

**THOMSON  
SEMICONDUCTORS**

TEA2024  
T.74-05-01

**ADVANCE INFORMATION**

**STEREO AF AMPLIFIER**

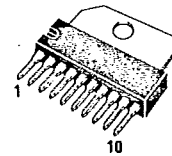
The TEA2024 is an A.F. stereo amplifier in plastic package of 10 passages which is especially adapted for use in radio-cassette and low cost car-radio.

It has the capacity to supply an output power of 3.5 W per channel in the following conditions :  $V_{CC} = 12 V$ ,  $THD = 10 \%$ ,  $R_L = 4 \Omega$ .

- Low idle current
- Internal thermal protection
- Protection against short-circuit
- Single-in-line package
- Very few external components
- Excellent ripple rejection.

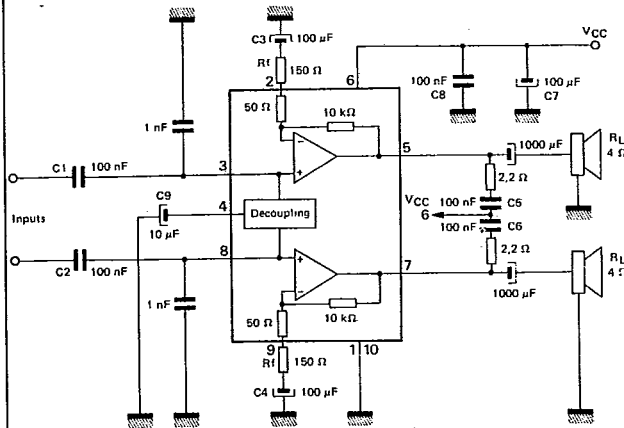
**STEREO AF AMPLIFIER**

**CASE CB-313**

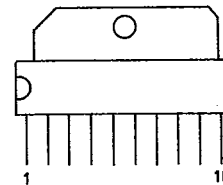


SP SUFFIX  
PLASTIC PACKAGE

**TYPICAL APPLICATION  
DUAL MODE**



**PIN ASSIGNMENT**



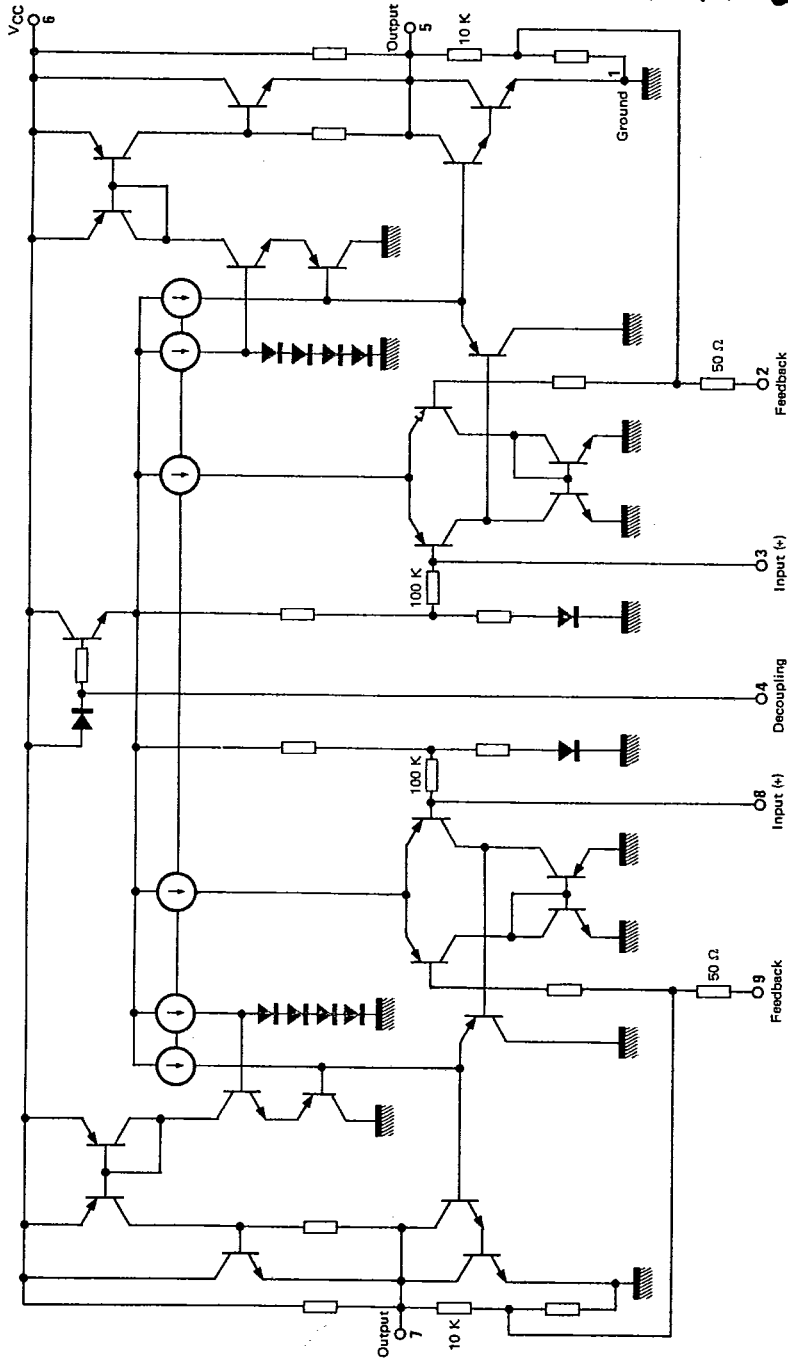
1. Ground (1)
2. Feedback (1)
3. Positive Input (1)
4. Decoupling
5. Output (1)
6. VCC (1)
7. Output (2)
8. Positive Input (2)
9. Feedback (2)
10. Ground (2)

