

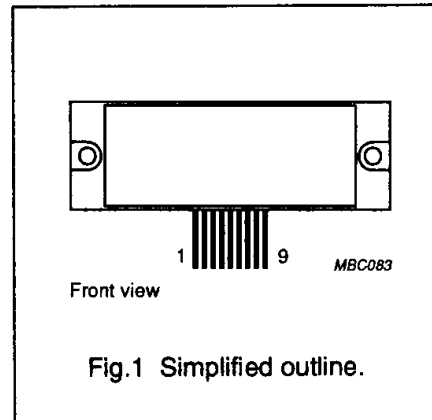
# Hybrid integrated circuit hi-fi audio power amplifiers

## OM961/OM991

### DESCRIPTION

The OM961 and OM991 are thin film hybrid integrated circuit hi-fi audio amplifiers for sinusoidal output power up to 60 W and 120 W respectively. The modules offer maximum design possibilities regarding amplification, ripple rejection, stability for complex loads etc. The amplifiers have built in short-circuit protection (SOAR protected) and are specially designed for low transient and harmonic distortion. All built in resistors are dynamically adjusted for optimum performance over a wide temperature range.

### PIN CONFIGURATION



### PINNING

PIN	DESCRIPTION
1	supply (-)
2	ground
3	output
4	output
5	driver supply (-)
6	non inverting input
7	inverting input
8	boot strap
9	supply (+)

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	UNIT
$P_o$	sinusoidal output power OM961	$d_{tot} < 0.2\%$ ; $f = 20 \text{ Hz to } 20 \text{ kHz}$ ; $R_L = 4 \Omega$ ; $V_S = \pm 31 \text{ V}$	60	—	W
		$d_{tot} < 0.2\%$ ; $f = 20 \text{ Hz to } 20 \text{ kHz}$ ; $R_L = 8 \Omega$ ; $V_S = \pm 35 \text{ V}$	60	—	W
	sinusoidal output power OM991	$d_{tot} < 0.2\%$ ; $f = 20 \text{ Hz to } 20 \text{ kHz}$ ; $R_L = 4 \Omega$ ; $V_S = \pm 45 \text{ V}$	60	—	W
		$d_{tot} < 0.2\%$ ; $f = 20 \text{ Hz to } 20 \text{ kHz}$ ; $R_L = 8 \Omega$ ; $V_S = \pm 50 \text{ V}$	60	—	W
$d_{tot}$	total harmonic distortion	$P_o = 1 \text{ W}$ ; $f = 1 \text{ kHz}$	—	0.02	%

### LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$V_S$	symmetrical supply voltage OM961	—	$\pm 45$	V
	OM991	—	$\pm 50$	V
$T_{stg}$	storage temperature range	-30	100	$^{\circ}\text{C}$
$T_{mb}$	mounting base operating temperature range	—	95	$^{\circ}\text{C}$

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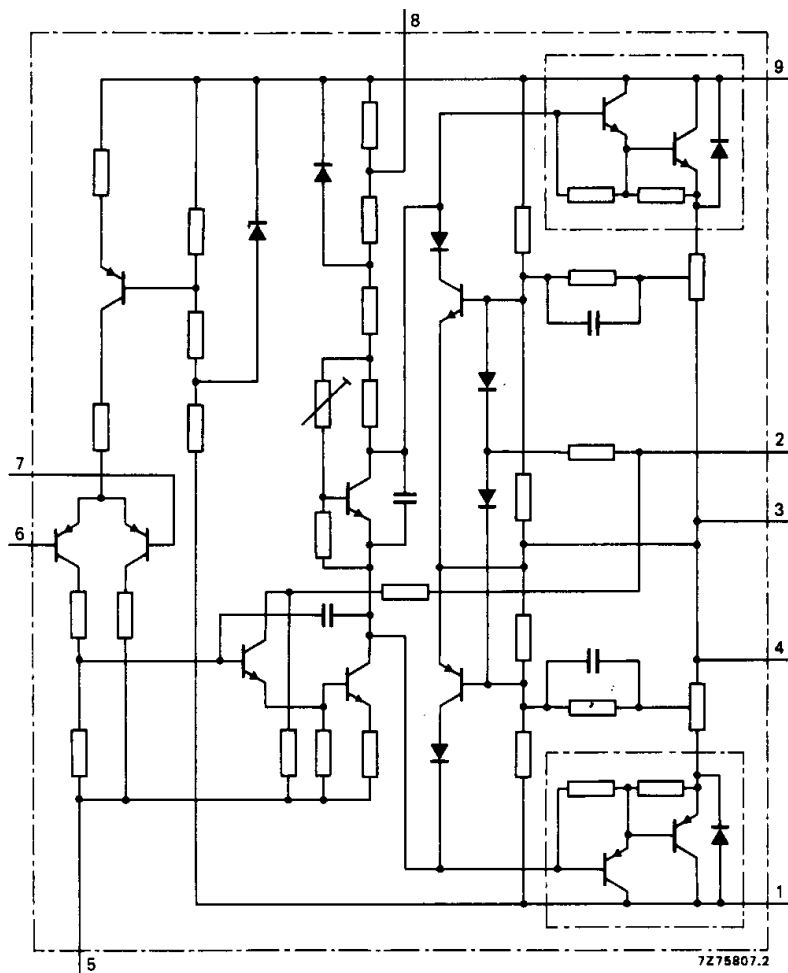


Fig.2 Circuit diagram.

