



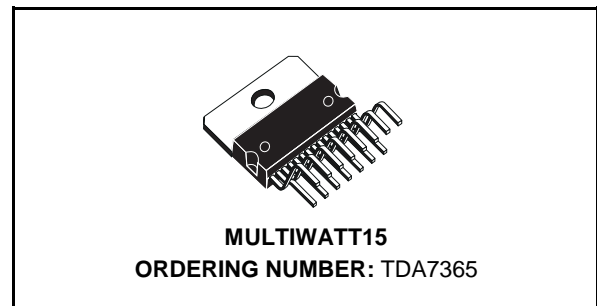
# TDA7365

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

- OUTPUT POWER 2x6W/4Ω @14.4V, 1KHz, 10%
- SOLID STATE POWER SWITCH INCLUDED (1A @ V<sub>DROP</sub> = 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 V<sub>s</sub> AT POWER ON
- SWITCH OUTPUT INTERNAL CURRENT LIMITATION
- OVERRATING CHIP TEMPERATURE WITH SOFT THERMAL LIMITER
- LOAD DUMP
- FORTUITOUS OPEN GND



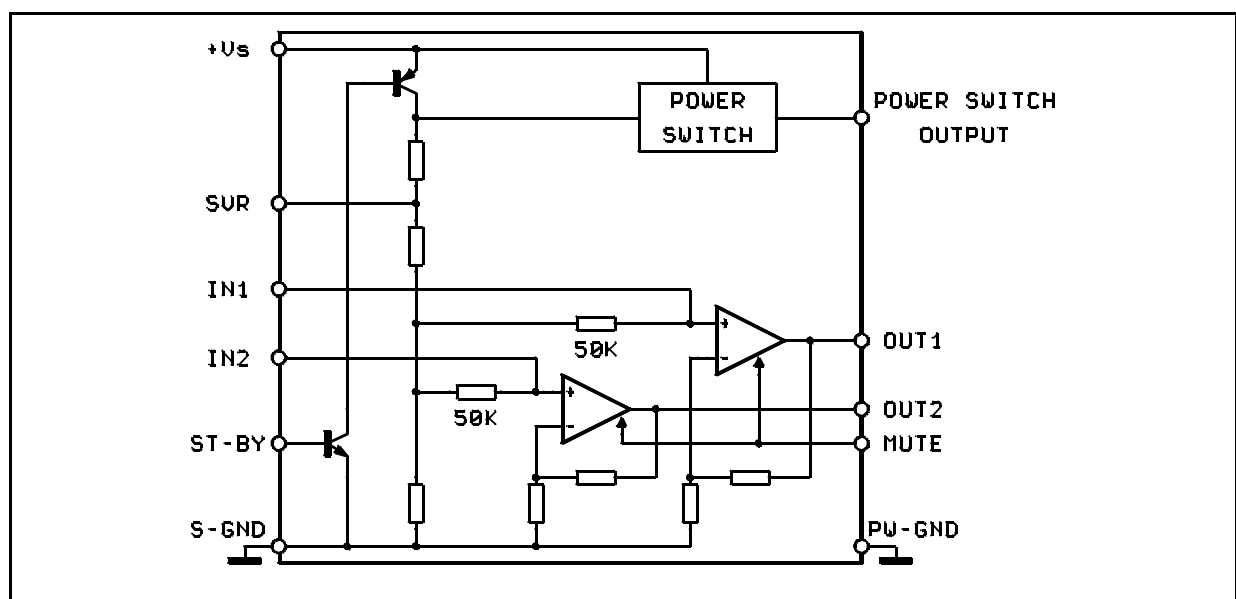
- REVERSE BATTERY
- ESD

### DESCRIPTION

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

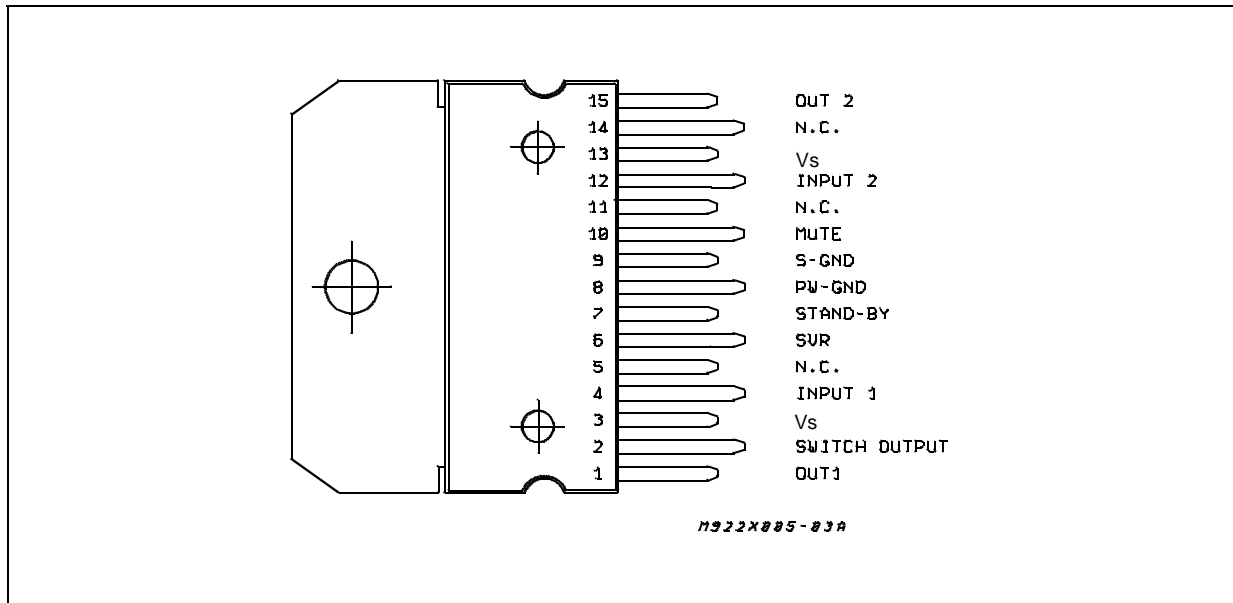
Thanks to the fully complementary output configuration the TDA7365 delivers a rail to rail voltage swing with no need of bootstrap capacitors. It includes a solid state switch, enabled by a ST-BY function common to the audio section, suitable for supplying both the signal processing part of the car radio set and the lamps. As a result the power-on operation is simplified, thereby saving cost and space in the whole power section.

### BLOCK DIAGRAM



## TDA7365

### PIN CONNECTION (Top view)



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_S$	DC Supply Voltage	28	V
$V_{OP}$	Operating Supply Voltage	18	V
$V_{PEAK}$	Peak Supply Voltage ( $t = 50\text{ms}$ )	40	V
$I_O$	Audio Channels Output Peak Current (not rep. $t = 100\mu\text{s}$ )	4	A
$I_O$	Audio Channels Output Peak Current (rep. $f > 10\text{Hz}$ )	3	A
$I_O$	Switch Output Peak Current	(internally limited) 1.5	A
$P_{tot}$	Power Dissipation ( $T_{case} = 85^\circ\text{C}$ )	32	W
$T_{stg}, T_j$	Storage and Junction Temperature	-40 to 150	$^\circ\text{C}$

