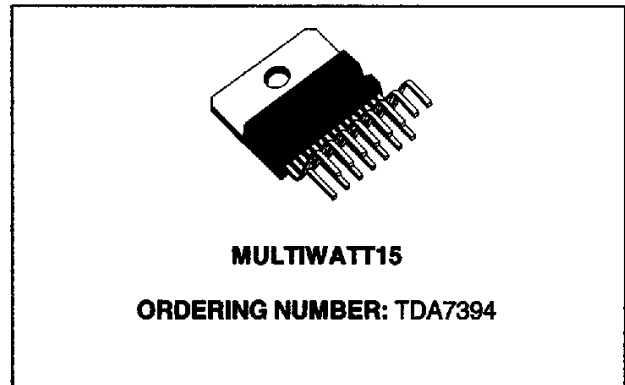


**2 x 30W DUAL BRIDGE CAR RADIO AMPLIFIER**

- **HIGH OUTPUT POWER CAPABILITY:**
  - 2 x 30W max./4Ω @ 13.2V, 1KHz
  - 2 x 22W typ./4Ω @ 14.4V, 1KHz, 10%
  - 2 x 19W typ./4Ω @ 13.2V, 1KHz, 10%
  - 2 x 28W typ./2Ω @ 14.4V, 1KHz, 10%
  - 2 x 25W typ./2Ω @ 13.2V, 1KHz, 10%
- **LOW DISTORTION**
- **LOW OUTPUT NOISE**
- **ST-BY FUNCTION**
- **MUTE FUNCTION**
- **AUTO-MUTE AT MIN. SUPPLY VOLTAGE DETECTION**
- **LOW EXTERNAL COMPONENT COUNT**
  - INTERNALLY FIXED GAIN (40dB)
  - NO EXTERNAL COMPENSATION
  - NO BOOTSTRAP CAPACITORS
- **ADDITIONAL MONO INPUT**
- **PROTECTIONS:**
  - **OUTPUT AC/DC SHORT CIRCUIT TO GND AND TO V<sub>s</sub>**
  - **VERY INDUCTIVE LOADS**
  - **OVERRATING CHIP TEMPERATURE WITH SOFT THERMAL LIMITER**
  - **LOAD DUMP VOLTAGE**