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**CHARACTERISTICS**Measured in circuit shown in Fig.3;  $T_{mb} = 25\text{ }^{\circ}\text{C}$ .

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_s$	symmetrical supply voltage OM961 OM991		$\pm 31$	–	$\pm 35$	V
			$\pm 40$	–	$\pm 45$	V
$I_{tot}$	total supply current	zero signal	–	100	–	mA
$P_o$	sinusoidal output power OM961	$d_{tot} < 0.2\%$ ; $f = 20\text{ Hz to } 20\text{ kHz}$ ; $R_L = 4\ \Omega$ ; note 1 note 2	60	–	–	W
		$d_{tot} < 0.2\%$ ; $f = 20\text{ Hz to } 20\text{ kHz}$ ; $R_L = 8\ \Omega$ note 2	–	–	60	W
	sinusoidal output power OM991	$d_{tot} < 0.2\%$ ; $f = 20\text{ Hz to } 20\text{ kHz}$ ; $R_L = 4\ \Omega$	120	–	–	W
		$d_{tot} < 0.2\%$ ; $f = 20\text{ Hz to } 20\text{ kHz}$ ; $R_L = 8\ \Omega$	–	–	90	W
	clipping level  OM961 OM991	$d_{tot} = 0.7\%$ ; $f = 1\text{ kHz}$ ; $R_L = 4\ \Omega$	–	75	–	W
100			–	135	W	
$d_{tot}$	total harmonic distortion	$P_o = 1\text{ W}$ ; $f = 1\text{ kHz}$	–	0.02	–	%
$d_{im}$	intermodulation distortion	$f_1 = 250\text{ Hz}$ ; $f_2 = 8\text{ kHz}$ amplitude ratio $V_{11}/V_{12} = 4/1$ $P_o = 1\text{ W}$	–	0.05	–	%
		$P_o = \text{rated value}$	–	0.1	–	%
$V_i$	input sensitivity OM961 OM991	$P_o = \text{rated value}$	1	–	1.4	V
			1.4	–	1.7	V
$R_i$	input impedance	determined by input circuitry	–	10	–	k $\Omega$
$G_o$	open loop gain		–	80	–	dB

**Notes**

1. Federal trade commission U.S.A.
2.  $P_o$  is stated as rated value.

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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$G_c$	closed loop gain		–	24	–	dB
f	frequency response	$P_o = \text{rated value} - 10 \text{ dB} (-1 \text{ dB})$	30	–	40000	Hz
$f_p$	power bandwidth	–3 dB	20	–	40000	Hz
S/N	signal to noise ratio	wide band; $P_o = 50 \text{ mW}$ ; unweighted	–	75	–	dB
		A-curve; $P_o = 50 \text{ mW}$ ; weighted	–	87	–	dB
$V_{off}$	DC output offset voltage		–	$\pm 20$	–	mV
RR	ripple rejection		65	–	–	dB
$Z_o$	output impedance		–	0.05	–	$\Omega$

