

## 3 W Mono BTL Audio Output Amplifier

### FEATURES

- No external components
- No switch-on/off clicks
- Good overall stability
- Low power consumption
- Short circuit proof
- ESD protected on all pins.

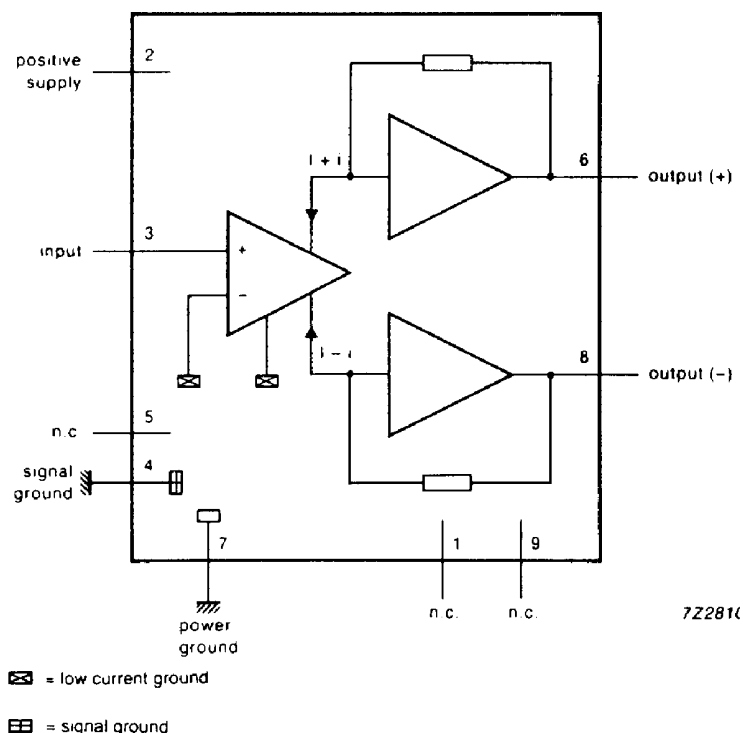
### GENERAL DESCRIPTION

The ILA7056SH is a mono output amplifier contained in a 9 pin SIL medium power package (SOT110).

The device is designed for battery-fed portable mono recorders, radios and television.

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>V<sub>p</sub></b>	supply voltage		3	11	18	V
<b>P<sub>o</sub></b>	output power	V <sub>p</sub> =11 V, THD=10%, R <sub>L</sub> =16 Ω	2.5	3		W
<b>G<sub>v</sub></b>	internal voltage gain		39	40,0	42	dB
<b>I<sub>p</sub></b>	total quiescent current	V <sub>p</sub> =11 V; R <sub>L</sub> =		5	7	mA
<b>THD</b>	total harmonic distortion	P <sub>o</sub> =0,5 W		0,25	1	%



PIN	DESCRIPTION
1	n.c.
2	VP
3	input(+)
4	signal ground
5	n.c.
6	output(+)
7	power ground
8	output(-)
9	n.c.

## FUNCTIONAL DESCRIPTION

The ILA7056SH is a mono output amplifier, designed for battery-fed portable radios and mains-fed equipment such as television. For space reasons there is a trend to decrease the number of external components. For portable applications there is also a trend to decrease the number of battery cells, but still a reasonable output power is required.

The ILA7056SH fulfills both of these requirements. It needs no peripheral components, because it makes use of the Bridge-Tied-Load (BTL) principle. Consequently it has, at the same supply voltage, a higher output power compared to a conventional Single Ended output stage. It delivers an output power of 1 W into a loudspeaker load of 8 W with 6 V supply or 3 W into 16 W loudspeaker at 11 V without need of an external heatsink. The gain is internally fixed at 40 dB. Special attention is given to switch-on/off click suppression, and it has a good overall stability. The load can be short circuited at all input conditions.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Vp	supply voltage		-	18	V
iorm	Peak output current repetitive		-	1	A
iosm	Peak output current non-repetitive		-	1.5	A
Tstg	storage temperature range		-55	150	°C
Tj	junction temperature		-	150	°C
Plot	total power dissipation	T <sup>ase</sup> < 60 °C	-	9	W
Tsc	short circuiting time	see note 1	-	1	hr

Note

1. The load can be short-circuited at all input conditions.

SYMBOL	PARAMETER	NOM.	UNIT
hibk	from junction to case	10	K/W
Rth.a	from junction to ambient in free air	55	K/W

## POWER DISSIPATION

Assume: VP = 11 V; RL = 16 W.

The maximum sine-wave dissipation is 1.52 W.

The Rth j-a of the package is 55 K/W.

Tamb max = 150 - 55 ´ 1.52 = 66.4 °C.

**CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Vp	operating supply voltage		3	11	18	V
IQRM	repetitive peak output current		-	-	0.6	A
IP	total quiescent current		-	5	7	mA
PO	output power	THD= 10%	2.5	3	-	W
THD	total harmonic distortion	Po = 0.5 W	-	0.25	1	
GV	voltage gain		39	40.5	42	dB
Vno	noise output voltage	note 2	-	180	300	uV
Vno	noise output voltage	note 3	-	60	-	[JV
	frequency response		-	20 to 20.000	-	Hz
RR	ripple rejection	note 4	36	50	-	dB
AV	DC-output offset voltage	note 5	-	-	200	mV
IZJ	input impedance		-	100	-	kii
1,	input bias current		-	100	300	nA

**Notes to the characteristics**

1. With a load connected to the outputs the quiescent current will increase, the maximum value of this increase being equal to the DC output offset voltage divided by RL .
2. The noise output voltage (RMS value) is measured with RS = 5 kW unweighted (20 Hz to 20 kHz).
3. The noise output voltage (RMS value) at f = 500 kHz is measured with RS = 0 W and bandwidth = 5 kHz. With a practical load (RL = 16 W, LL = 200 mH) the noise output current is only 50 nA.
4. The ripple rejection is measured with RS = 0 W and f = 100 Hz to 10 kHz. The ripple voltage (200 mV) is applied to the positive supply rail.
5. RS = 5 kW.