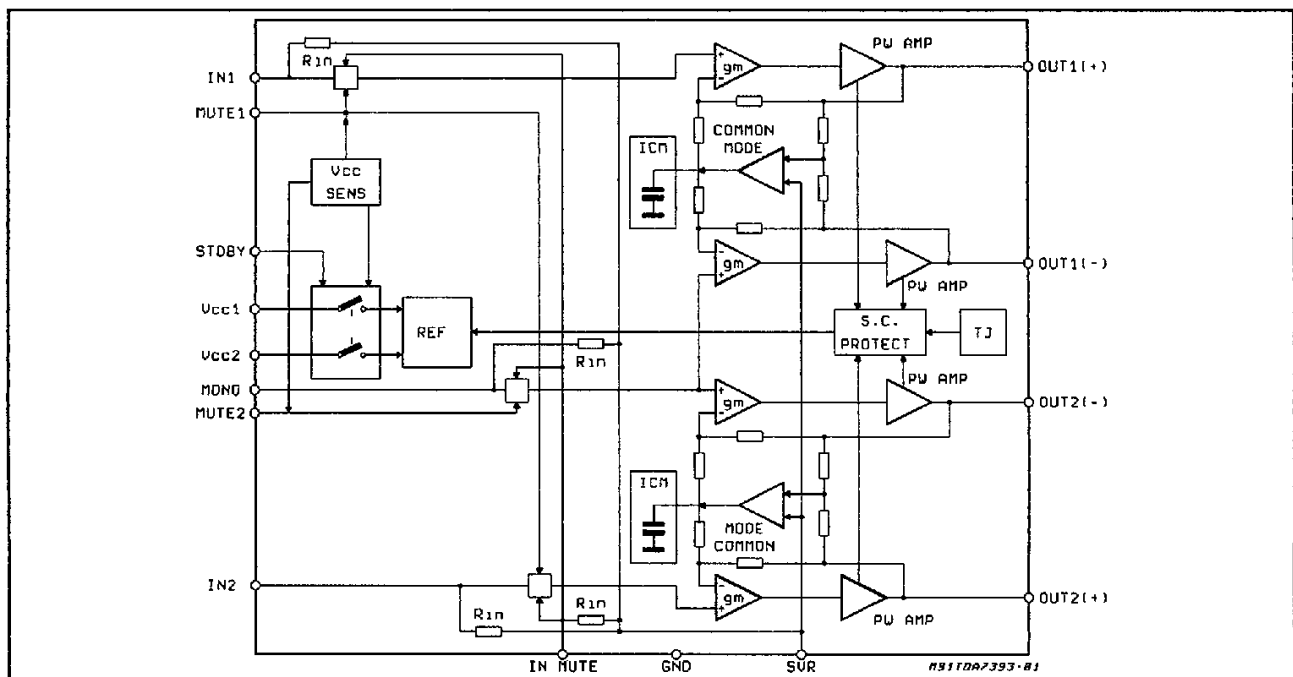


- **FORTUITOUS OPEN GND**
- **REVERSE BATTERY**
- **ESD PROTECTION**

**DESCRIPTION**

The TDA7394 is a new technology class AB Audio Power Amplifier in Multiwatt15 package designed for high end car radio applications. Thanks to the fully complementary PNP/NPN output configuration the high power performances of the TDA7394 are obtained without bootstrap capacitors. The extremely reduced components count allows very compact sets.