**THOMSON SEMICONDUCTORS**  
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45, av. de l'Europe - 78140 VELIZY - FRANCE  
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**THOMSON  
COMPONENTS**

T-74-05-01

ELECTRICAL DIAGRAM



T-74.05.01

**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Supply voltage	V <sub>CC</sub>	20	V
Operating supply voltage	V <sub>CC</sub>	18	V
Power dissipation	P <sub>tot</sub>	See graphs	
Maximum output current	I <sub>O</sub>	2.5	A
Storage or junction temperature	T <sub>stg</sub> , T <sub>j</sub>	-40, +150	°C

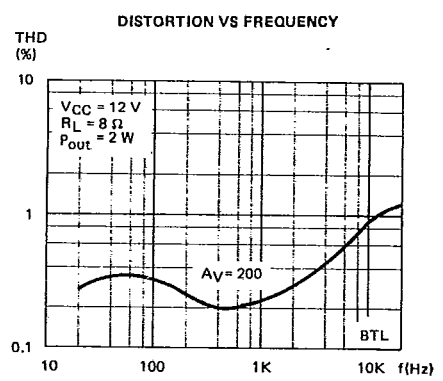
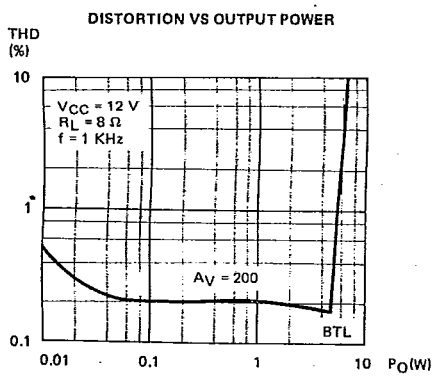
