TELEFUNKEN electronic
Creative Technologies

TDA 2030

T-74-05-01

Monolithic Integrated Circuit

Application: Audio power amplifier for radios and television receivers

Features:

- Output stage short circuit protected
- Thermal shut down protected
- Characteristic specification according to DIN 45500
- Simple mounting due to ≈ TO-220 casing

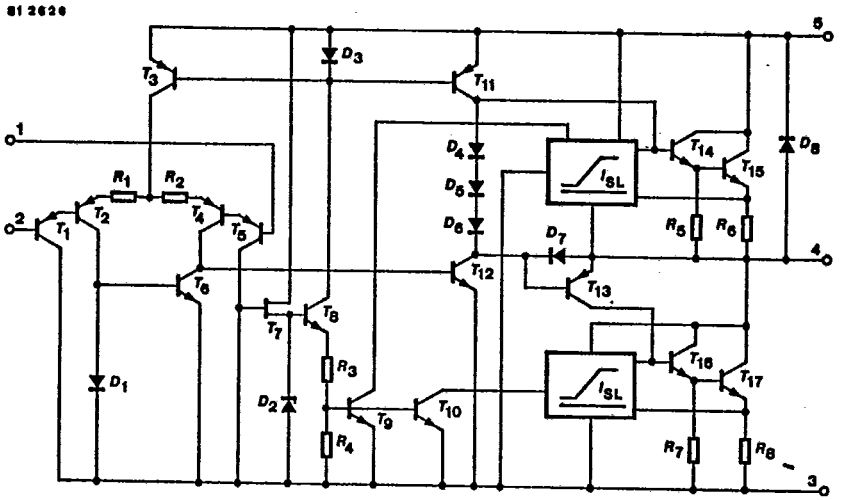


Fig. 1 Diagram and pin connections, Pin 3 connected with metallic surface

Absolute maximum ratings

Reference point: Common power supply

Supply voltage	Pin 5–3	$\pm V_S$	18	V
Input voltage	Pin 1+2	V_I	V_S	V
Differential input voltage	Pin1–2	$\pm V_{ID}$	15	V
Peak output current (repetitive)	Pin 4	I_{OM}	3.5	A
Power dissipation $T_{case} = 90°C$	Fig. 2	P_{tot}	20	W
Junction temperature		T_j	+150	°C
Storage temperature range		T_{stg}	−40...+150	°C