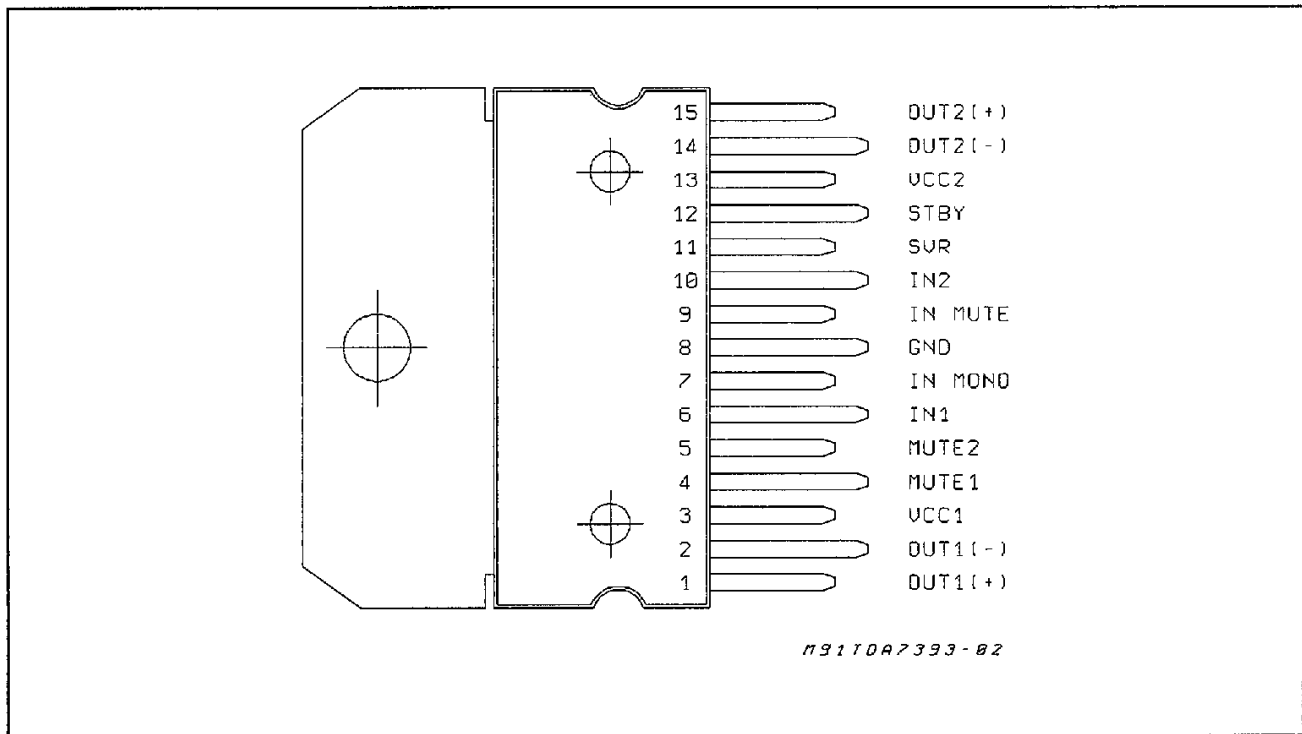
**BLOCK DIAGRAM**



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Operating Supply Voltage	18	V
V <sub>CC(DC)</sub>	DC Supply Voltage	28	V
V <sub>CC(pk)</sub>	Peak Supply Voltage (t = 50ms)	50	V
I <sub>o</sub>	Output Peak Current: Repetitive (Duty Cycle 10% at f = 10Hz)	4.5	A
	Non Repetitive (t = 100μs)	5.5	A
P <sub>tot</sub>	Power dissipation, T <sub>case</sub> = 75°C (see derating curve)	50	W
T <sub>j</sub>	Junction Temperature	150	°C
T <sub>op</sub>	Operating Ambient Temperature	- 40 to 85	°C
T <sub>stg</sub>	Storage Temperature	- 55 to 150	°C

**PIN CONNECTION (Top view)**



**THERMAL DATA**

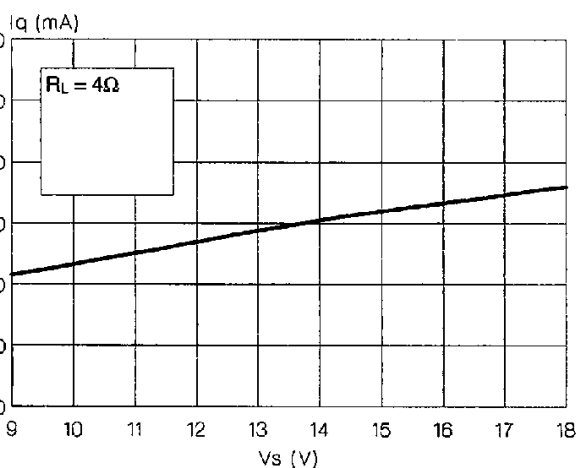
Symbol	Parameter	Value	Unit
R <sub>th J-case</sub>	Thermal Resistance Junction to Case	Max. 1.5	°C/W

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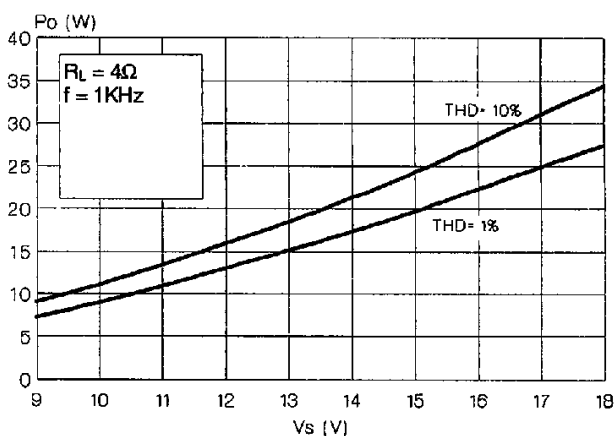
**ELECTRICAL CHARACTERISTICS** ( $V_S = 13.2V$ ;  $f = 1KHz$ ;  $R_G = 600\Omega$ ;  $R_L = 4\Omega$ ;  $T_{amb} = 25^\circ C$ ;  
Refer to the application circuit, unless otherwise specified.)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$I_{q1}$	Quiescent Current			90	180	mA
$V_{OS}$	Output Offset Voltage		-200		+200	mV
