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,

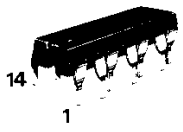
make it especially suitable for mobile, battery operated equipments.
Other features include:

- 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.

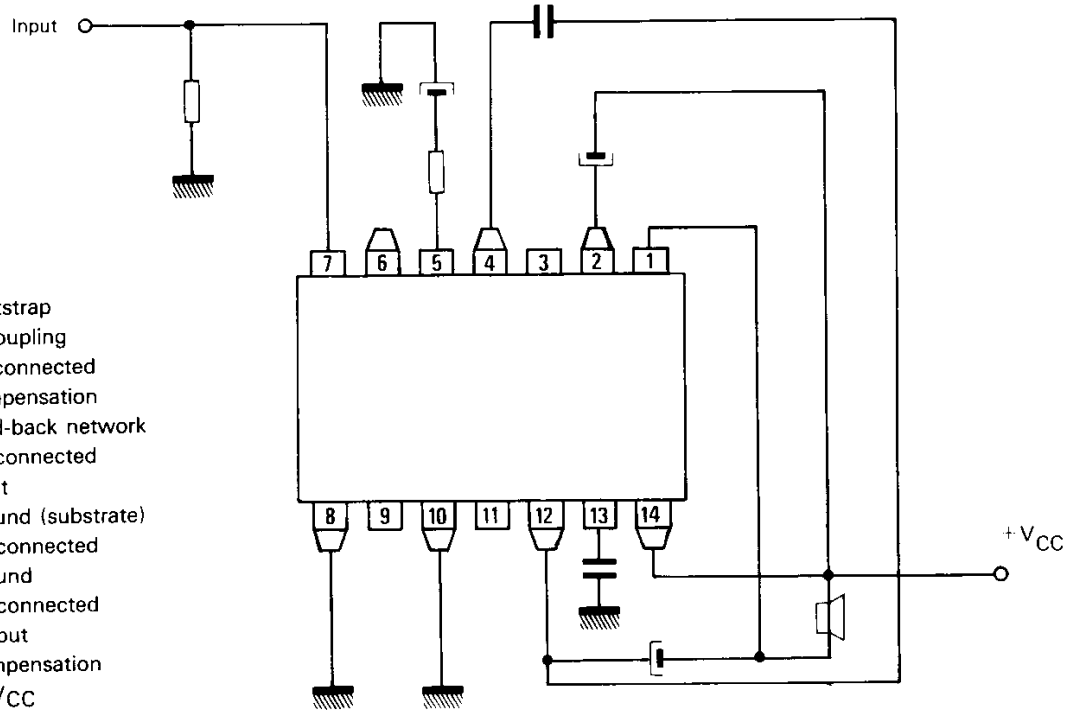
AF AMPLIFIER

CASE CB-21



PLASTIC-PACKAGE

PIN CONFIGURATION



1 Bootstrap
2 Decoupling
3 No connected
4 Compensation
5 Feed-back network
6 No connected
7 Input
8 Ground (substrate)
9 No connected
10 Ground
11 No connected
12 Output
13 Compensation
14 ± V_{CC}

NT7905-A 1/8

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THOMSON-CSF COMPONENTS

ABSOLUTE RATINGS (LIMITING VALUES)