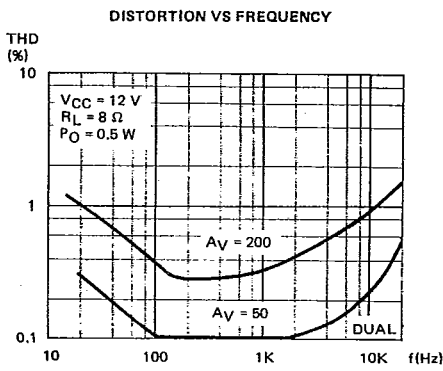
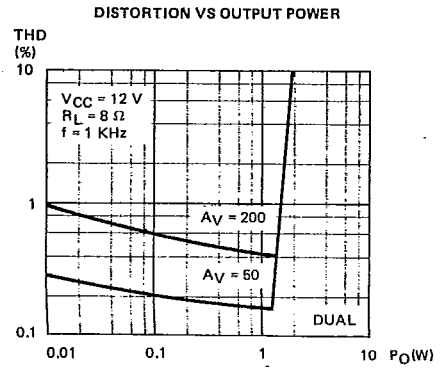
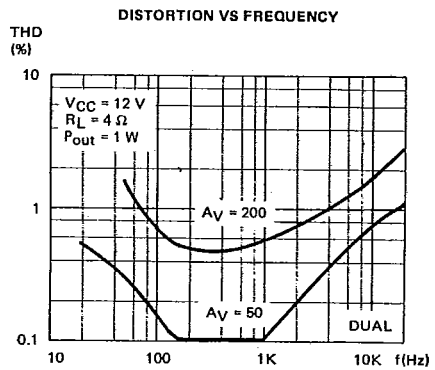
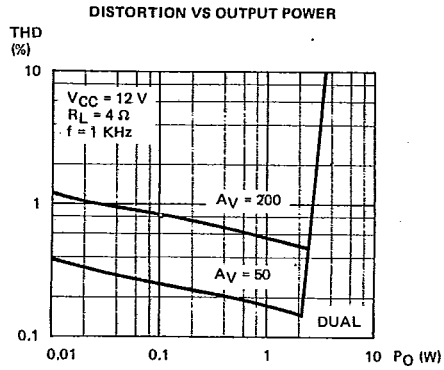
**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Value	Unit
Junction-ambient thermal resistance	R <sub>th(j-a)</sub>	60	°C/W
Junction-case thermal resistance	R <sub>th(j-c)</sub>	9	°C/W

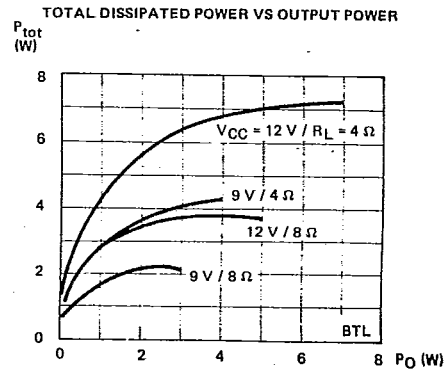
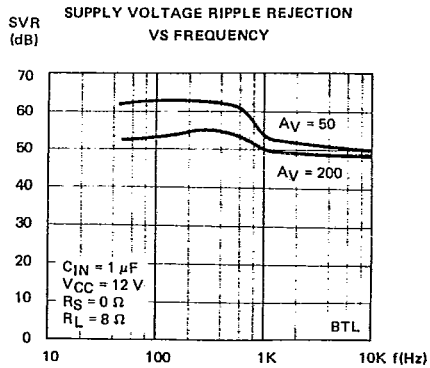
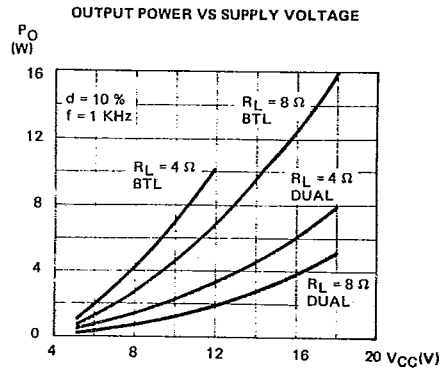
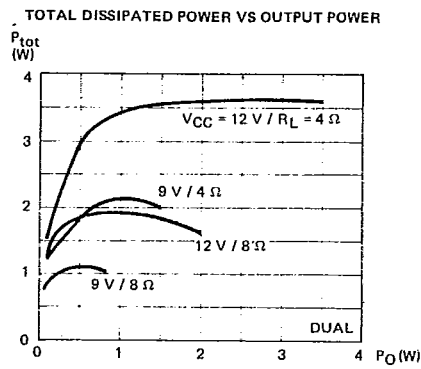
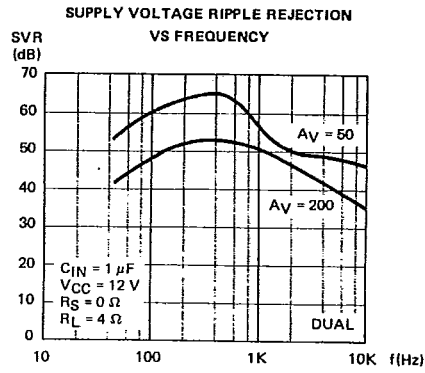
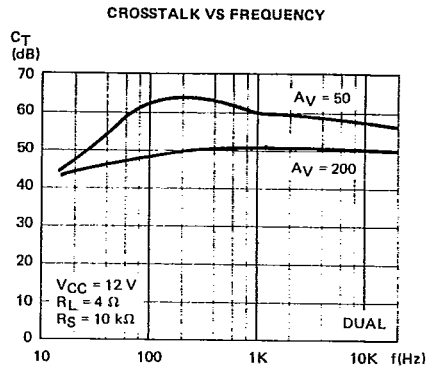
**ELECTRICAL CHARACTERISTICS**