### THERMAL DATA

Symbol	Description	Value	Unit
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max 2	$^\circ\text{C/W}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_S$	Supply Range		8		18	V
$I_d$	Total Quiescent Drain Current	Power Switch Unloaded		80		mA
$P_O$	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	$P_O = 0.1$ to $3W$		0.08	0.3	%
CT	Cross Talk	$f = 1kHz$ ; $R_g = 0$	50	55		dB
		$f = 10kHz$ ; $R_g = 0$		50		dB
$R_{IN}$	Input Impedance		40	50		$K\Omega$
$G_V$	Voltage Gain		39	40	41	dB
$G_V$	Voltage Gain Match.				1	dB
$E_{IN}$	Input Noise Voltage (*)	$R_g = 0$		1.2	5	$\mu V$
SVR	Supply Voltage Rejection	$R_g = 0$ ; $f = 100Hz$ ; $V_r = 0.5V_{rms}$	45	50		dB
ASB	Stand-by Attenuation		60	90		dB
$I_{SB}$	ST-BY Current Consumption				100	$\mu A$
$V_{SB IN}$	ST-BY IN Threshold Voltage				1.5	V
$V_{SB OUT}$	ST-BY OUT Threshold Voltage		3.5			V
$V_{M IN}$	MUTE IN Threshold Voltage				1.5	V
$V_{M OUT}$	MUTE OUT Threshold Voltage		3.5			V

**POWER SWITCH CHARACTERISTICS**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$I_{OP}$	Continuous Output Current			1.2		A
$V_{DROP}$	Dropout Voltage	$I_o = 1A$			1.4	V

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

**TEST AND APPLICATION CIRCUIT**

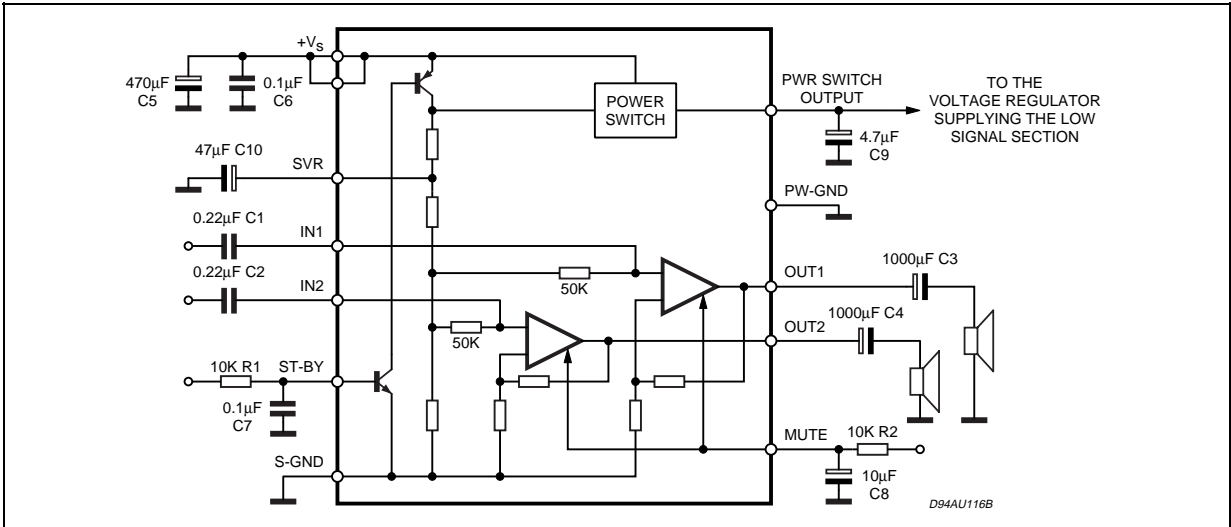


Figure 1: P.C.Board and component layout of the Test and Application Circuit 1:1 scale.