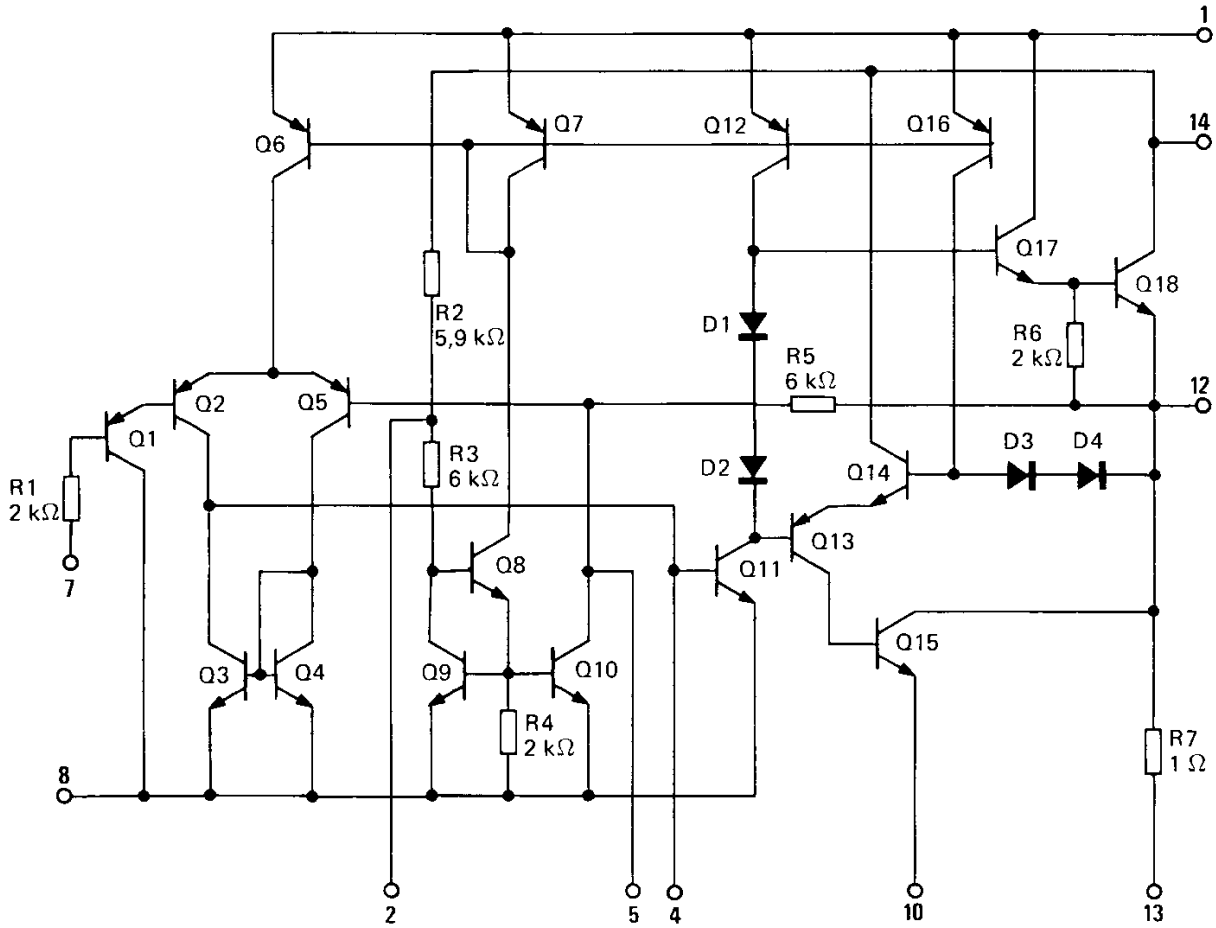
Rating	Symbol	Value	Unit
Supply voltage	V_{CC}	16	V
Output peak current	I_O	1.5	A
Storage temperature	T_{stg}	− 40, + 150	°C
Junction temperature	Tj	+ 150	°C

Min Tj = -40 for TBC

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Junction-ambient thermal resistance	$R_{th(j-a)}$	80	°C/W

