

## INTEGRATED CIRCUIT AMPLIFIER FOR IN THE EAR HEARING AID

Monolithic semiconductor integrated-circuit amplifier in a plastic envelope, primarily intended for in the ear hearing aids.

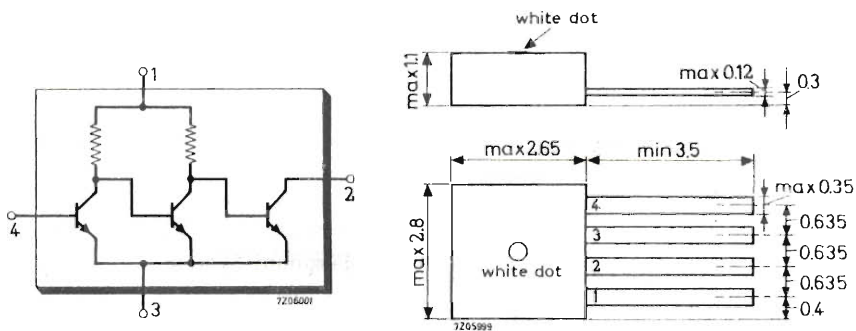
### QUICK REFERENCE DATA

For meaning of symbols: see page 3 fig. 1.

Supply voltage	$V_{1-3}$	max.	5 V
Output current	$I_2$	max.	5 mA
Total power dissipation up to $T_{amb} = 25^\circ C$	$P_{tot}$	max.	25 mW
In a practical circuit as given at page 3 fig. 1:			
Total supply current	$I_{tot}$	typ.	1 mA
Transducer gain	$G_{TR}$	>	75 dB
		typ.	80 dB
Power output at $d_{tot} = 10\%$	$P_o$	>	0.2 mW
Frequency cut-off (-3 dB)	$f_c$	>	20 kHz

### MECHANICAL DATA

Dimensions in mm



The sealing of the plastic envelope withstands the accelerated damp heat test of IEC recommendation 68-2 (test D, severity IV, 6 cycles). 7Z3 0744

## RATINGS (Limiting values)<sup>1)</sup>

(for meaning of symbols see page 3, fig. 1)

### Voltages

Supply voltage	$V_{1-3}$	max.	5 V
Output voltage	$V_{2-3}$	max.	5 V <sup>2)</sup>
Input voltage	$-V_{4-3}$	max.	5 V

### Currents

Output current	$I_2$	max.	5 mA
Input current	$I_4$	max.	5 mA

### Power dissipation

Total power dissipation (See page C)	$P_{tot}$	max.	25 mW
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### Temperatures

Storage temperature	$T_{stg}$	-20 to +80 °C
Ambient temperature	$T_{amb}$	max. 80 °C

**CHARACTERISTICS** at  $V_{1-3} = 1.3$  V and  $T_{amb} = 25$  °C unless otherwise specified

$I_2$  see figure 1

<u>Supply current</u> (no signal)	$I_{tot}$	<	1.2 mA
	$I_1$	typ.	0.34 mA
<u>Transducer gain</u> <sup>3)</sup> at $f = 1$ kHz	$G_{tr}$	>	75 dB
		typ.	80 dB
$V_{1-3} = 1.3$ V; $T_{amb} = -10$ °C	$G_{tr}$	typ.	78 dB
$V_{1-3} = 1.1$ V; $T_{amb} = 25$ °C	$G_{tr}$	typ.	76 dB

<sup>1)</sup> Limiting values according to the Absolute Maximum System as defined in IEC publication 134.

<sup>2)</sup> This value may be exceeded during inductive switch-off for transient energies < 10  $\mu$ Ws.

<sup>3)</sup> The transducer gain is defined as the ratio of the output power in the load of  $|Z| = 1.5$  k $\Omega$  and the available input power of the source with  $R_S = 5$  k $\Omega$

$$G_{tr} = \frac{P_o}{V_1^2/4R_S}$$

**CHARACTERISTICS (continued)**

at  $V_{1-3} = 1.3 \text{ V}$  and  $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$  unless otherwise specified