## THERMAL CHARACTERISTICS

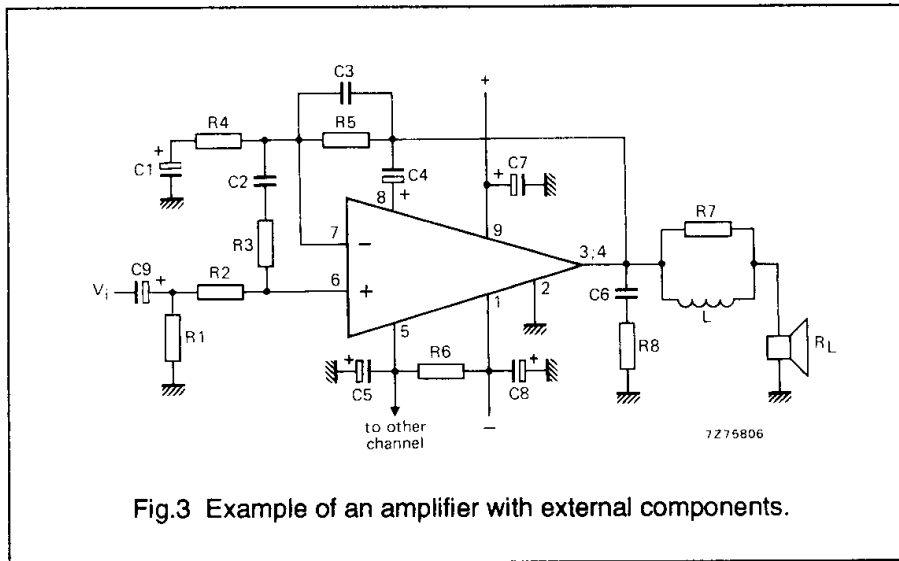
SYMBOL	PARAMETER	CONDITIONS	NOM.	UNIT
$R_{th \text{ h-a}}$	from heatsink to ambient	heatsink length a = 50 mm (note 1)	1.0	K/W
$R_{th \text{ h-a}}$	from heatsink to ambient	heatsink length a = 75 mm (note 1)	0.7	K/W
$R_{th \text{ h-a}}$	from heatsink to ambient	heatsink length a = 100 mm (note 1)	0.6	K/W
$R_{th \text{ h-a}}$	from heatsink to ambient	heatsink length a = 150 mm (note 1)	0.4	K/W
$R_{th \text{ mb-h}}$	from mounting base to heatsink	using heatsink compound	0.2	K/W

### Note

1. See Fig.5

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## List of components

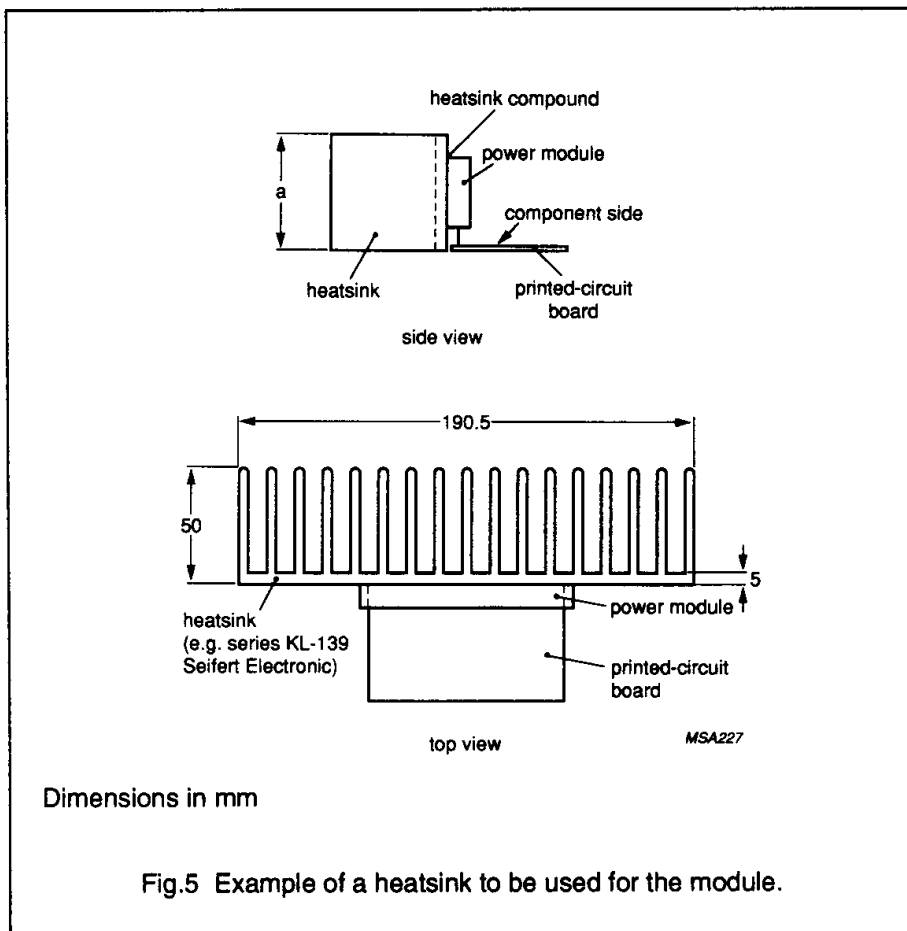
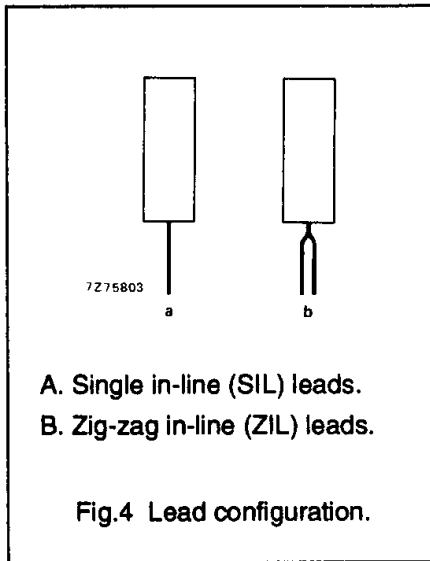
COMPONENT	DESCRIPTION	VALUE
R1	0.25 W resistor	10 k $\Omega$
R2	0.25 W resistor	4.7 k $\Omega$
R3	0.25 W resistor	300 $\Omega$
R4	0.25 W resistor	680 $\Omega$
R5	0.25 W resistor	10 k $\Omega$
R6	0.5 W resistor	22 $\Omega$
R7	0.25 W resistor	2.2 $\Omega$
R8	0.5 W resistor	10 $\Omega$
C1	10 V capacitor	47 $\mu$ F
C2	capacitor (10%)	270 pF
C3	capacitor (10%)	120 pF
C4	100 V capacitor	100 $\mu$ F
C5	63 V capacitor	470 $\mu$ F
C6	100 V capacitor	100 nF
C7	63 V capacitor	10 $\mu$ F
C8	63 V capacitor	10 $\mu$ F
C9	63 V capacitor	1 $\mu$ F
L	inductor	4 $\mu$ H
R <sub>L</sub>	load resistance	4 or 8 $\Omega$

