SGS-THOMSON MICROELECTRONICS

TDA7360

STEREO / BRIDGE AMPLIFIER WITH CLIPPING DETECTOR

ADVANCE DATA

Main features:

- VERY FEW EXTERNAL COMPONENTS
- NO BOUCHEROT CELLS
- NO BOOTSTRAP CAPACITORS
- HIGH OUTPUT POWER
- NO SWITCH ON/OFF NOISE
- VERY LOW STAND-BY CURRENT
- FIXED GAIN
- PROGRAMMABLE TURN-ON DELAY
- CLIPPING DETECTION

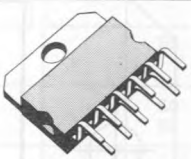
Protections:

- OUTPUT AC-DC SHORT CIRCUIT TO GROUND AND TO SUPPLY VOLTAGE
- VERY INDUCTIVE LOADS
- OVERRATING CHIP TEMPERATURE
- LOAD DUMP VOLTAGE
- FORTUITOUS OPEN GROUND

The TDA7360 is a new technology class AB Audio Power Amplifier in Multiwatt package designed for car radio applications. Thanks to the fully complementary PNP/NPN output configuration the high power performances of the TDA7360 are obtained without bootstrap capacitors.

A delayed turn-on mute circuit eliminates audible on/off noise, and a novel short circuit protection system prevents spurious intervention with highly inductive loads.

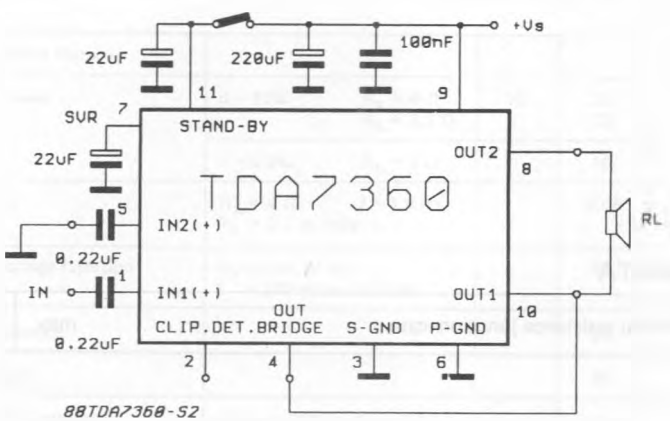
The device provides a circuit for the detection of clipping in the output stages. The output, an open collector, is able to drive systems with automatic volume control.



Multiwatt-11

ORDER CODE: TDA7360

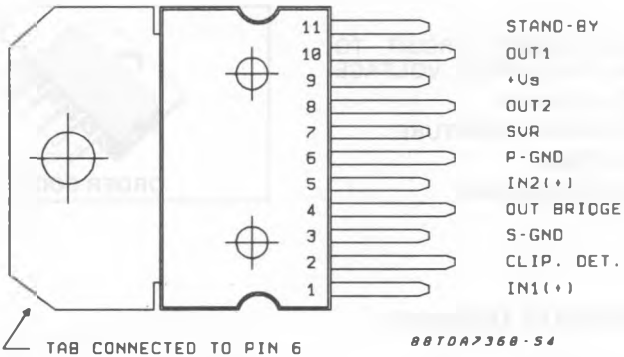
APPLICATION CIRCUIT (BRIDGE)



ABSOLUTE MAXIMUM RATINGS

V_s	Operating supply voltage	18	V
V_s	DC supply voltage	28	V
V_s	Peak supply voltage (for t = 50 ms)	40	V
I_o	I_{OUT} peak (non rep. t = 100 μs)	4.5	A
I_o	I_{OUT} peak (rep. freq. > 10 Hz)	3.5	A
P_{tot}	Power dissipation at T_{case} = 80°C	40	W
T_{stg}, T_j	Storage and junction temperature	-40 to 150	°C

CONNECTION DIAGRAM
(Top view)



THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	1.8	°C/W

ELECTRICAL CHARACTERISTICS (Refer to the test circuit, T_{amb} = 25°C, V_s = 14.4V, f = 1 KHz, unless otherwise specified)

Parameter		Test Conditions	Min.	Typ.	Max.	Unit
V_s	Supply voltage		8		18	V
I_d	Total quiescent drain current	stereo configuration		60		mA
ASB	Stand-by attenuation		60	80		dB
I_{SB}	Stand-by current				100	μA
I_{CO}	Clip detector current average	d = 1%		-1		mA
dt_{co}	Distortion threshold for Clip Detect. output			0.5		%

STEREO

P_o	Output power (each channel)	d = 10% R_L = 1.6Ω R_L = 2 Ω R_L = 3.2Ω R_L = 4 Ω	7	12 11 8 6.5		W W W W
d	Distortion	f = 1KHz 4Ω 100 mW to 4 W		0.05		%
SVR	Supply voltage rejection	R_s = 0 to 10 KΩ f = 100 Hz		55		dB
CT	Crosstalk	f = 1 KHz f = 10 KHz		60 55		dB dB
R_i	Input resistance			50		KΩ
G_v	Voltage gain			20		dB
G_v	Voltage gain match.				1	dB
E_{in}	Input noise voltage	22 Hz to 22 KHz R_g = 50Ω R_g = 10KΩ		3 3.5		μV μV

BRIDGE

VOS	Output offset voltage				250	mV
P_o	Output power	d = 10% R_L = 4 Ω R_L = 3.2 Ω	16	20 22		W W
		d = 0.5% R_L = 4 Ω		18		W
d	Distortion	R_L = 4 Ω f = 1 KHz P_o = 0.1 to 10W		0.05		%
SVR	Supply voltage rejection	R_s = 0 to 10 KΩ f = 300 Hz to 3.5 KHz		55		dB
R_i	Input resistance			50		KΩ
G_v	Voltage gain			26		dB
E_{in}	Input noise voltage	22Hz to 22KHz R_g = 50Ω R_g = 10KΩ		6 7		μV μV

APPLICATION INFORMATION

The TDA7360 is equipped with an internal circuit able to detect the output stage saturation providing a proper current sinking into a proper open collector out. (pin 2) when a certain distortion level is reached on each output.
This particular function allows compression facility whenever the amplifier is overdriven, obtaining high quality sound at all listening levels.