$I_2$  see figure 1

Total distortion at  $f = 1 \text{ kHz}$

$P_O = 100 \text{ } \mu\text{W}$   $d_{\text{tot}}$  typ. 4 %

< 6 %

$P_O = 200 \text{ } \mu\text{W}$   $d_{\text{tot}}$  < 10 %

Noise figure at  $R_S = 5 \text{ k}\Omega$

Bandwidth  $f = 400$  to  $3200 \text{ Hz}$   $F$  < 6 dB

Frequency cut-off (-3 dB)  $f_c$  > 20 kHz

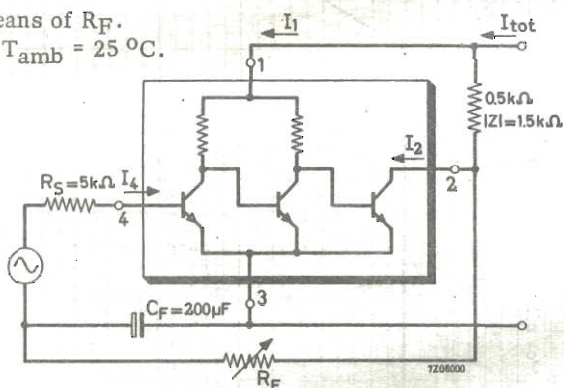
> 50 kHz

Value of  $R_F$  to adjust  $I_2$  at  $0.7 \text{ mA}$   $R_F$  typ. 300 k $\Omega$

< 700 k $\Omega$

$I_2 = 0.7 \text{ mA}$ ,  
adjusted by means of  $R_F$ .  
 $V_{1-3} = 1.3 \text{ V}$ ;  $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ .

Fig. 1

**SOLDERING RECOMMENDATION****A: Iron soldering**

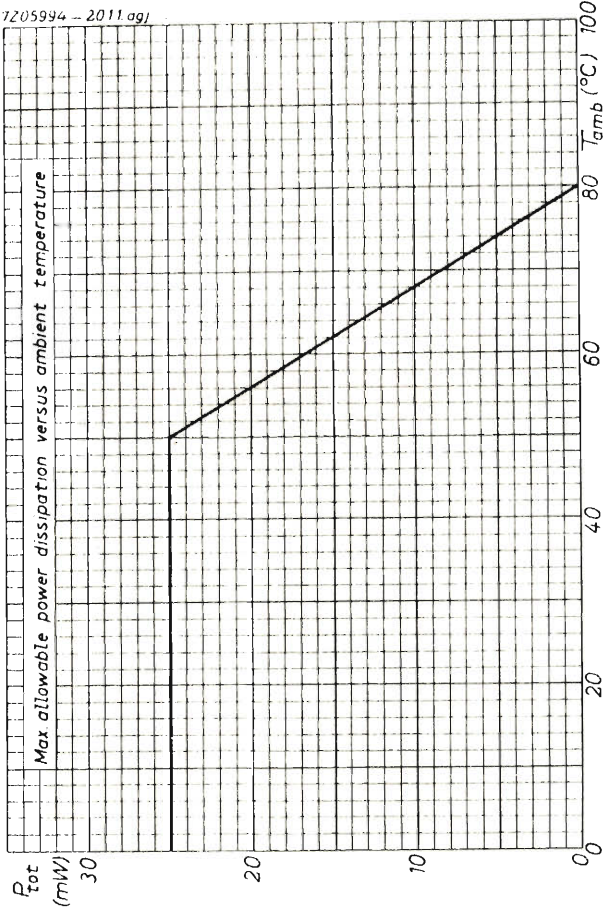
At a maximum iron temperature of  $300 \text{ }^\circ\text{C}$  the maximum permissible soldering time is 3 seconds, provided the soldering spot is at least  $0.5 \text{ mm}$  from the seal and the leads are not soldered at the same time. Soldering in immediate subsequence is allowed.