$G_v$	Voltage Gain		38.5	40	41.5	dB
$P_o$	Output Power	THD = 10%; $V_S = 14.4V$ THD = 10% THD = 1% THD = 10%; $R_L = 2\Omega$ THD = 10%; $V_S = 14.4V$ ; $R_L = 2\Omega$	17	22 19 16 25 28		W W W W W
$P_{o\ max}$	Max. Output Power	EIAJ RULES		30		W
THD	Distortion	$P_o = 4W$		0.08	0.3	%
$e_{No}$	Output Noise	Bw = 20Hz to 20KHz			0.5	mVrms
SVR	Supply Voltage Rejection	$f = 100Hz$ (stereo)		60		dB
$f_L$	Low Cut-Off Frequency			10		Hz
$f_H$	High Cut-Off Frequency			200		KHz
$R_i$	Input Impedance		10	15	20	K $\Omega$
$C_T$	Cross Talk	$f = 1KHz$	50	65		dB
$I_{SB}$	St-By Current Consumption				100	$\mu A$
$V_{SB\ out}$	St-By OUT Threshold Voltage	Amp: ON	3.5			V
$V_{SB\ in}$	St-By IN Threshold Voltage	Amp: OFF			1.5	V
$V_{SB}$	Supply Dependent St-By Threshold	St-By = H, $V_S$ reducing/increasing		7.5	8.3	V
$A_M$	Mute Attenuation	$V_O = 1Vrms$		75		dB
$V_{M\ out}$	Mute OUT Threshold Voltage	Amp: Play	3.5			V
$V_{M\ in}$	Mute IN Threshold Voltage	Amp: Mute			1.5	V
$V_M$	Supply Dependent Mute Threshold	Mute = IN, $V_S$ reducing/increasing		8.5	9.3	V
$I_m(L)$	Muting Pin Current	$V_{MUTE} = 1.5V$ (Source Current)	6	10	14	$\mu A$
$I_m(H)$	Muting Pin Current	$V_{MUTE} = 3.5V$ (Source Current)	6	10	14	$\mu A$