SCHEMATIC DIAGRAM



ELECTRICAL CHARACTERISTICS

T_{amb} = 25 °C (note 1) (Unless otherwise stated)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{CC}	3	–	16	V
Quiescent output voltage Pin 12 V_{CC} = 9 V	V_O	4	4.5	5	V
Quiescent drain current V_{CC} = 9 V	I_{CC}	–	4		mA
Bias current Pin 7 V_{CC} = 9 V	I	–	0.1	–	μA
Output power	P_O				W
V_{CC} = 12 V ; R_L = 8 Ω ; R_f = 120 Ω ; d = 10 % ; f = 1 kHz		–	2	–	
V_{CC} = 9 V ; R_L = 4 Ω ; R_f = 120 Ω ; d = 10 % ; f = 1 kHz		–	1.6	–	
V_{CC} = 9 V ; R_L = 8 Ω ; R_f = 120 Ω ; d = 10 % ; f = 1 kHz		–	1.2	–	
V_{CC} = 6 V ; R_L = 4 Ω ; R_f = 120 Ω ; d = 10 % ; f = 1 kHz		–	0.75	–	
V_{CC} = 3.5 V ; R_L = 4 Ω ; R_f = 120 Ω ; d = 10 % ; f = 1 kHz		–	0.22	–	
Input sensitivity	S				mV
V_{CC} = 9 V ; P_O = 1.2 W ; R_L = 8 Ω ; R_f = 33 Ω ; f = 1 kHz		–	16	–	
V_{CC} = 9 V ; P_O = 1.2 W ; R_L = 8 Ω ; R_f = 120 Ω ; f = 1 kHz		–	60	–	
V_{CC} = 9 V ; P_O = 50 mW ; R_L = 8 Ω ; R_f = 33 Ω ; f = 1 kHz		–	3.5	–	
V_{CC} = 9 V ; P_O = 50 mW ; R_L = 8 Ω ; R_f = 120 Ω ; f = 1 kHz		–	12	–	
Input resistance	R_I	–	5	–	MΩ
Frequency response (– 3 dB) V_{CC} = 9 V ; R_L = 8 Ω ; R_f = 120 Ω ; C_B = 680 pF V_{CC} = 9 V ; R_L = 8 Ω ; R_f = 120 Ω ; C_B = 220 pF	B	25 to 7.000 25 to 20.000			Hz
Distortion	d				%
V_{CC} = 9 V ; P_O = 500 mW ; R_L = 8 Ω ; R_f = 33 Ω ; f = 1 kHz		–	0.8	–	
V_{CC} = 9 V ; P_O = 500 mW ; R_L = 8 Ω ; R_f = 120 Ω ; f = 1 kHz		–	0.4	–	
Voltage gain (open loop) V_{CC} = 9 V ; R_L = 8 Ω ; f = 1 kHz	A_V	–	75	–	dB
Voltage gain (closed loop)	A_V				dB
V_{CC} = 9 V ; R_L = 8 Ω ; R_f = 33 Ω ; f = 1 kHz		–	45	–	
V_{CC} = 9 V ; R_L = 8 Ω ; R_f = 120 Ω ; f = 1 kHz		–	34	–	
Input noise voltage V_{CC} = 9 V ; B (– 3 dB) = 25 to 20.000 Hz	V_n	–	3	–	μV_{eff}
Input noise current V_{CC} = 9 V ; B (– 3 dB) = 25 to 20.000 Hz	I_n	–	0.4	–	
Signal to noise ratio V_{CC} = 9 V ; R_L = 8 Ω ; R_f = 120 Ω ; R1 = 100 kΩ P_O = 1.2 W ; B (– 3 dB) = 25 to 20.000 Hz		–	70	–	dB
Supply voltage rejection (see fig. 2) V_{CC} = 9 V ; R_L = 8 Ω ; R_f = 120 Ω ; C6 = 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

