbol	Parameter	Test Condition	Min.	Тур.	Max.	Unit
$I_{Op}$	Continuous Output Current			1.2		Α
V <sub>DROP</sub>	Dropout Voltage	lo = 1A			1.4	V

(\*) 22Hz to 22KHz (\*\*) A weighted

### **TEST AND APPLICATION CIRCUIT**

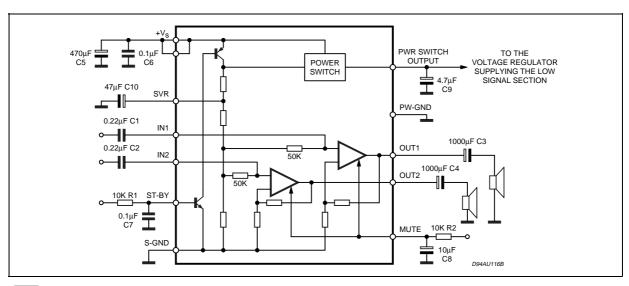
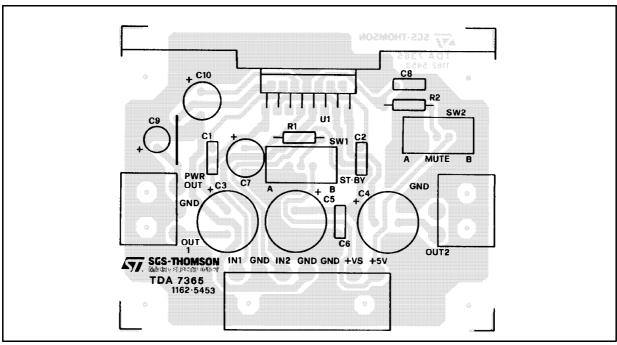


Figure 1: P.C.Board and component layout of the Test and Application Circuit 1:1 scale.



**Figure 2:** Quiescent Drain Current vs. Supply Voltage

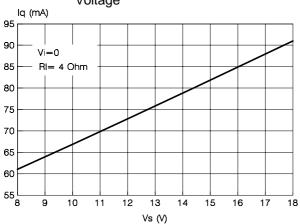


Figure 4: Output Power vs. Supply Voltage

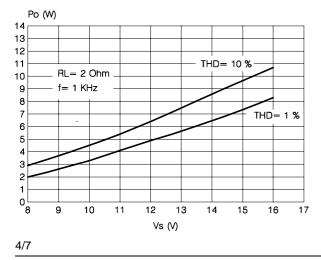


Figure 3: Output Power vs. Supply Voltage

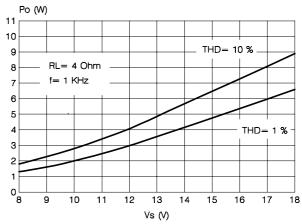
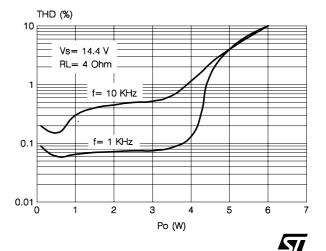


Figure 5: Distortion vs. Output Power



Fiigure 6: Distortion vs. Frequency

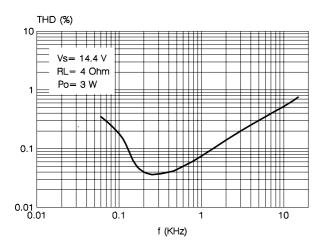
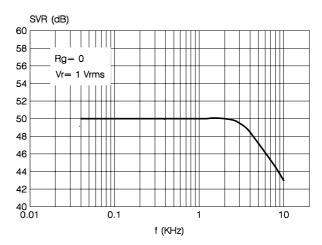


Figure 7: Supply Voltage Rejection



Fiigure 8: Cross-Talk vs. Frequency

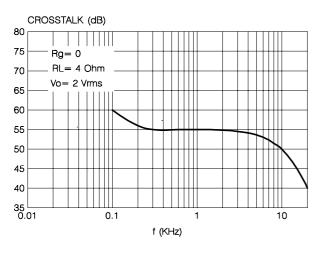
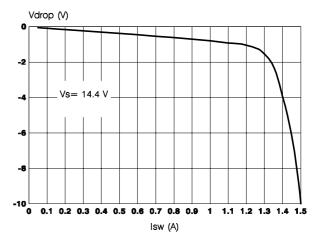


Figure 9: Switch Drop-out vs. Switch Current



**Figure 10:** Total Power Dissipation and Efficiency vs. Output Power

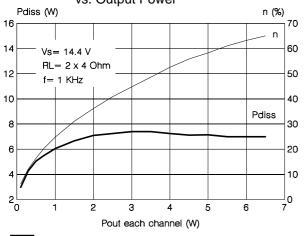
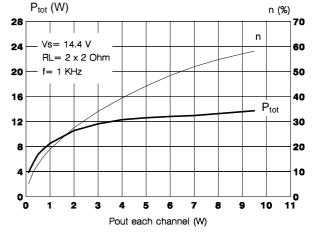


Figure 11: Total Power Dissipation and Efficiency

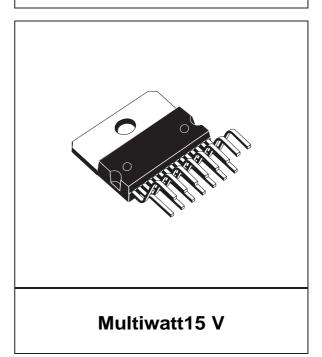


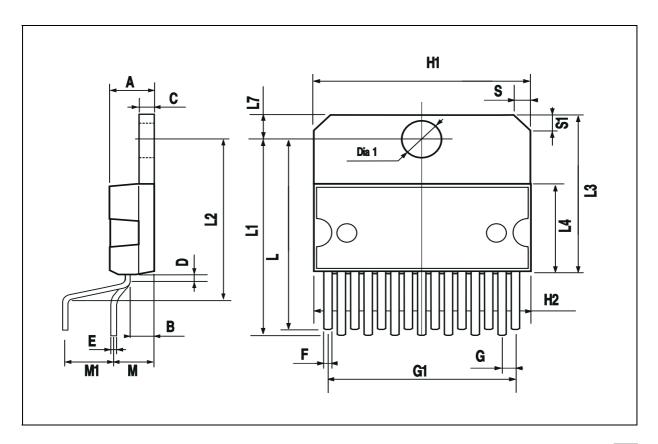
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DIM.	mm			inch			
DIN.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Α			5			0.197	
В			2.65			0.104	
С			1.6			0.063	
D		1			0.039		
Е	0.49		0.55	0.019		0.022	
F	0.66		0.75	0.026		0.030	
G	1.02	1.27	1.52	0.040	0.050	0.060	
G1	17.53	17.78	18.03	0.690	0.700	0.710	
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	0.870	0.886	
L2	17.65		18.1	0.695		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	4.63	5.08	5.53	0.182	0.200	0.218	
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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