**Figure 1: Quiescent Current vs. Supply Voltage**



**Figure 2: Output Power vs. Supply Voltage**



695 0484900 4E26266 722237 006440 569

Figure 3: Output Power vs Supply Voltage

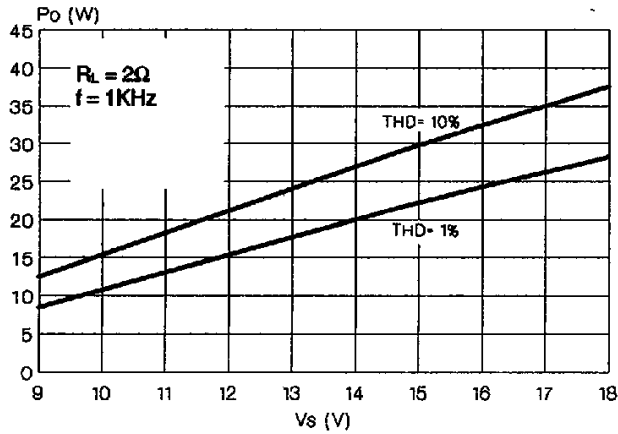


Figure 4: EIAJ Power vs. Supply Voltage

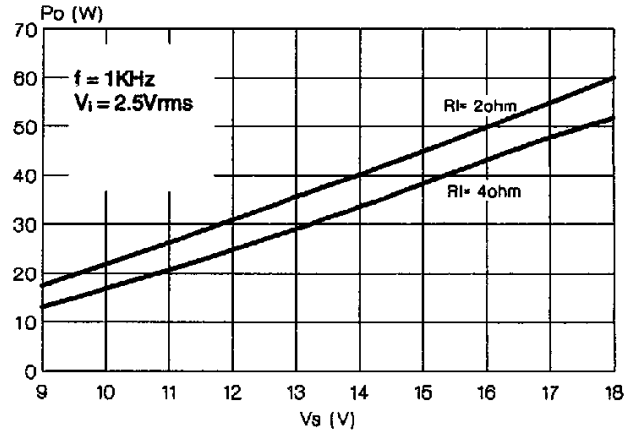


Figure 5: Cross-Talk vs. Frequency

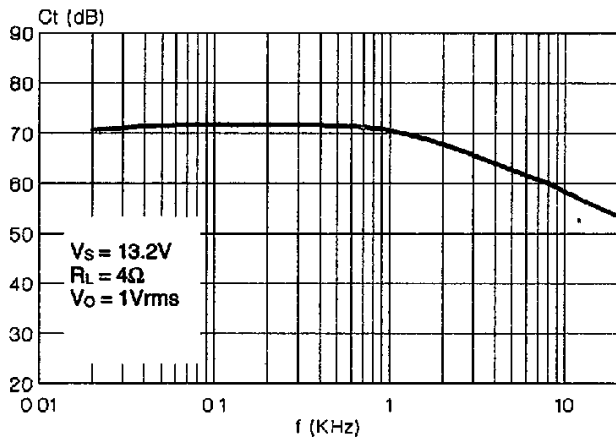


Figure 6: SVR vs. Frequency

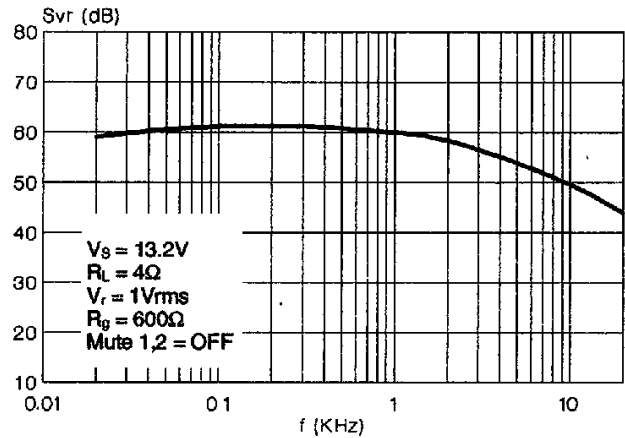


Figure 7: Distortion vs. Frequency

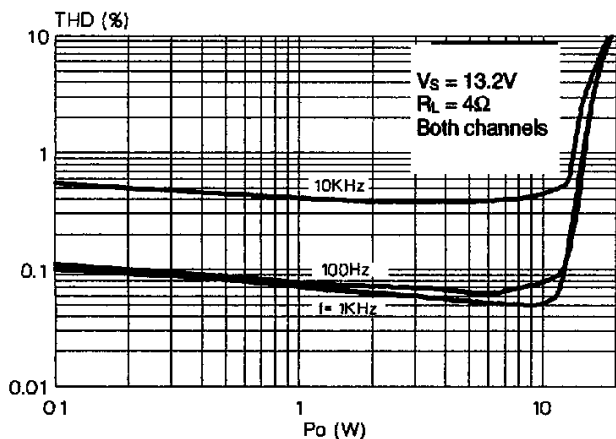
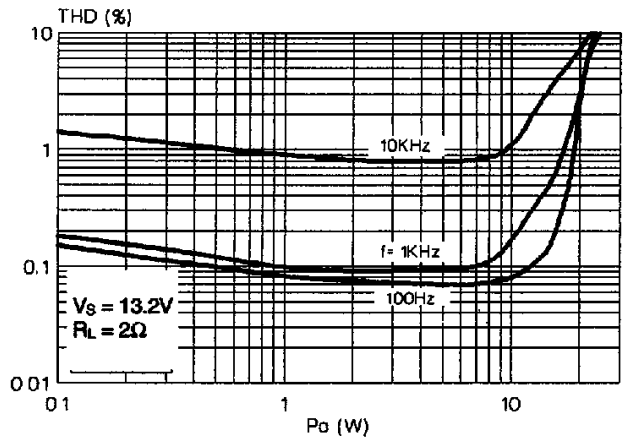


Figure 8: Distortion vs. Frequency



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Figure 9: Block Diagram of Mute Circuit

