

# THOMSON-EFCIS

## Integrated Circuits

### TBA820

#### AF AMPLIFIER

The TBA820 is a monolithic integrated audio power amplifier.  
Its main features:

- working with supply voltages from 3 to 16 volts,
  - low idle current (4 mA typ.),
  - high efficiency,
- make it especially suitable for mobile, battery operated equipments.

Other features include:

- output power up to 2W without any external heat sink,
- high input impedance, low bias current,
- high ripple rejection,
- no thermal runaway,
- no cross-over distortion,
- few external components required.

The TBA820 is supplied in a quad-in-line, 14 leads package.

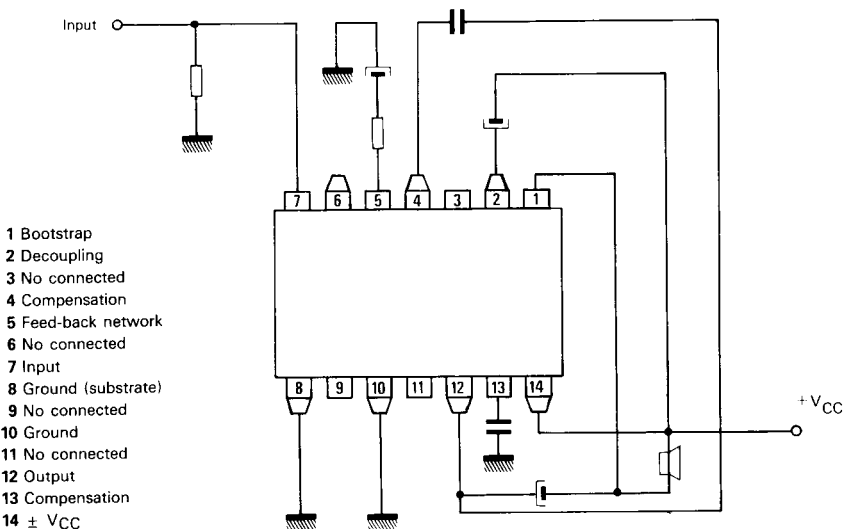
#### AF AMPLIFIER

#### CASE CB-21



PLASTIC-PACKAGE

#### PIN CONFIGURATION



NT7905-A 1/8

#### THOMSON-EFCIS

Sales headquarters  
45, av. de l'Europe - 78140 VELIZY - FRANCE  
Tel.: (3) 946 97 19 / Telex : 204780 F

 **THOMSON-CSF**  
COMPONENTS

**ABSOLUTE RATINGS (LIMITING VALUES)**

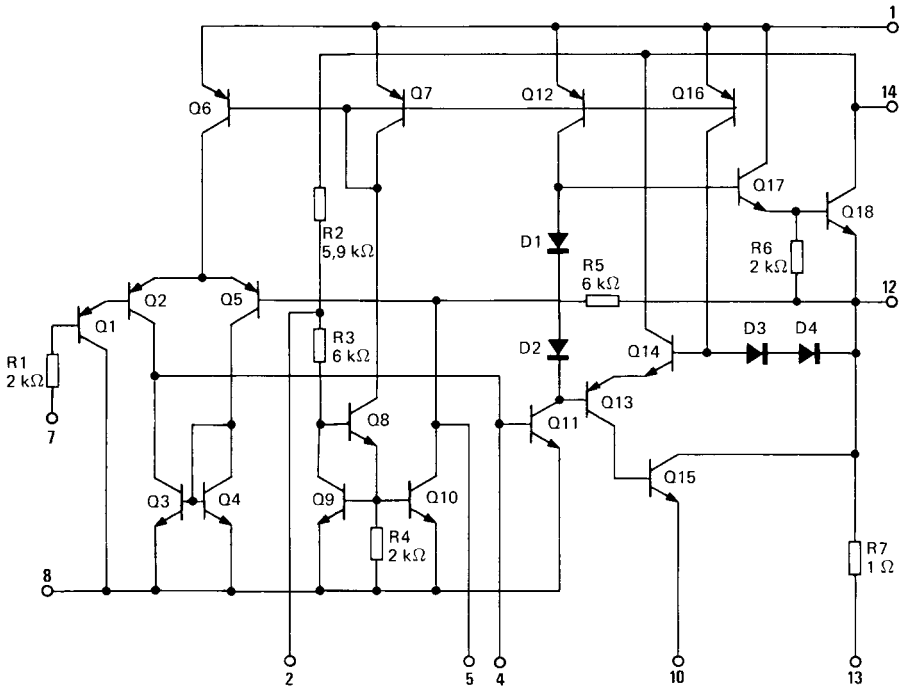
Rating	Symbol	Value	Unit
Supply voltage	V <sub>CC</sub>	16	V
Output peak current	I <sub>O</sub>	1.5	A
Storage temperature	T <sub>stg</sub>	- 40, + 150	°C
Junction temperature	T <sub>j</sub>	+ 150	°C