TDA 2030

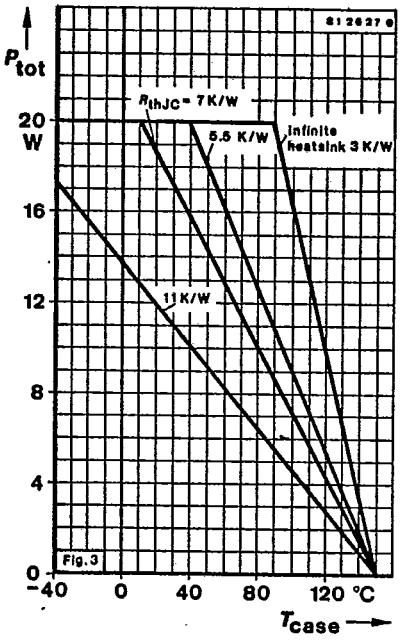
T-74-05-01

				Min.	Typ.	Max.	
Thermal resistance							
Junction case			R_{thJC}			3	K/W
Electrical characteristics							
$\pm V_S$ = 14 V, G_v = 30 dB, f = 1 kHz, T_{amb} = 25°C							
Reference point: Common power supply, unless otherwise specified							
Supply voltage		Pin 5–3	$\pm V_S$	6		18	V
Quiescent drain current							
$\pm V_S$ = 18 V, R_L = 4 Ω	Fig. 4	Pin 5	I_{SB}		40	60	mA
Total supply current							
P_o = 14 W, R_L = 4 Ω		Pin 5	I_{Stot}		900		mA
P_o = 9 W, R_L = 8 Ω		Pin 5	I_{Stot}		515		mA
Thermal shut down							
P_{tot} = 12 W			T_{case}	110			°C
Supply voltage rejection ratio							
R_L = 4 Ω, V_{hum} = 0.5 V,							
f_{hum} = 100 Hz, R_G = 22 kΩ	Fig. 5		SVR	40	50		dB
Input offset voltage							
$\pm V_S$ = 18 V		Pin 1-2	$\pm V_{IO}$		2	20	mV
Input offset current							
$\pm V_S$ = 18 V		Pin 1, 2	$\pm I_{IO}$		20	200	nA
Input current							
$\pm V_S$ = 18 V		Pin 1, 2	I_I		0.2	1	μA
Output offset voltage							
$\pm V_S$ = 18 V		Pin 4	$\pm V_{OO}$		2.5	22	mV
Output power	Fig. 8, 9						
f = 1 kHz, d = 0.5%, R_L = 4 Ω			P_o	12	14		W
R_L = 8 Ω			P_o	8	9		W
d = 10%, R_L = 4 Ω			P_o		18		W
R_L = 8 Ω			P_o		11		W
Input voltage	Fig.10,11	Pin 1					
P_o = 12 W, R_L = 4 Ω			V_i		215		mV
P_o = 8 W, R_L = 8 Ω			V_i		250		mV
Input resistance		Pin 1	R_i	0.5	5		MΩ
Band width (–3 dB)	Fig. 6, 7						
V_S = 18 V, R_L = 4 Ω, C_3 = 1000 pF			B		10...140 000		Hz
Distortion	Fig.12,13						
P_o = 0.1...12 W, R_L = 4 Ω			d		0.2	0.5	%
P_o = 0.1... 8 W, R_L = 8 Ω			d		0.1	0.5	%

TDA 2030

T-74-05-01

			Min.	Typ.	Max.	
Voltage gain						
Open loop		G_{vo}		90		dB
Closed loop	Fig. 3	G_{vf}		30		dB
Input noise voltage						
B = 10...25000 Hz, R_L = 4 Ω		V_{ni}		3	10	μV
Input noise current						
B = 10...25000 Hz, R_L = 4 Ω		I_{ni}		80	200	pA



Thermal Switching off

The protective circuit will be effective against thermal overload of the IC; therefore, the heat sink should be dimensioned only for normal operating conditions.

Short circuit protection

The output stage of the integrated circuit is protected against overload due to short circuit of the load resistance.

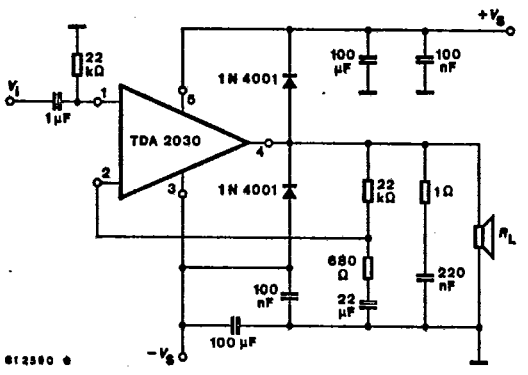
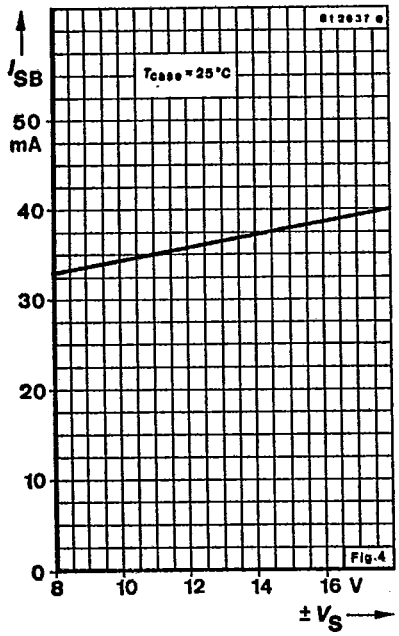
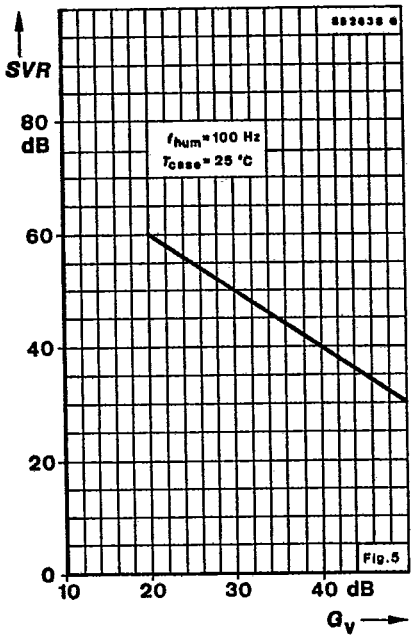