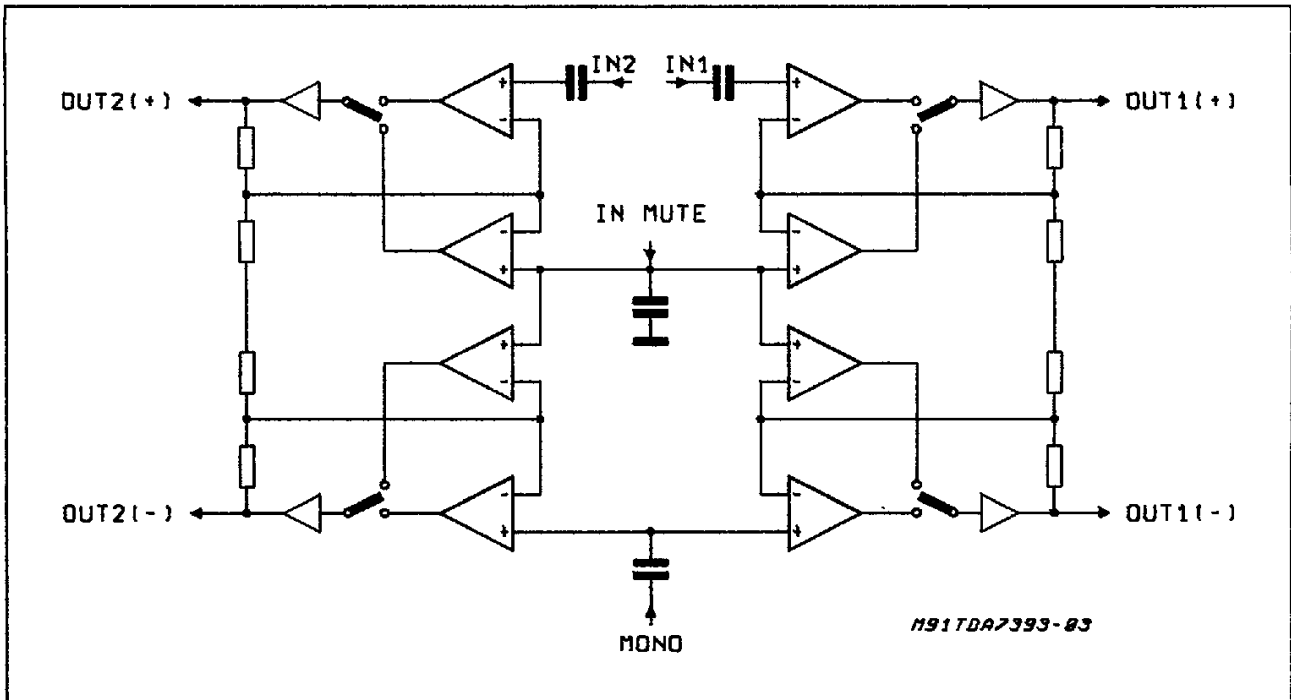
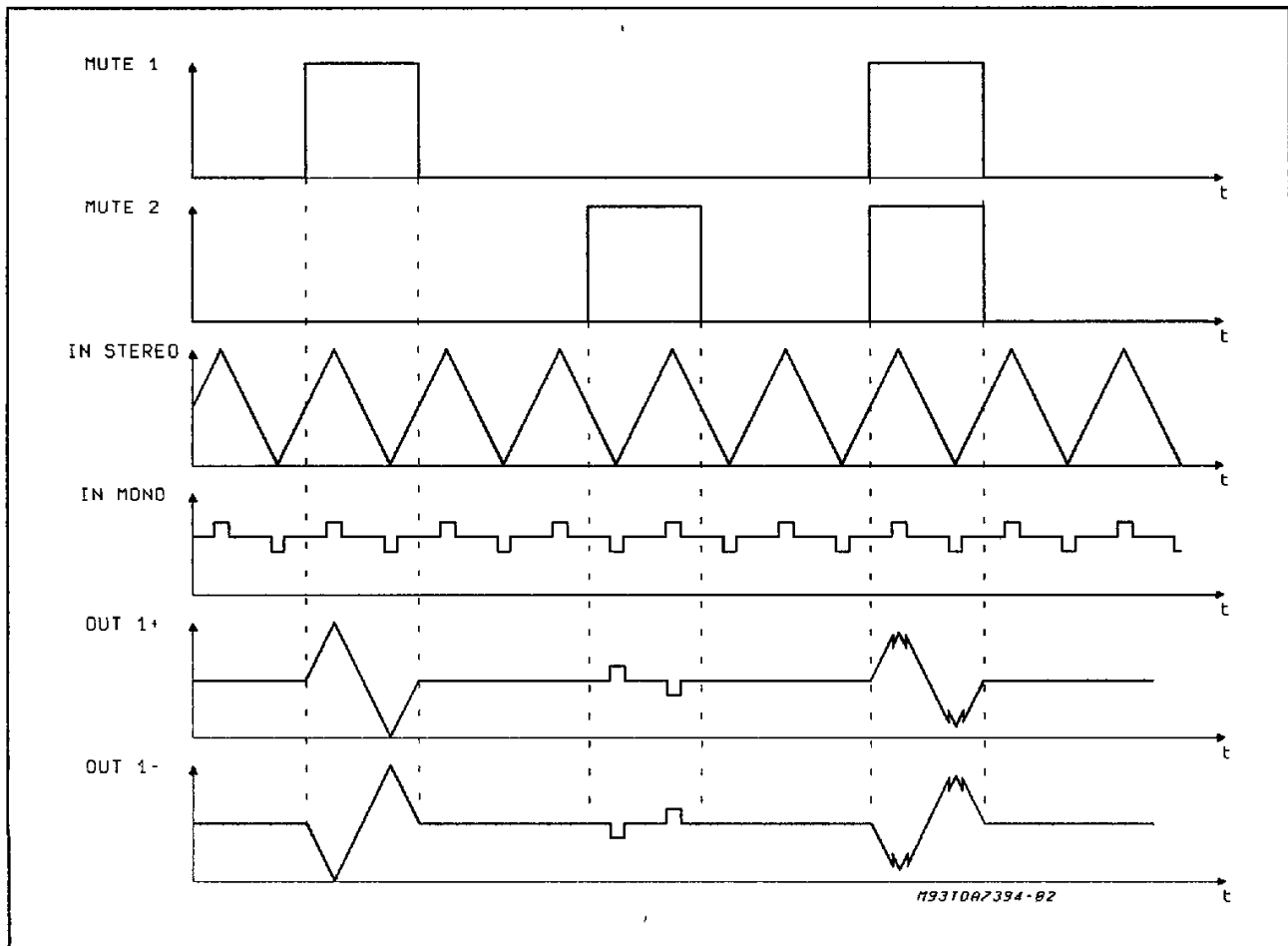