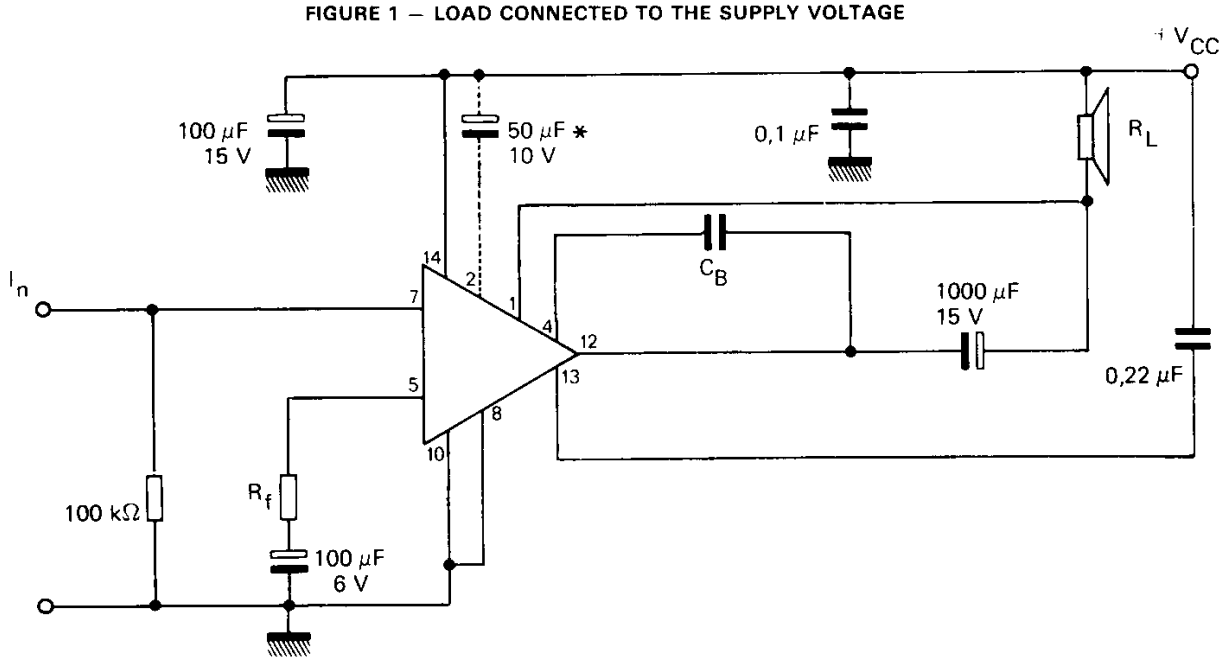
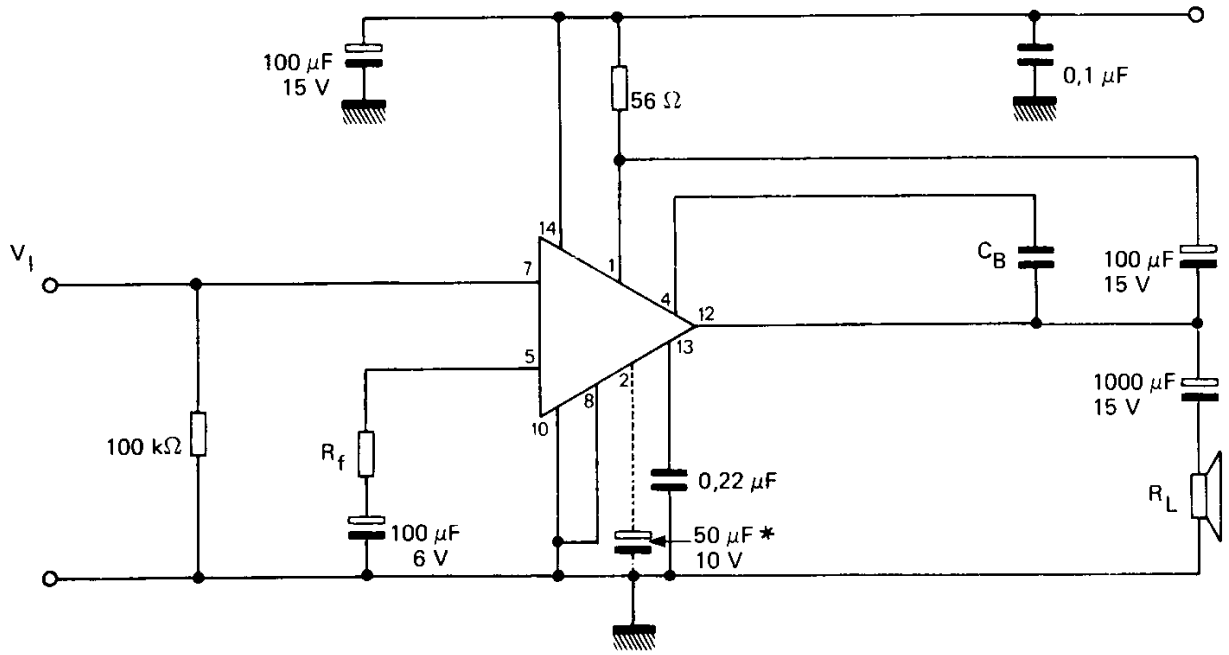