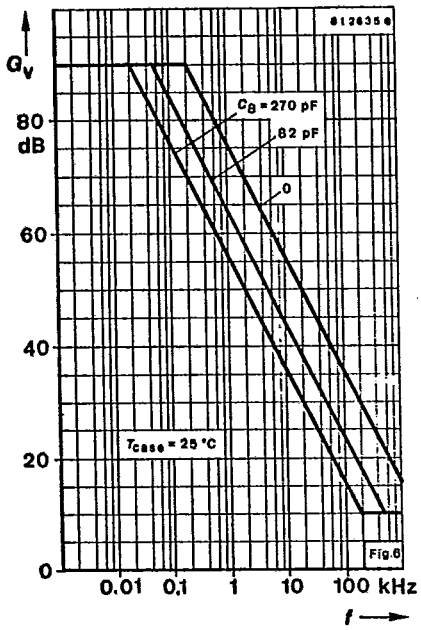
Fig. 3 Test circuit

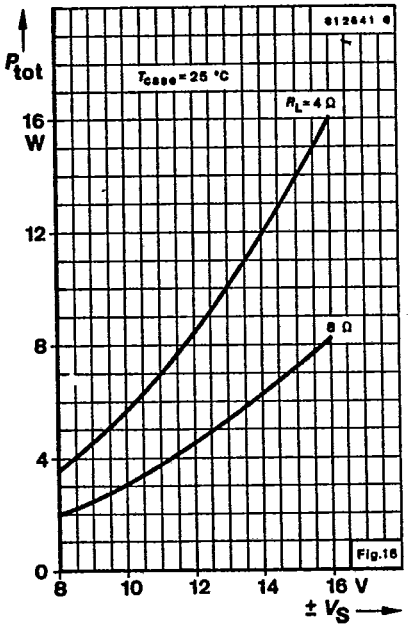
TDA 2030

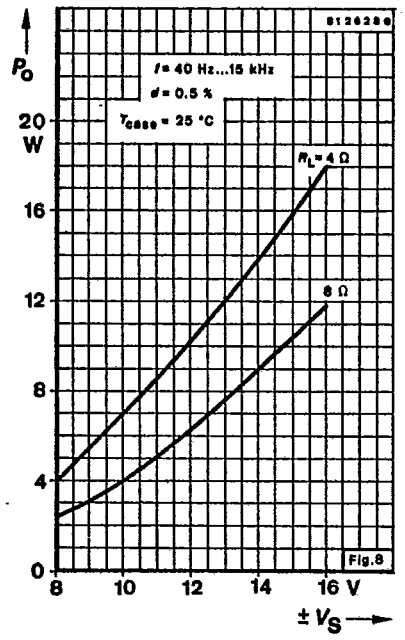
T-74-05-01

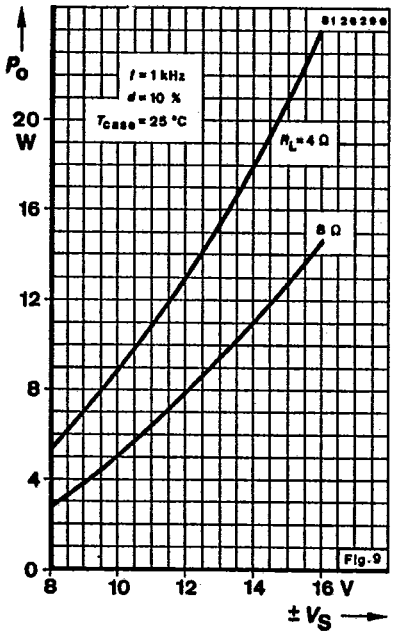


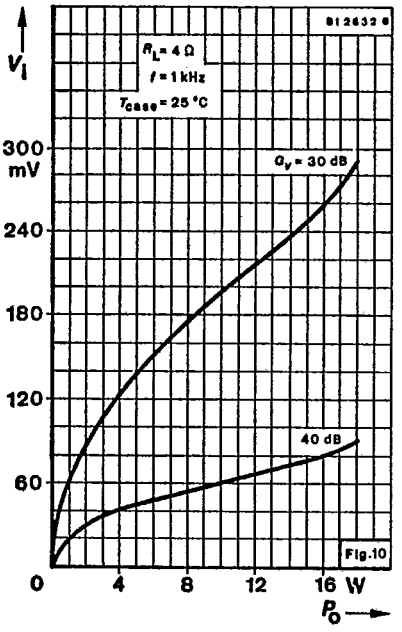


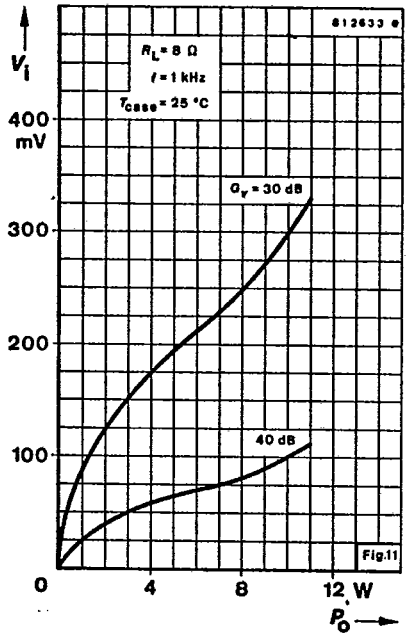