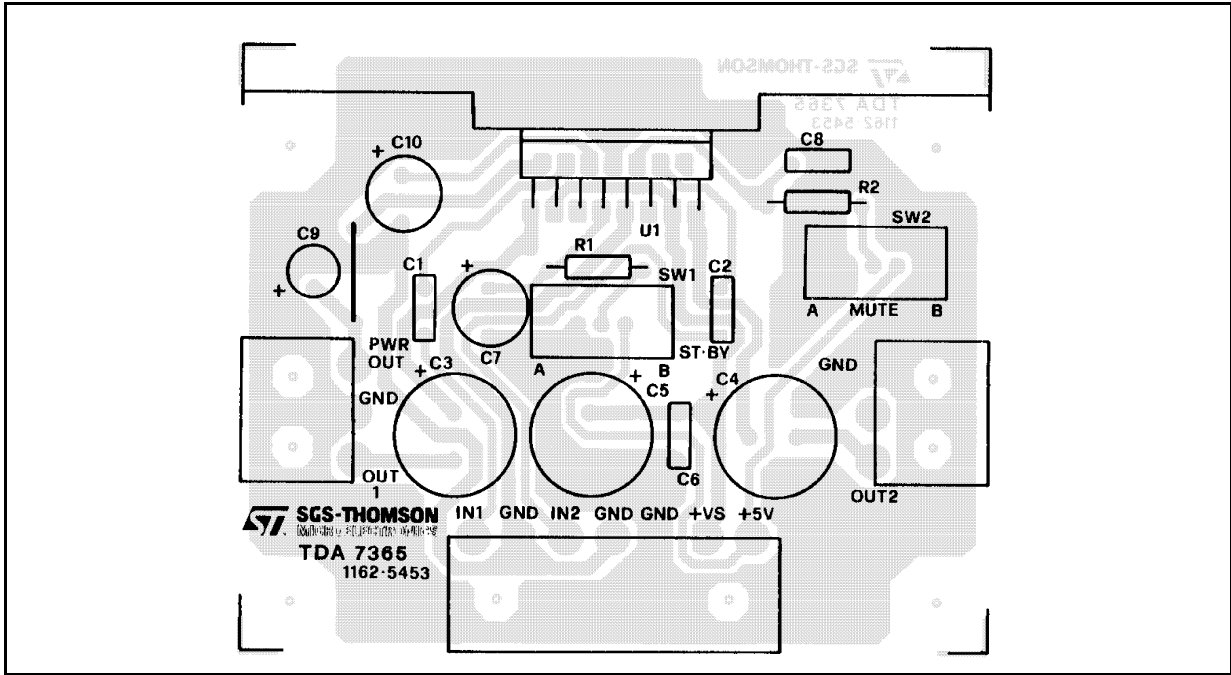


Figure 2: Quiescent Drain Current vs. Supply Voltage

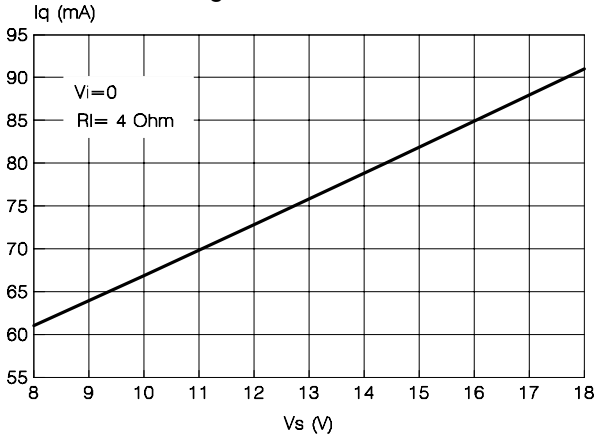


Figure 4: Output Power vs. Supply Voltage