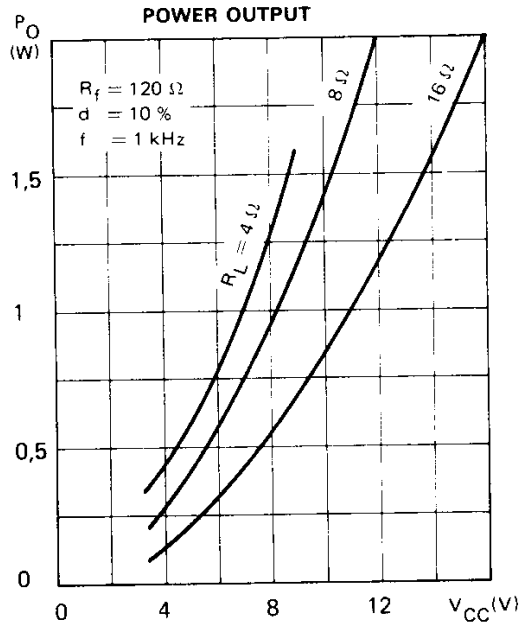
FIGURE 2 – LOAD CONNECTED TO GROUND



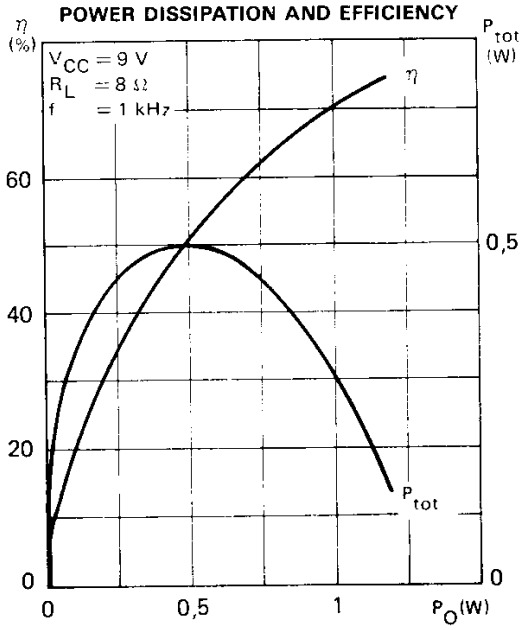
*Must be used when high ripple rejection is requested.