P_O
20 W
16
12
8
4
0
f = 40 Hz...15 kHz
d = 0.5 %
T_{case} = 25 °C
R_L = 4 Ω
8 Ω
8
10
12
14
16 V
$\pm V_S$
Fig.8

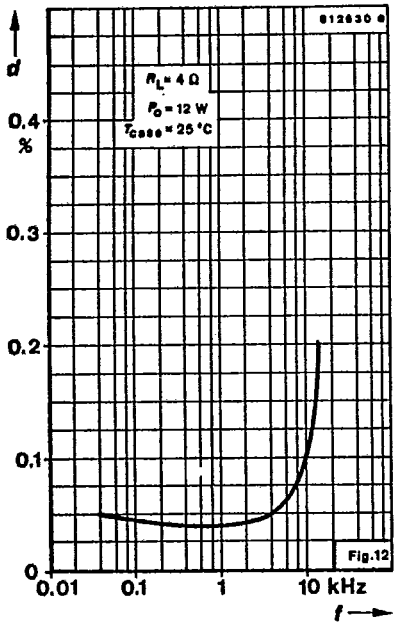

P_O
20 W
16
12
8
4
0
f = 1 kHz
d = 10 %
T_{case} = 25 °C
R_L = 4 Ω
8 Ω
8
10
12
14
16 V
$\pm V_S$
Fig.9