V<sub>CC</sub> = 12 V, T<sub>amb</sub> = +25°C, R<sub>L</sub> = 4 Ω, A<sub>V</sub> = 46 dB, Dual mode (unless otherwise specified)

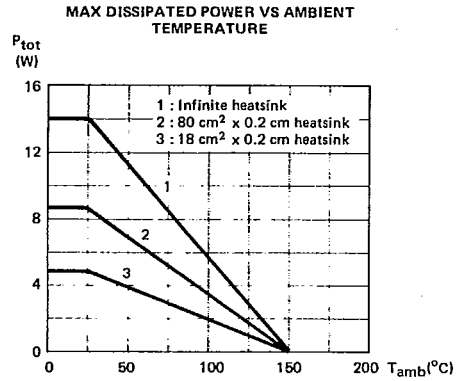
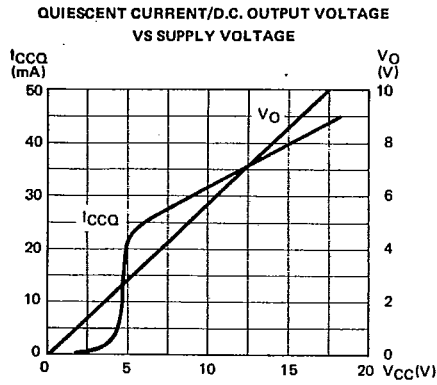
Characteristic	Symbol	Min	Typ	Max	Unit
Supply voltage range	V <sub>CC</sub>	6	—	18	V
Supply current (V <sub>E</sub> = 0)	I <sub>CC</sub>	—	35	60	mA
D.C. output voltage (V <sub>CC</sub> = 12 V)	V <sub>out</sub>	5.4	6.0	6.6	V
Output power (f = 1 KHz ; d = 10 % ; R <sub>L</sub> = 4 Ω)	P <sub>out</sub>				W
Dual mode - per channel					
V <sub>CC</sub> = 12 V		3	3.5	—	
V <sub>CC</sub> = 9 V		—	1.75	—	
V <sub>CC</sub> = 6 V		—	0.60	—	
V <sub>CC</sub> = 14.4 V		—	5	—	
BTL mode - V <sub>CC</sub> = 12 V		—	10	—	
Voltage gain without external resistance					dB
R <sub>f</sub> = 150 Ω	A <sub>V1</sub>	31	34	37	
R <sub>f</sub> = 0 Ω	A <sub>V2</sub>	—	46	—	
Distortion (f = 1 KHz ; V <sub>CC</sub> = 12 V ; R <sub>L</sub> = 4 Ω ; P <sub>out</sub> 0.5 to 2 W)	d	—	0.3	1.5	%
Input noise voltage (R <sub>G</sub> = 0 ; B = 20 KHz)		—	2	—	μV
Supply voltage ripple rejection	SVR				dB
F <sub>ripple</sub> = 100 Hz ; V <sub>ripple</sub> = 0.5 V <sub>RMS</sub> ; R <sub>G</sub> = 0		40	50	—	
Crosstalk (f = 1 KHz ; R <sub>G</sub> = 10 K)	C <sub>T</sub>	40	52	—	dB
Frequency response (3 dB) · (P <sub>out</sub> = 1 W ; R <sub>L</sub> = 4 Ω)	B	—	0.015 - 40	—	KHz
Open loop gain		—	80	—	dB