TYPICAL CHARACTERISTICS

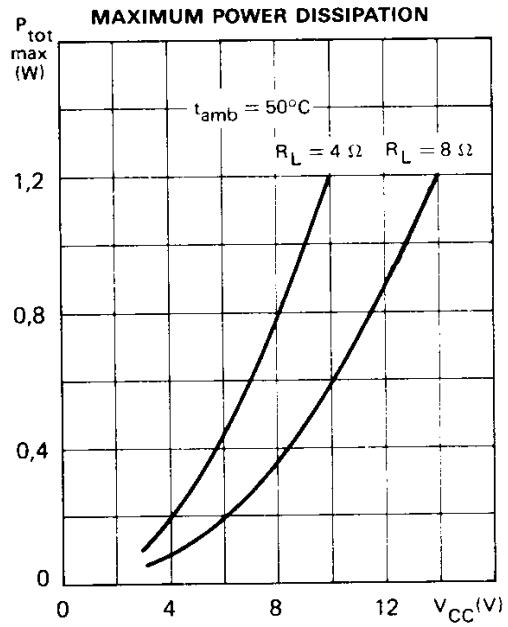
POWER OUTPUT



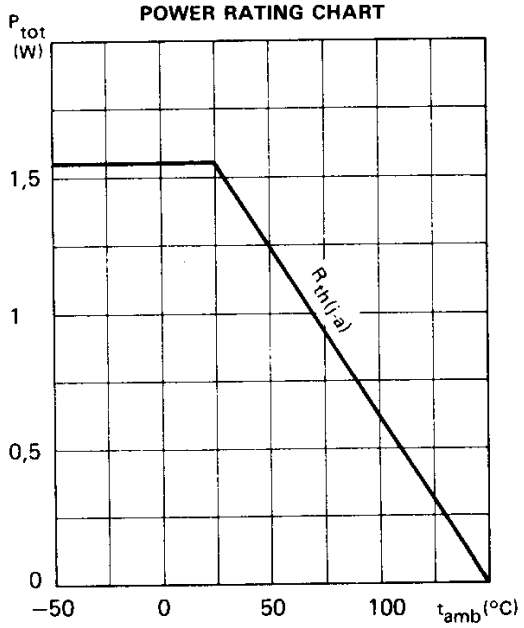
POWER DISSIPATION AND EFFICIENCY



MAXIMUM POWER DISSIPATION

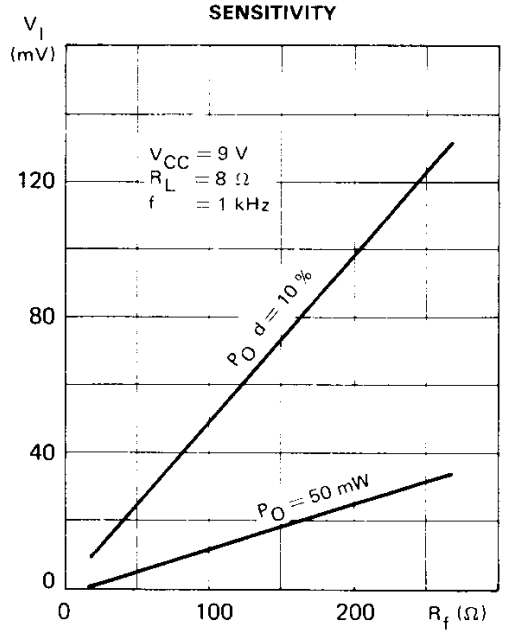


POWER RATING CHART

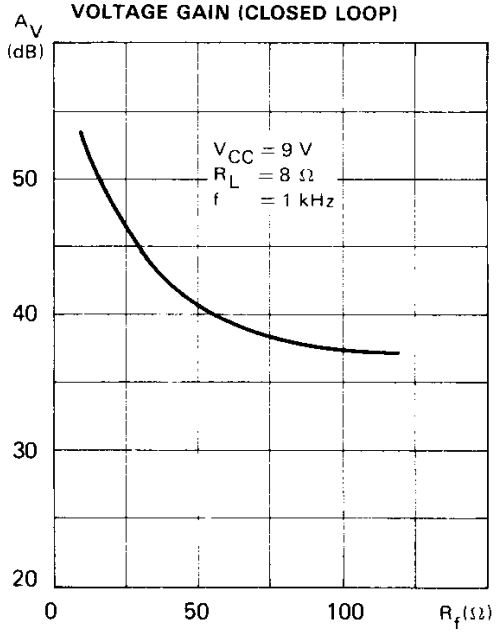


TYPICAL CHARACTERISTICS

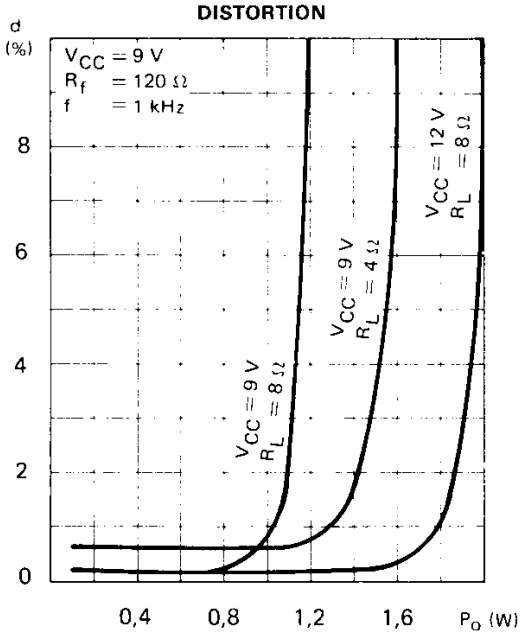
SENSITIVITY



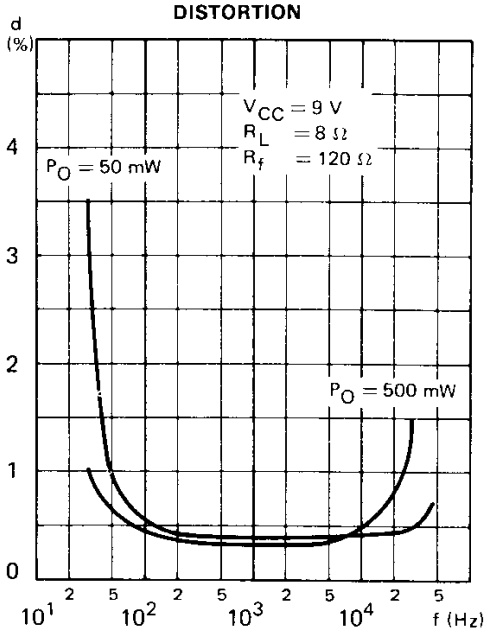
VOLTAGE GAIN (CLOSED LOOP)