Fig. 1 - Dual channel distortion threshold detector

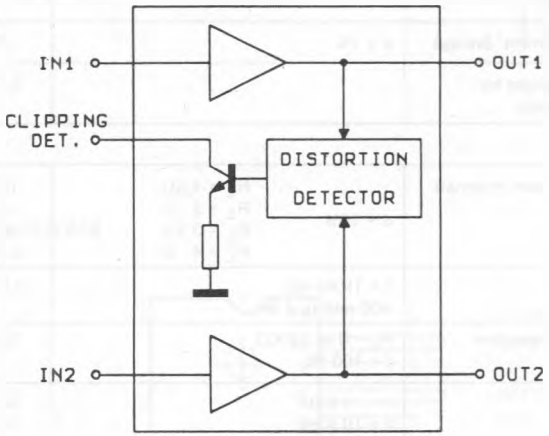


Fig. 2 - Output from the clipping detector Pin. versus signal distortion

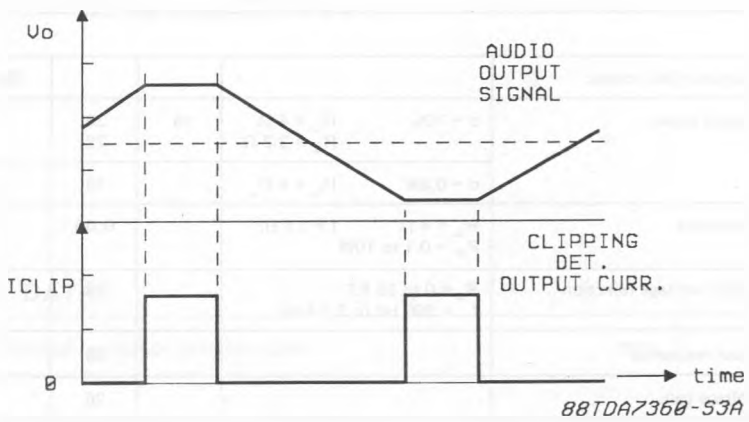


Fig. 3 - Stereo test and application circuit

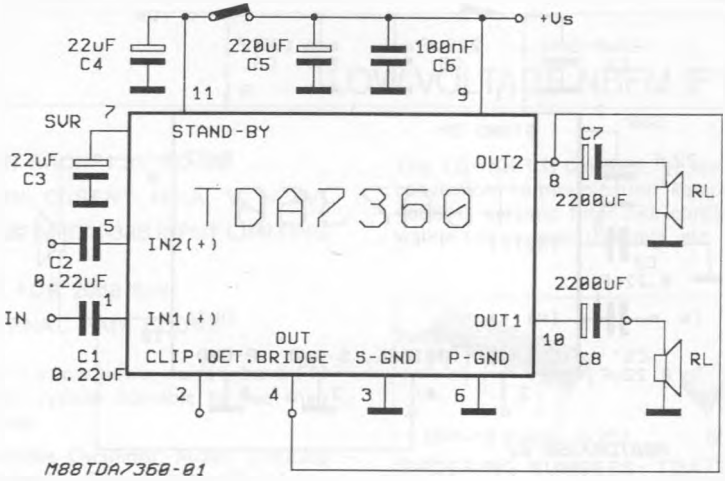


Fig. 4 - P.C. and layout (STEREO) of the Fig. 3 (1:1 scale)

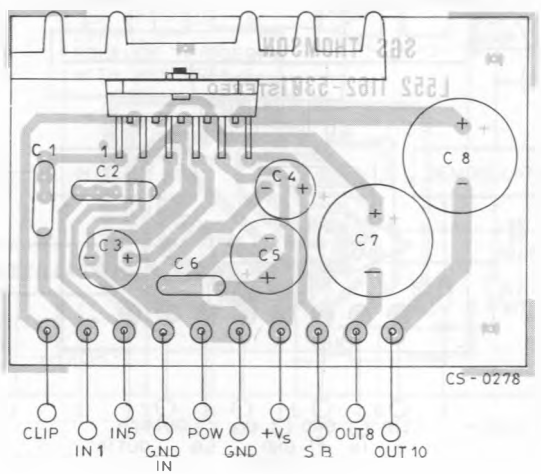


Fig. 5 - Bridge test and application circuit

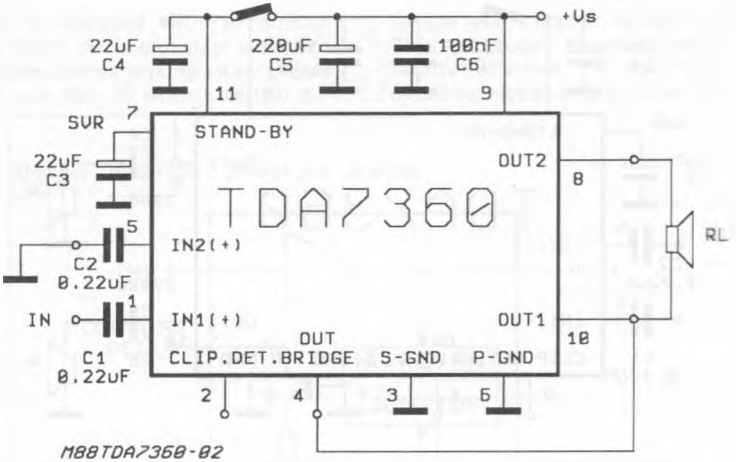


Fig. 6 - P.C. and layout (BRIDGE) of the Fig. 5 (1:1 scale)