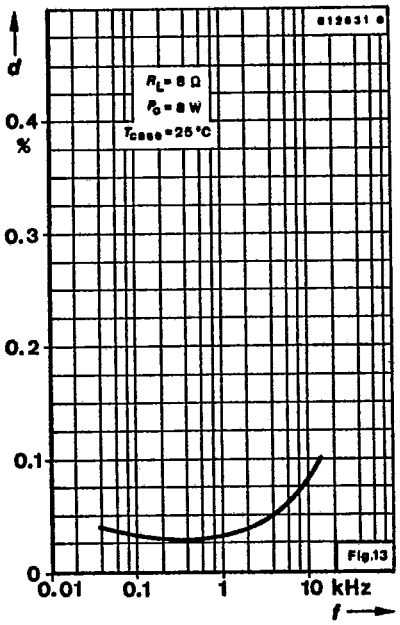

V_i
300 mV
240
180
120
60
0
R_L = 4 Ω
f = 1 kHz
T_{case} = 25 °C
G_v = 30 dB
40 dB
4
8
12
16 W
P_O
Fig.10

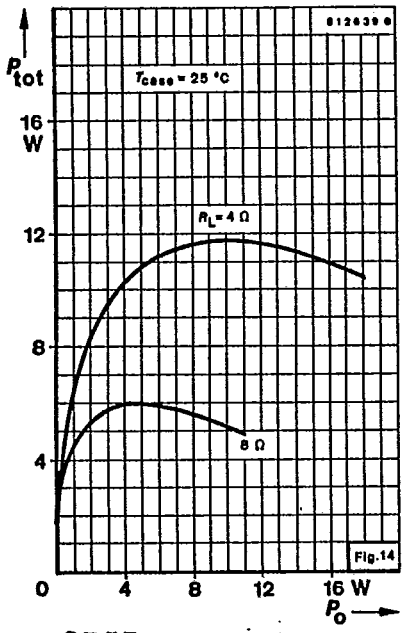

V_i
400 mV
300
200
100
0
R_L = 8 Ω
f = 1 kHz
T_{case} = 25 °C
G_v = 30 dB
40 dB
4
8
12 W
P_O
Fig.11