*Min T<sub>j</sub> = -40 from T<sub>stg</sub>*

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Value	Unit
Junction-ambient thermal resistance	R <sub>th(j-a)</sub>	80	°C/W

**SCHEMATIC DIAGRAM**



## ELECTRICAL CHARACTERISTICS

T<sub>amb</sub> = 25°C (note 1)

(Unless otherwise stated)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V <sub>CC</sub>	3	—	16	V
Quiescent output voltage V <sub>CC</sub> = 9 V	Pin 12 V <sub>O</sub>	4	4.5	5	V
Quiescent drain current V <sub>CC</sub> = 9 V	I <sub>CC</sub>	—	4	—	mA
Bias current V <sub>CC</sub> = 9 V	Pin 7 I	—	0.1	—	μA
Output power V <sub>CC</sub> = 12 V ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 120 Ω ; d = 10 % ; f = 1 kHz V <sub>CC</sub> = 9 V ; R <sub>L</sub> = 4 Ω ; R <sub>f</sub> = 120 Ω ; d = 10 % ; f = 1 kHz V <sub>CC</sub> = 9 V ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 120 Ω ; d = 10 % ; f = 1 kHz V <sub>CC</sub> = 6 V ; R <sub>L</sub> = 4 Ω ; R <sub>f</sub> = 120 Ω ; d = 10 % ; f = 1 kHz V <sub>CC</sub> = 3.5 V ; R <sub>L</sub> = 4 Ω ; R <sub>f</sub> = 120 Ω ; d = 10 % ; f = 1 kHz	P <sub>O</sub>	—	2 1.6 1.2 0.75 0.22	—	W
Input sensitivity V <sub>CC</sub> = 9 V ; P <sub>O</sub> = 1.2 W ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 33 Ω ; f = 1 kHz V <sub>CC</sub> = 9 V ; P <sub>O</sub> = 1.2 W ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 120 Ω ; f = 1 kHz V <sub>CC</sub> = 9 V ; P <sub>O</sub> = 50 mW ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 33 Ω ; f = 1 kHz V <sub>CC</sub> = 9 V ; P <sub>O</sub> = 50 mW ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 120 Ω ; f = 1 kHz	S	—	16 60 3.5 12	—	mV
Input resistance	R <sub>I</sub>	—	5	—	MΩ
Frequency response (-3 dB) V <sub>CC</sub> = 9 V ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 120 Ω ; C <sub>B</sub> = 680 pF V <sub>CC</sub> = 9 V ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 120 Ω ; C <sub>B</sub> = 220 pF	B	25 to 7.000 25 to 20.000			Hz
Distortion V <sub>CC</sub> = 9 V ; P <sub>O</sub> = 500 mW ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 33 Ω ; f = 1 kHz V <sub>CC</sub> = 9 V ; P <sub>O</sub> = 500 mW ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 120 Ω ; f = 1 kHz	d	—	0.8 0.4	—	%
Voltage gain (open loop) V <sub>CC</sub> = 9 V ; R <sub>L</sub> = 8 Ω ; f = 1 kHz	A <sub>V</sub>	—	75	—	dB
Voltage gain (closed loop) V <sub>CC</sub> = 9 V ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 33 Ω ; f = 1 kHz V <sub>CC</sub> = 9 V ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 120 Ω ; f = 1 kHz	A <sub>V</sub>	—	45 34	—	dB
Input noise voltage V <sub>CC</sub> = 9 V ; B (-3 dB) = 25 to 20.000 Hz	V <sub>n</sub>	—	3	—	μV <sub>eff</sub>
Input noise current V <sub>CC</sub> = 9 V ; B (-3 dB) = 25 to 20.000 Hz	I <sub>n</sub>	—	0.4	—	
Signal to noise ratio V <sub>CC</sub> = 9 V ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 120 Ω ; R <sub>1</sub> = 100 kΩ P <sub>O</sub> = 1.2 W ; B (-3 dB) = 25 to 20.000 Hz		—	70	—	dB
Supply voltage rejection (see fig. 2) V <sub>CC</sub> = 9 V ; R <sub>L</sub> = 8 Ω ; R <sub>f</sub> = 120 Ω ; C <sub>6</sub> = 50 μF f (ripple) = 100 Hz	SVR	—	42	—	dB