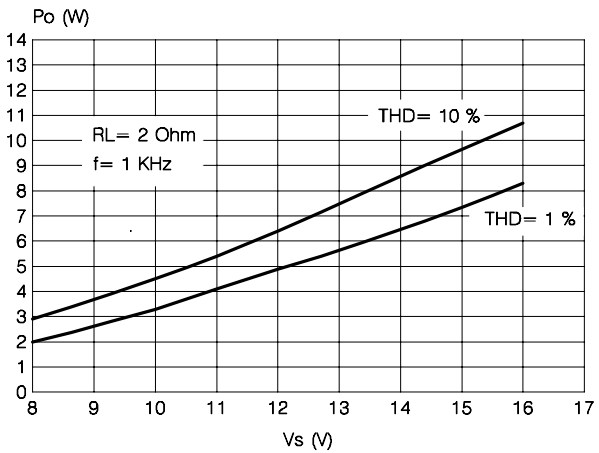


Figure 3: Output Power vs. Supply Voltage

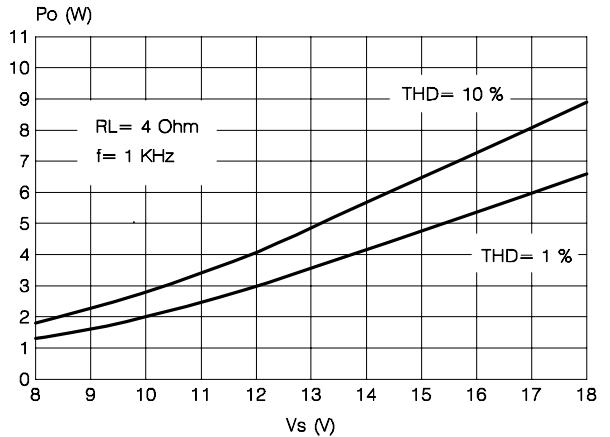
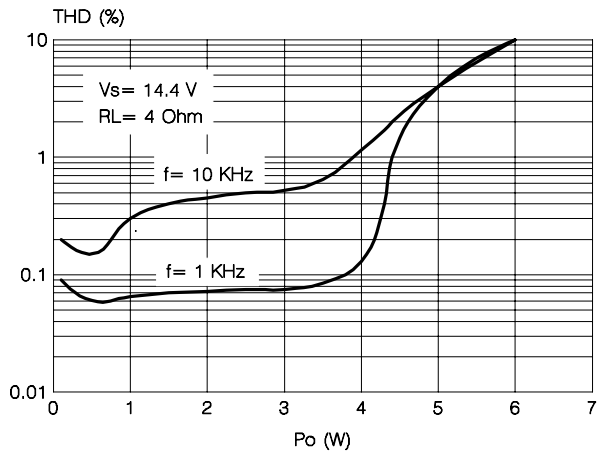
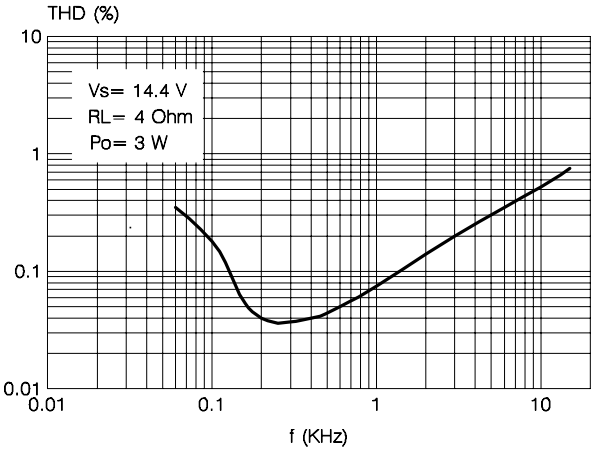