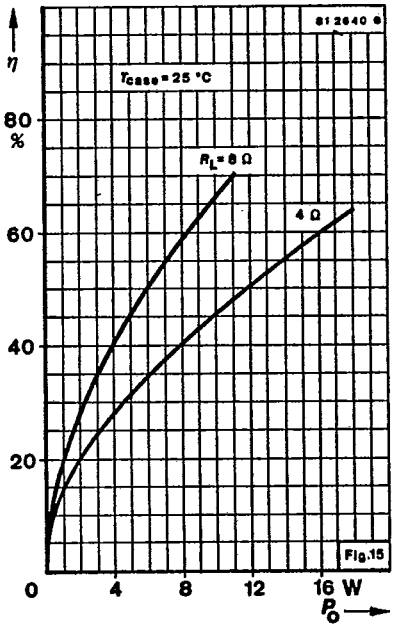
TDA 2030

T-74-05-01









0357 E-02

Applications

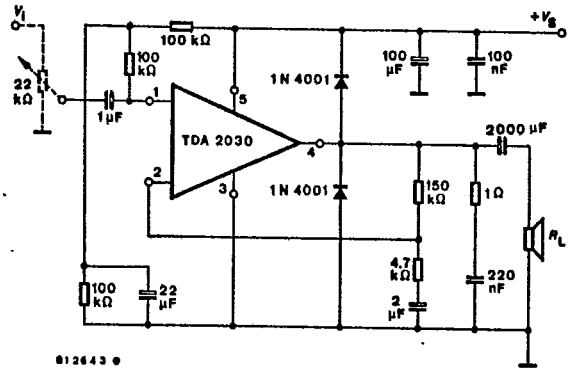


Fig.16 AF amplifier with single power supply

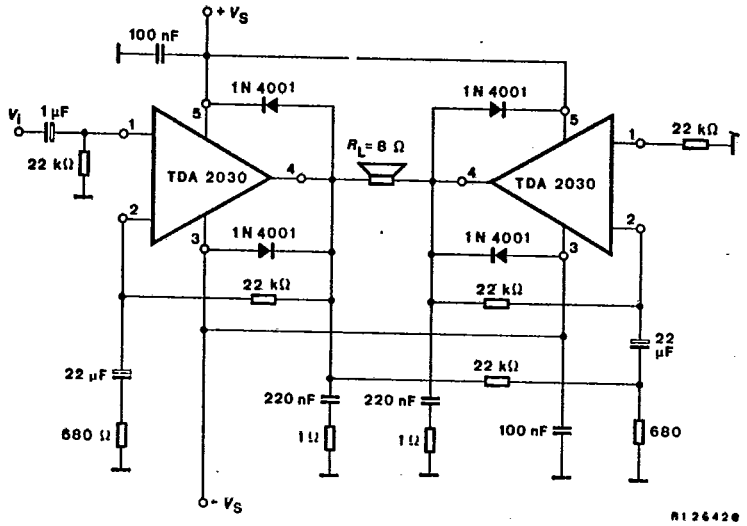


Fig. 17 AF amplifier with split power supply

TDA 2030

T-74-05-01

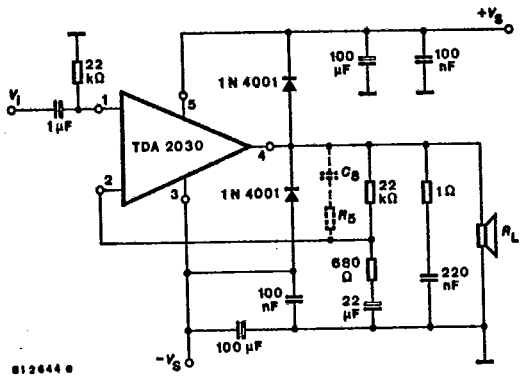
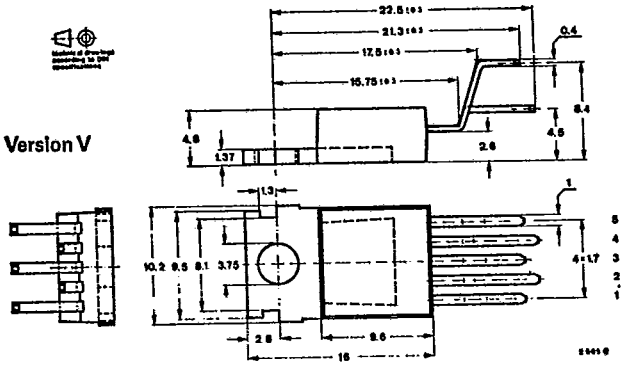


Fig. 18 Bridge amplifier with split power supply

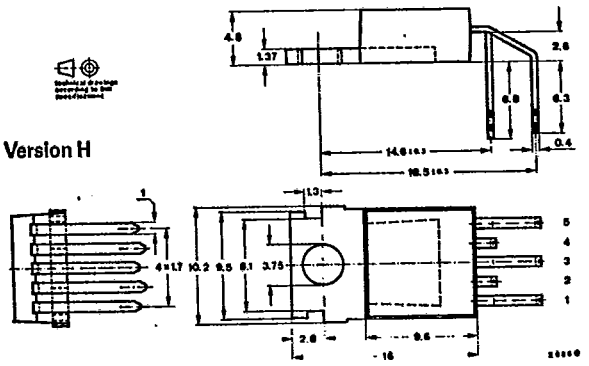
Dimensions in mm

Version V



Supply voltage + V_S	Pin 5
Output	Pin 4
Supply voltage – V_S	Pin 3
Inverting input	Pin 2
Non-inverting input	Pin 1

Version H



Special case
Plastic
≈ TO 220
5-leads
Weight max. 1.8 g