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## MOUNTING RECOMMENDATIONS

The modules are delivered with SIL (single in-line) leads but may also be bent to ZIL (zig-zag in-line) configuration.



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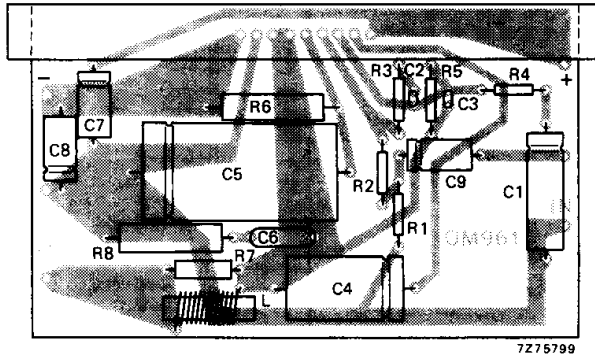


Fig.6 Component side of SIL version showing component layout.

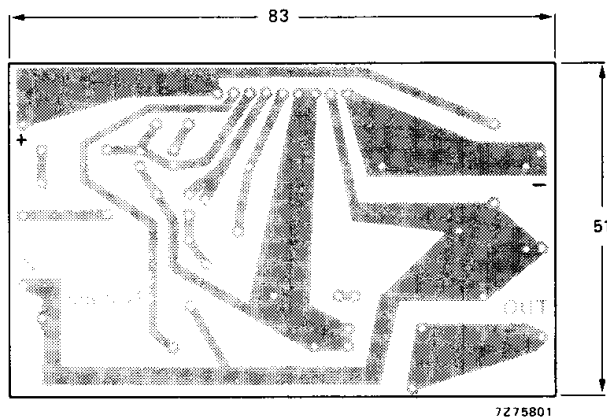
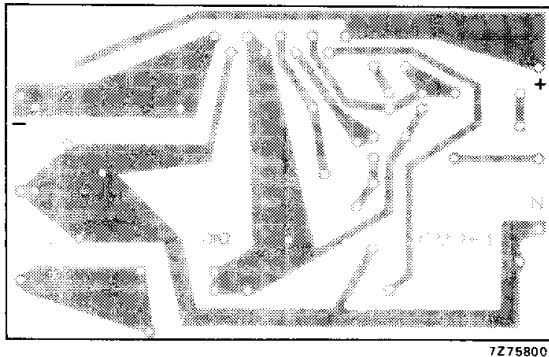


Fig.7 Track side of SIL version.

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For component layout see Fig.6.

Fig.8 Component side of ZIL version.

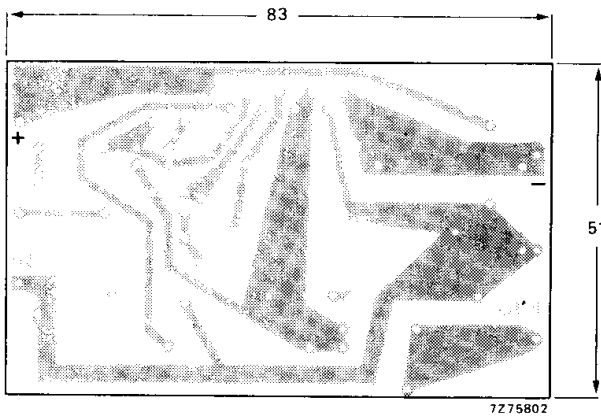


Fig.9 Track side of ZIL version.



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### PACKAGE OUTLINE