Note 1: The characteristics above were obtained using the circuit shown in fig. 1.

## TEST AND APPLICATION CIRCUITS

FIGURE 1 — LOAD CONNECTED TO THE SUPPLY VOLTAGE

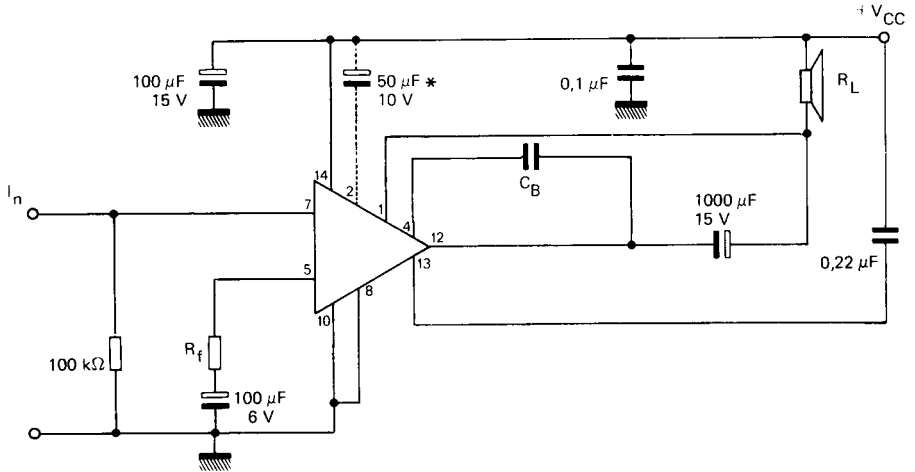
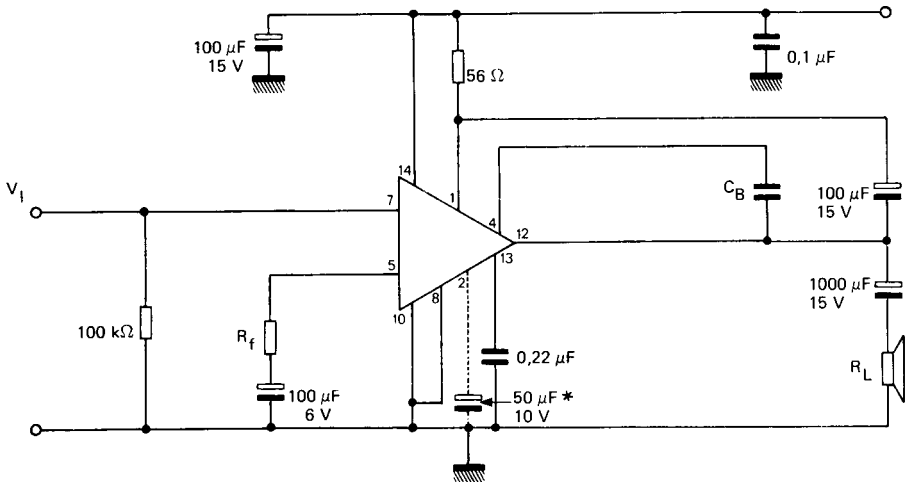
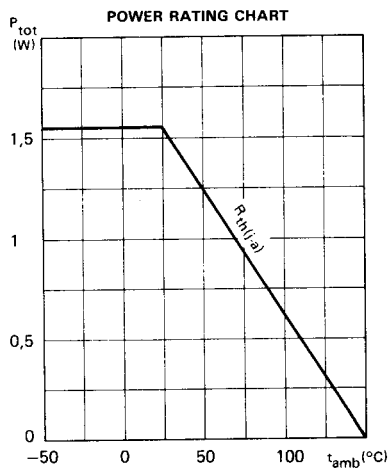
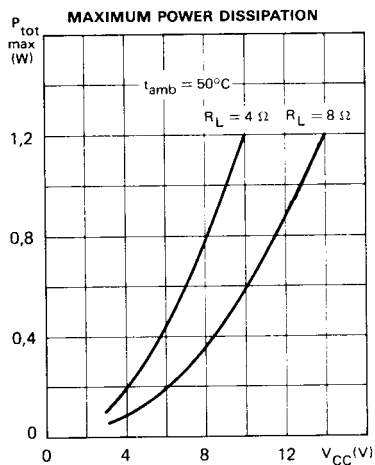
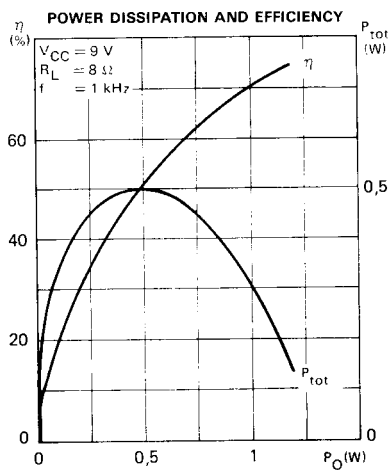
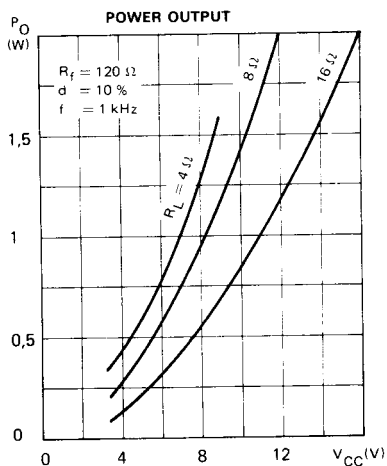