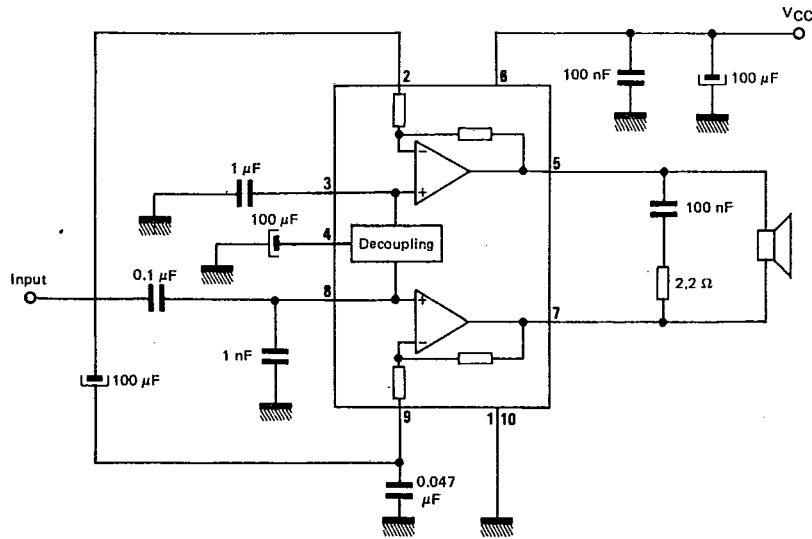
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**BRIDGE MODE**



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## APPLICATION INFORMATION

### GROUND CONNECTION

Two ground pins are provided and must be connected together on the PC board. The GND connections for power - return from the load and negative supply - must be kept separated from the signal and feed-back ground. Inappropriate ground connections will cause parasitic oscillation, distortion and cross-talk.

### VOLTAGE GAIN

The voltage gain is determined by the ratio of internal

feedback resistors and external resistor  $R_f$ .

$$G_v = 34 \text{ dB for } R_f = 150 \Omega$$

$$G_v = 46 \text{ dB for } R_f = 0 \Omega$$

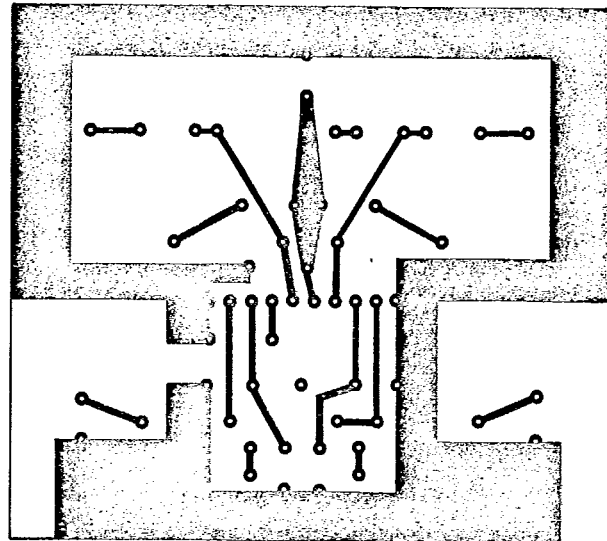
### CAPACITORS C5 AND C6

These capacitors must be connected close to the I.C. connections. Low temp-coefficient type will give the best results to prevent oscillations.

1 nF ceramic capacitors bypassing inputs to ground will help prevent high oscillations or radio interference.