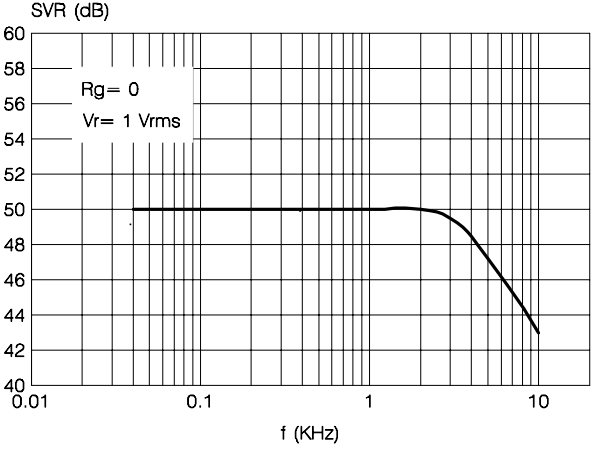
Figure 5: Distortion vs. Output Power



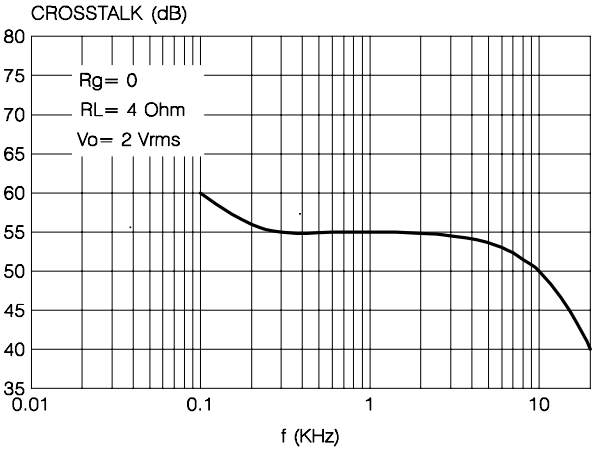
**Figure 6: Distortion vs. Frequency**



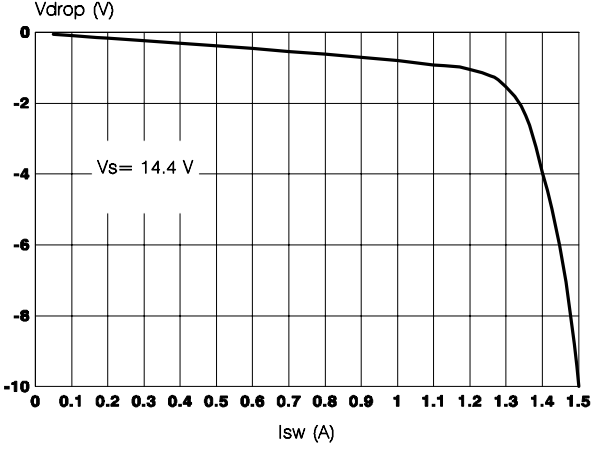
**Figure 7: Supply Voltage Rejection**



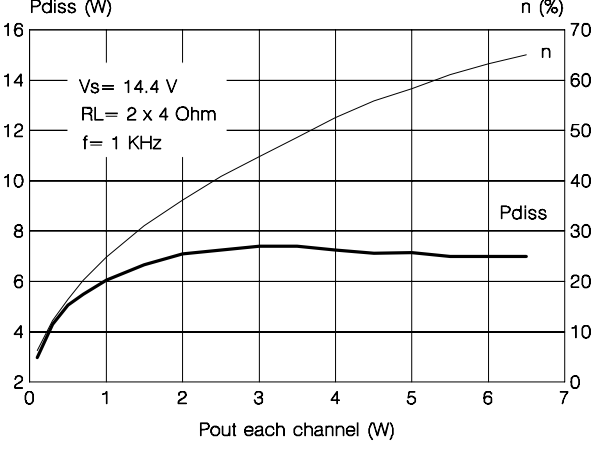
**Figure 8: Cross-Talk vs. Frequency**



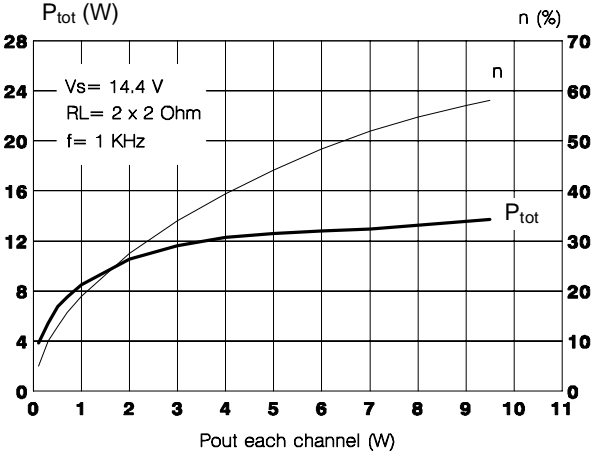
**Figure 9: Switch Drop-out vs. Switch Current**