FIGURE 2 — LOAD CONNECTED TO GROUND

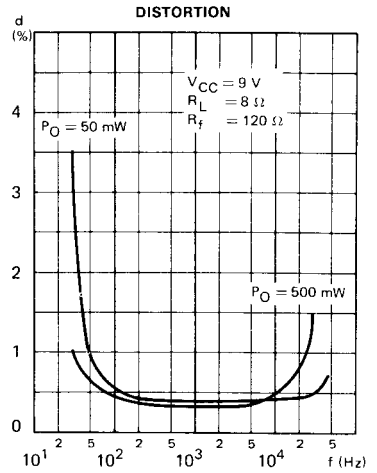
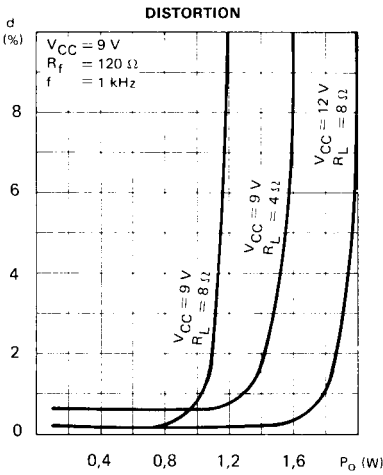
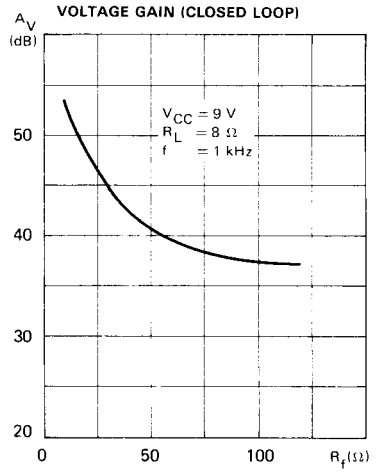
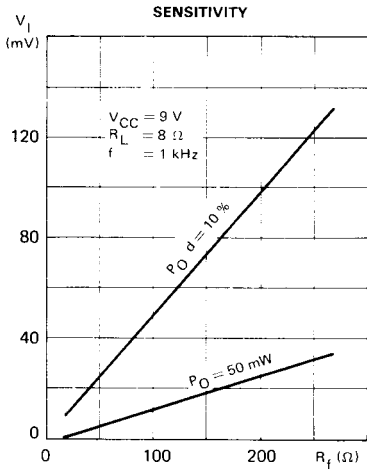