Figure 10: Explanatory Waveforms Of Mute Circuit



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Figure 11: Application Circuit

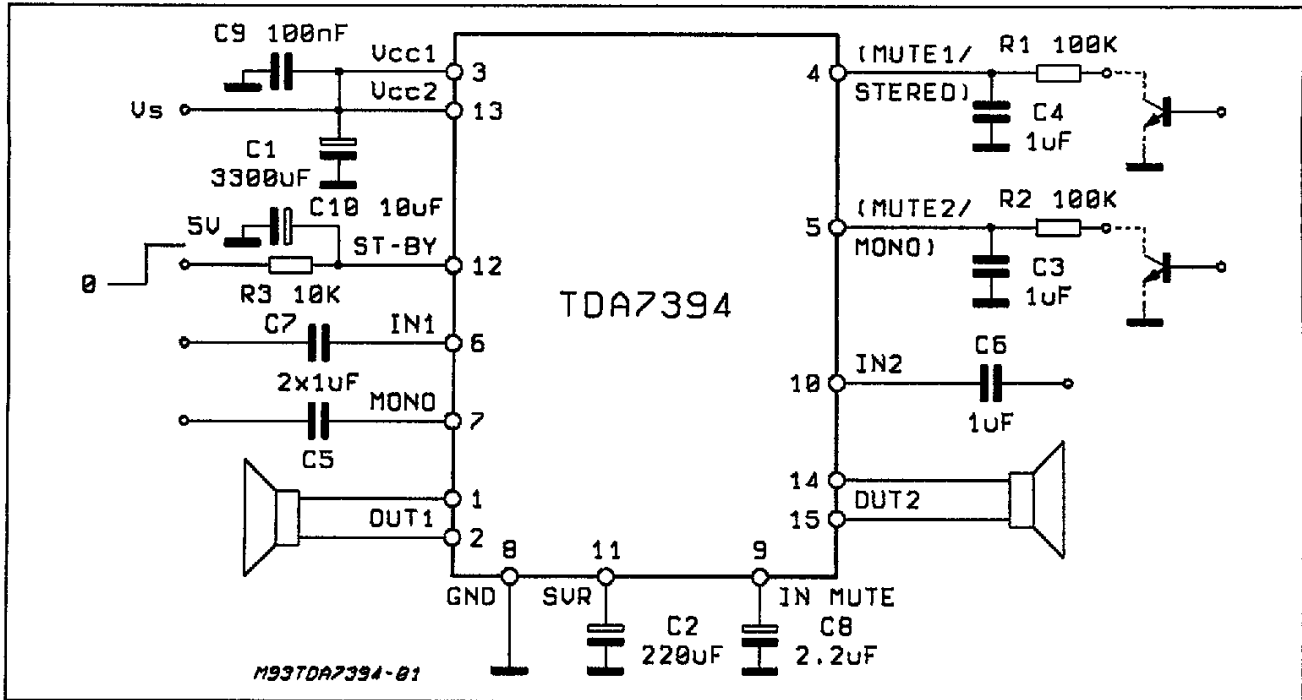