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

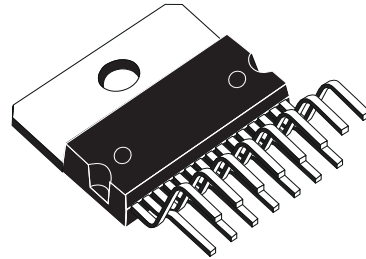


**Figure 11: Total Power Dissipation and Efficiency vs. Output Power**

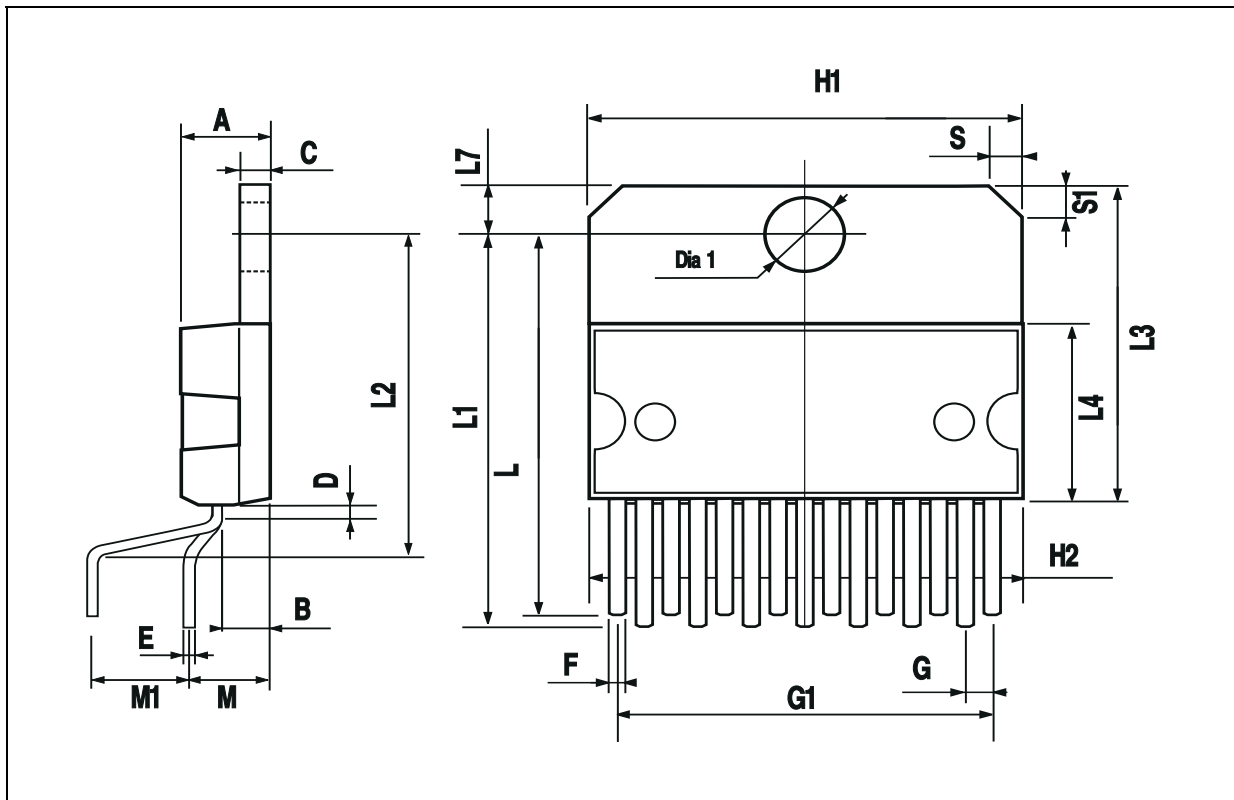


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			5			0.197
B			2.65			0.104
C			1.6			0.063
D		1			0.039	
E	0.49		0.55	0.019		0.022
F	0.66		0.75	0.026		0.030
G	1.02	1.27	1.52	0.040	0.050	0.060
G1	17.53	17.78	18.03	0.690	0.700	0.710
H1	19.6			0.772		
H2			20.2			0.795
L	21.9	22.2	22.5	0.862	0.874	0.886
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
M	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**



**Multiwatt15 V**



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