\*Must be used when high ripple rejection is requested.

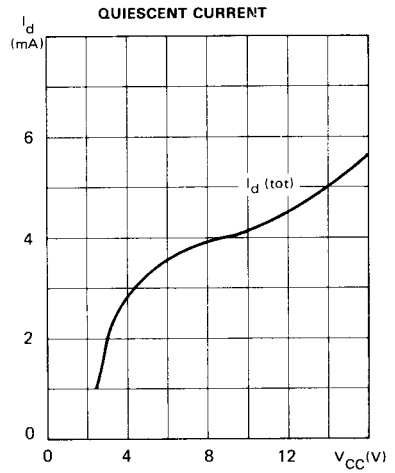
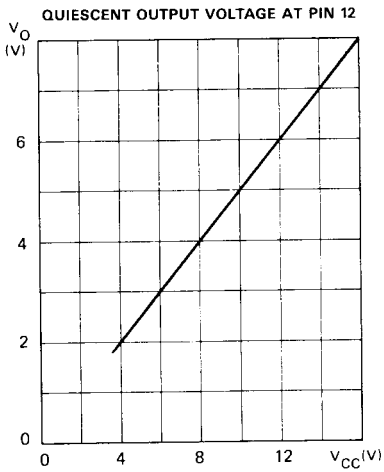
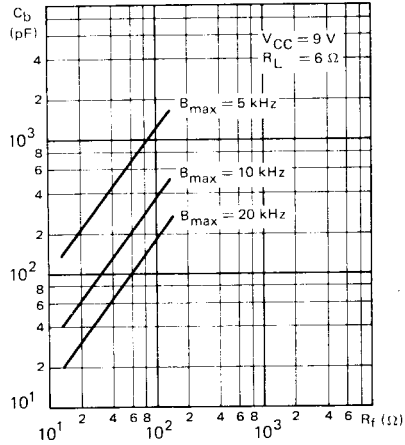
## TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



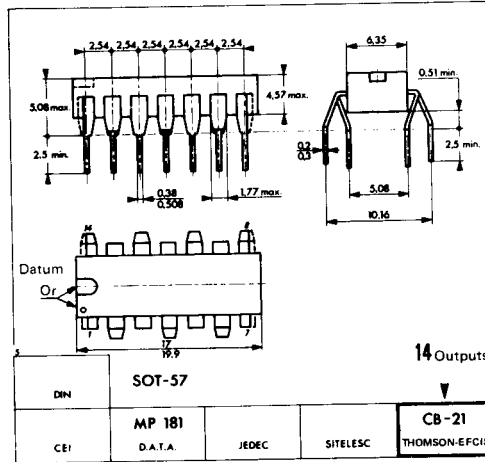
## TYPICAL CHARACTERISTICS

TYPICAL VALUE OF  $C_B$  VERSUS  $R_f$  AND B

CASE CB-21



PLASTIC PACKAGE



These specifications are subject to change without notice.  
Please inquire with our sales offices about the availability of the different packages.