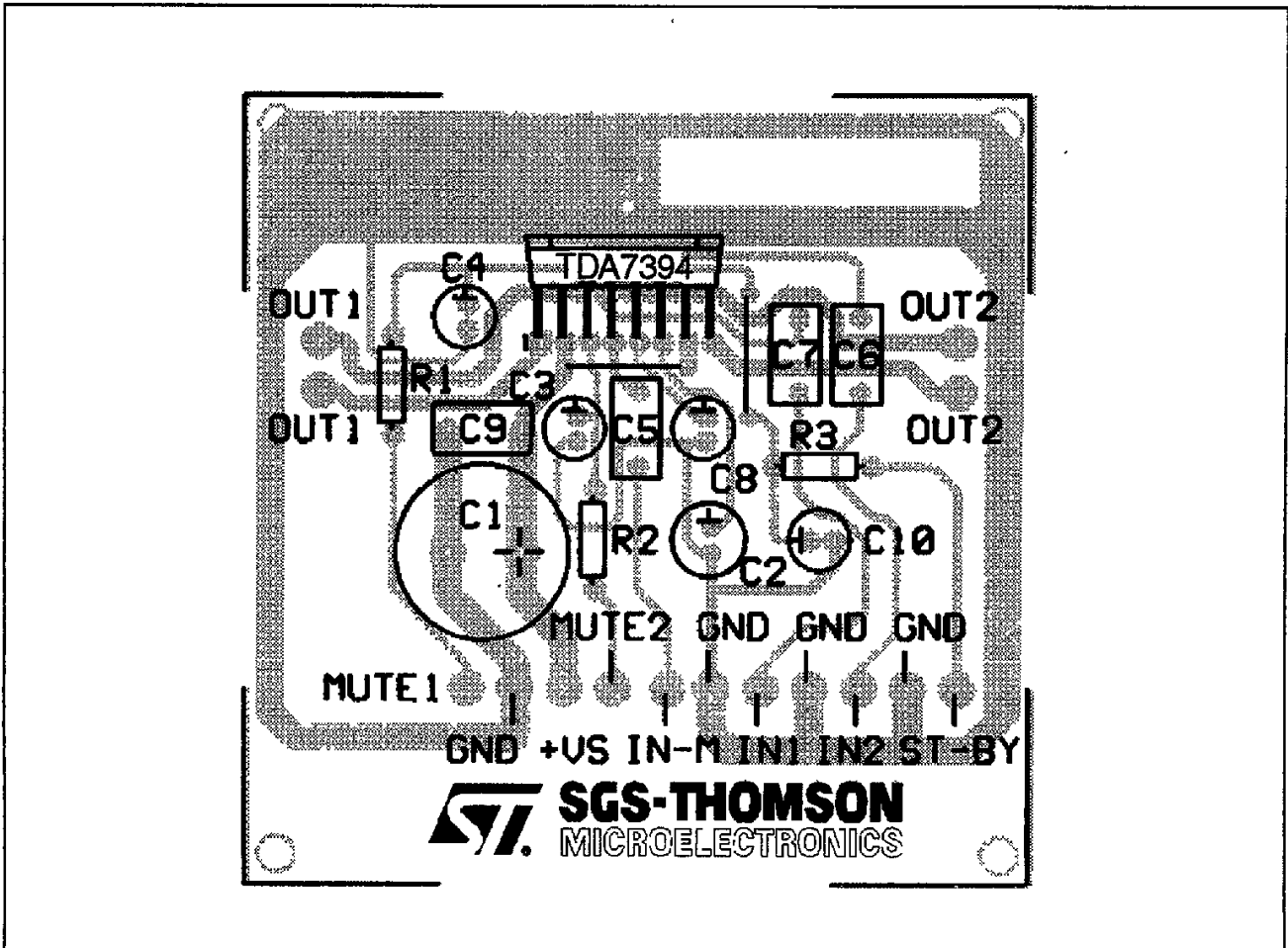


Figure 12: P.C. Board and Component Layout of the fig. 11 (1:1 scale)



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Figure 13: Power Dissipation Derating Curve