DISTORTION

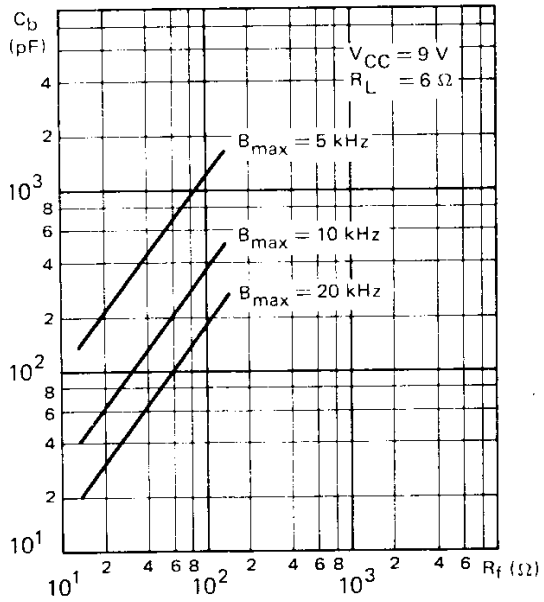


DISTORTION

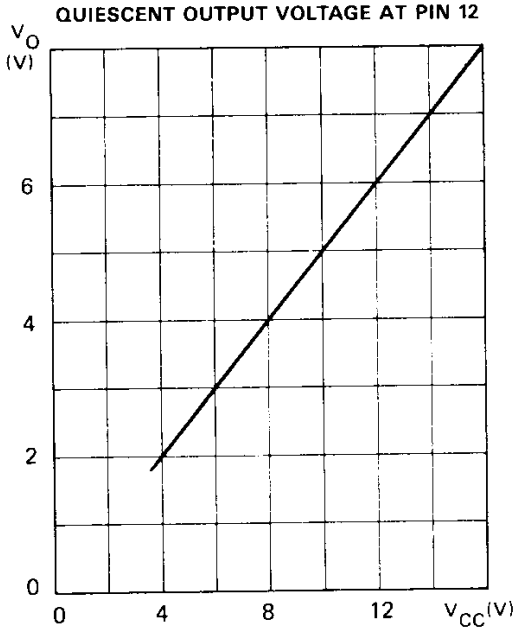


TYPICAL CHARACTERISTICS

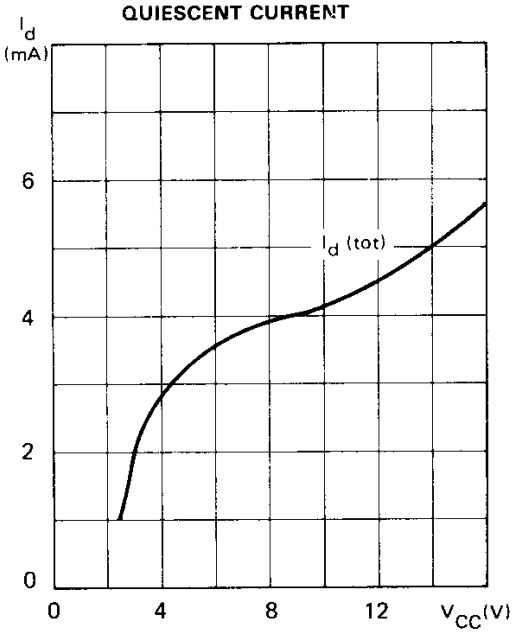
TYPICAL VALUE OF C_B VERSUS R_f AND B



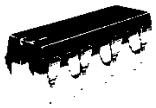
QUIESCENT OUTPUT VOLTAGE AT PIN 12



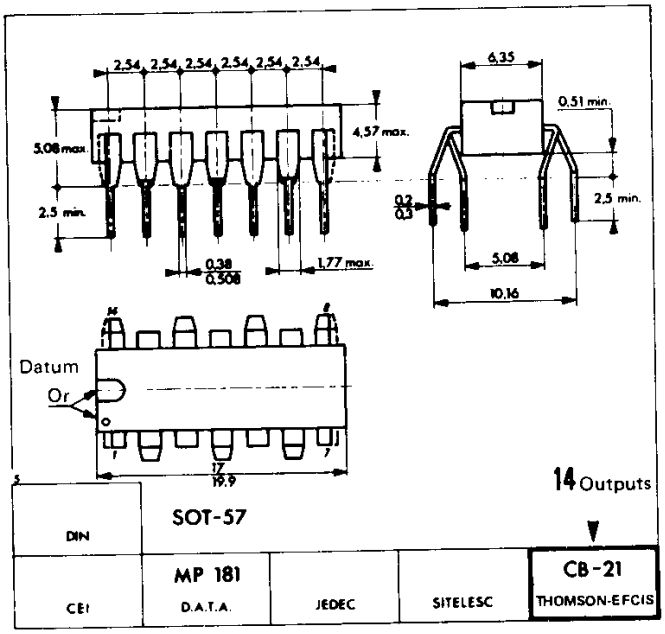
QUIESCENT CURRENT



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.