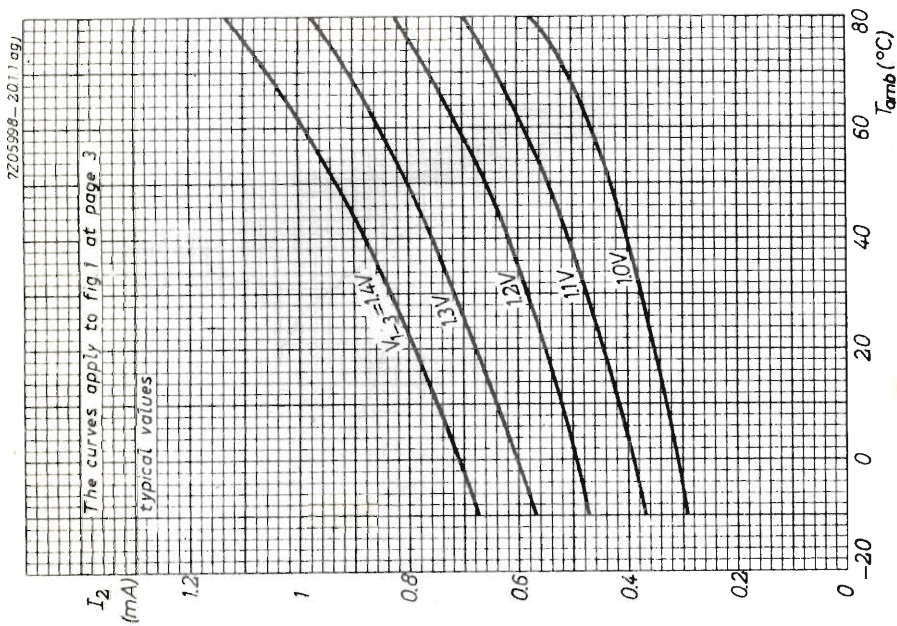
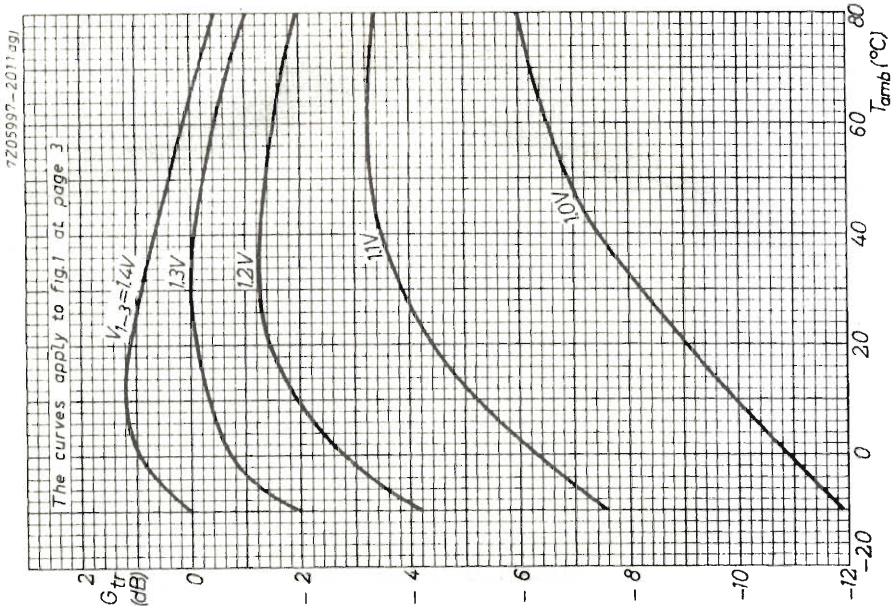
**B: Dip soldering**

At a maximum solder temperature of  $250 \text{ }^\circ\text{C}$  the maximum permissible soldering time is 3 seconds, provided the soldering spot is at least  $0.5 \text{ mm}$  from the seal.

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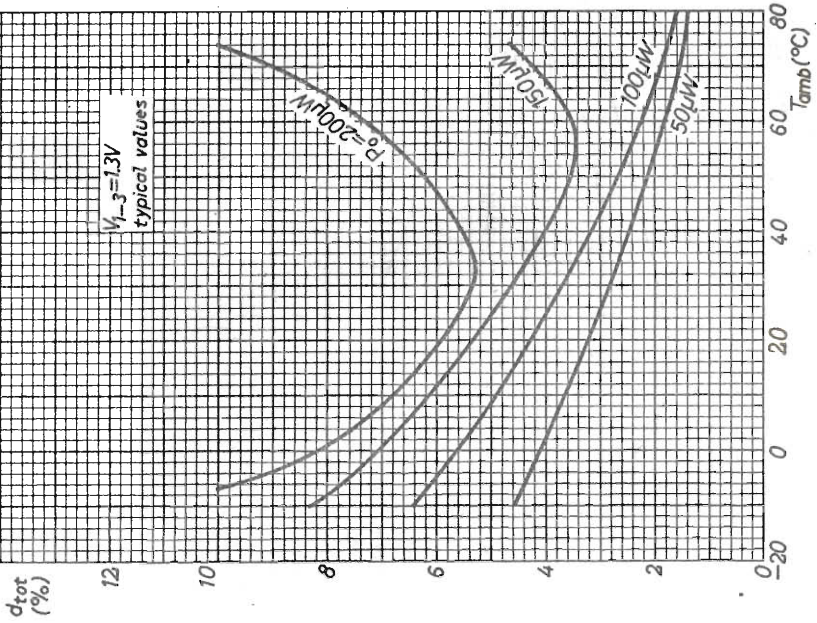






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The curves apply to fig.1 at page 3



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The curves apply to fig.1 at page 3