OUTPUT POWER TABLE (TYPICAL VALUE)					
THD = 10 % ; f = 1 KHz ; T <sub>amb</sub> = + 25°C					
LOAD \ VCC	6 V	9 V	12 V	14.4 V	
DUAL	8 Ω	—	1 W/ch	1.8 W/ch	3.0 W/ch
	4 Ω	0.6 W/ch	1.8 W/ch	3.5 W/ch	5 W/ch
BTL	8 Ω	1.2 W	3.5 W	6.7 W	10.5 W
	4 Ω	2.0 W	6.3 W	10 W	—

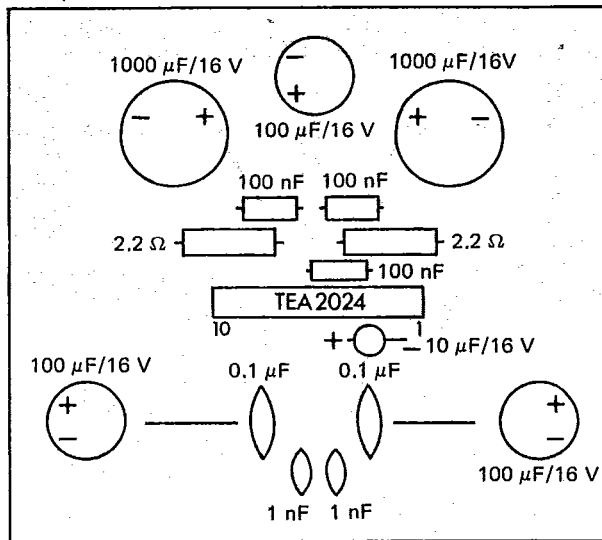
DUAL and BTL MODES  
PRINTED CIRCUIT BOARD



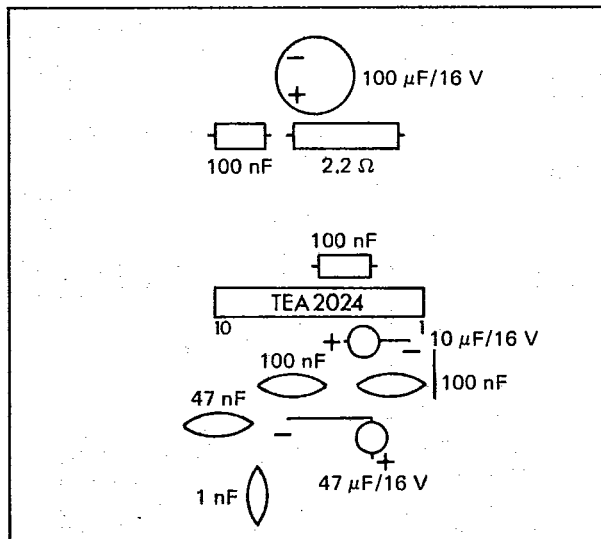


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COMPONENT LAYOUT (DUAL MODE)



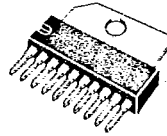
COMPONENT LAYOUT (BRIDGE MODE)



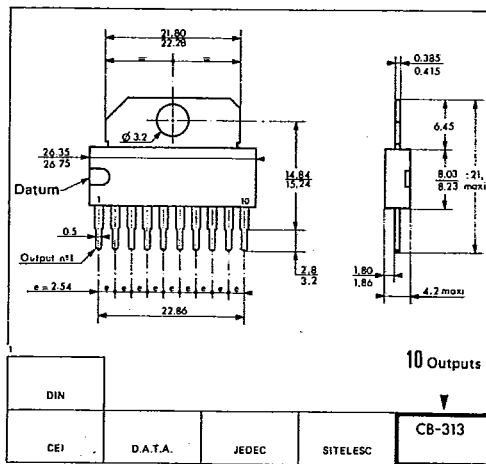
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CASE CB-313



SP SUFFIX  
PLASTIC PACKAGE



This is advance information and specifications are subject to change without notice.  
Please inquire with our sales offices about the availability of the different packages.