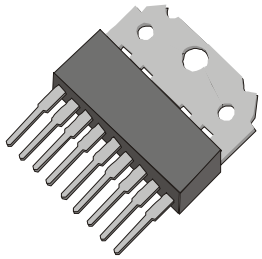
3 W Mono BTL Audio Output Amplifier

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

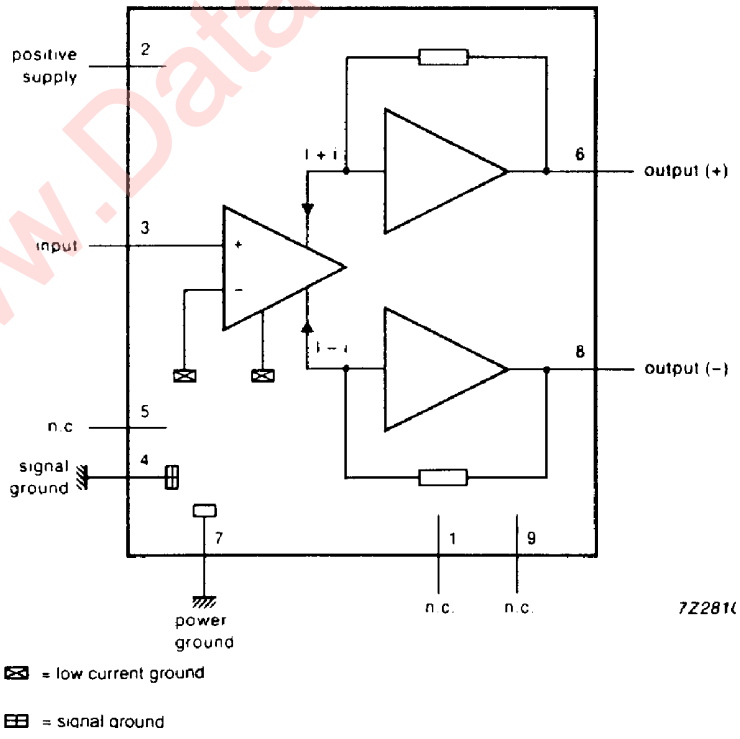
GENERAL DESCRIPTION
The ILA7056 is a mono output amplifier contained in a 9 pin SIL medium power package (SOT110).
The device is designed for battery-fed portable mono recorders, radios and television.



ORDERING INFORMATION
Plastic SIL-9MPF
(SOT110-1)
T_A = -40°C to 125° C

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Vp	supply voltage		3	11	18	V
Po	output power	Vp=11 V, THD=10%, RL=16 Ω	2.5	3		W
Gv	internal voltage gain		39	40,0	42	dB
Ip	total quiescent current	Vp=11 V; RL=∞		5	7	mA
THD	total harmonic distortion	Po=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 ILA7056 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 ILA7056 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^se < 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
Rtll.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.

- **9-Pin Plastic Power Single-in-Line (SIL-9MPF, SOT 110-1)**