LINEAR INTEGRATED CIRCUIT

DUAL AUDIO PREAMPLIFIER

- SINGLE OR DUAL SUPPLY OPERATION
- LOW NOISE FIGURE
- HIGH GAIN
- LARGE INPUT VOLTAGE RANGE
- EXCELLENT GAIN STABILITY VERSUS SUPPLY VOLTAGE
- NO LATCH UP
- OUTPUT SHORT CIRCUIT PROTECTED

The TBA 231A is a monolithic integrated dual operational amplifier in a 14-lead dual in-line plastic package.
These low-noise, high-gain amplifiers show extremely stable operating characteristics over a wide range of supply voltage and temperatures.
The device is intended for a variety of applications requiring two high performance operational amplifiers, such as phono and tape stereo preamplifier, TV remote control receiver, etc.

ABSOLUTE MAXIMUM RATINGS

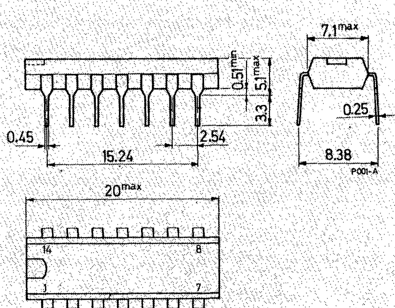
V_s	Supply voltage	± 18	V
V_i	Differential input voltage	± 5	V
V_{CM}	* Common mode input voltage	± 15	V
P_{tot}	Power dissipation at $T_{amb} \leq 60\ °C$	500	mW
T_{stg}	Storage temperature	-40 to 150	°C
T_{op}	Operating temperature	0 to 70	°C

* For $V_s \leq \pm 15V$, $V_{CM\ max} = V_s$.

ORDERING NUMBER: TBA 231A

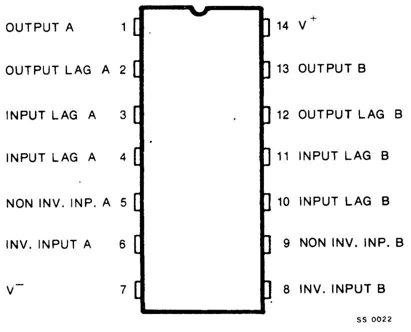
MECHANICAL DATA

Dimensions in mm

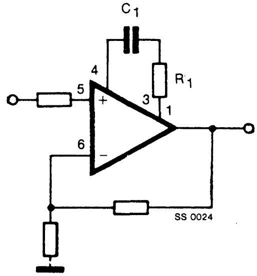


TBA231A

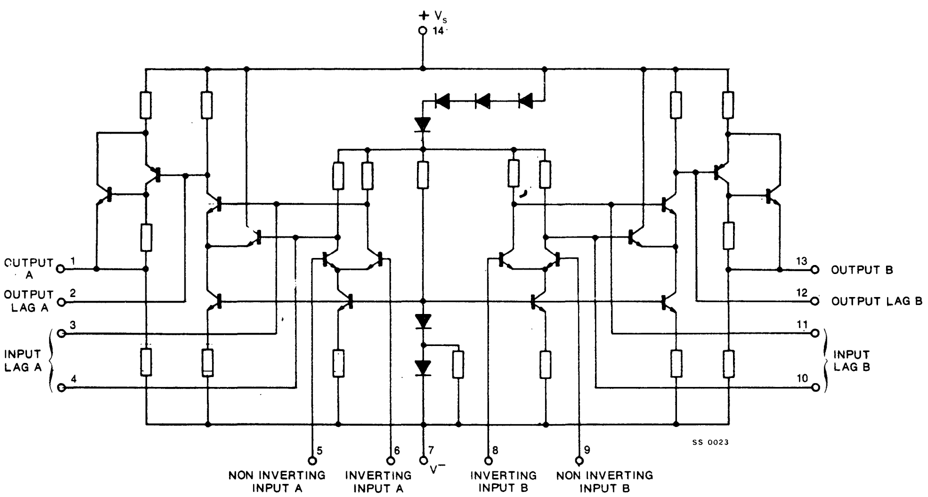
CONNECTION DIAGRAM
(top view)



TEST CIRCUIT



SCHEMATIC DIAGRAM



THERMAL DATA

$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	180	°C/W

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C, R_L = 50 kΩ to pin 7, unless otherwise specified, V_s = ± 15V)

	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_d	Quiescent drain current	$V_o = 0$		9	14	mA
V_{os}	Input offset voltage	R_g = 200Ω		1	6	mV
I_{os}	Input offset current			50	1000	nA
I_b	Input bias current			250	2000	nA
V_{CM}	Common mode input voltage range		± 10	± 11		V
R_i	Input resistance	f = 1 kHz	37	150		kΩ
G_v	Voltage gain	V_o = ± 5V	6500	20 000		–
V_o	Positive output voltage swing		+12	+13		V
V_o	Negative output voltage swing		-14	-15		V
R_o	Output resistance	f = 1 kHz		5		kΩ
CMR	Common mode rejection	R_g = 200Ω	70	90		dB
SVR	Supply voltage rejection	R_g = 200Ω		50		μV/V
SR	Slew rate	Unity gain C_1 = 0.1 μF R_1 = 4.7Ω		1		V/μs
CS	Channel separation	R_g = 10 kΩ f = 10 kHz		140		dB
NF	Noise figure	R_g = 10 kΩ B = 10 Hz to 10 kHz		1.5		dB

Fig. 1 – Output voltage swing vs. supply voltage

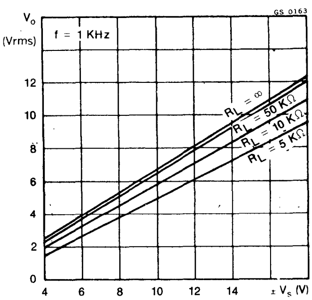


Fig. 2 – Quiescent drain current vs. supply voltage

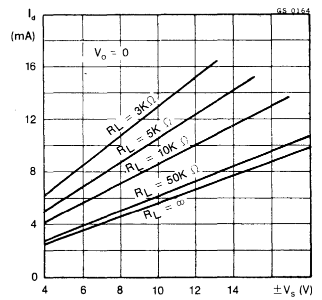


Fig. 3 – Open loop voltage gain vs. supply voltage

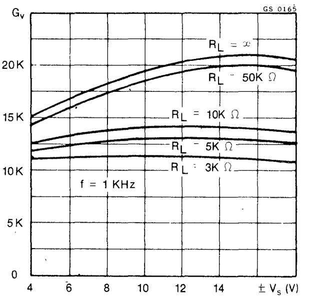


Fig. 4 - Open loop frequency response using recommeded compensation networks

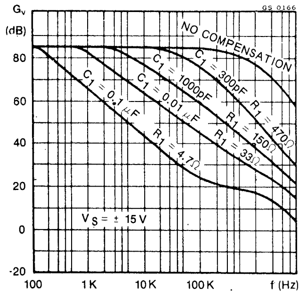


Fig. 5 - Output voltage swing vs. frequency for various compensation networks

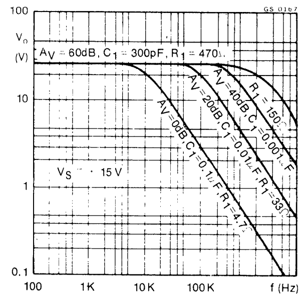


Fig. 6 - Input noise voltage vs. frequency

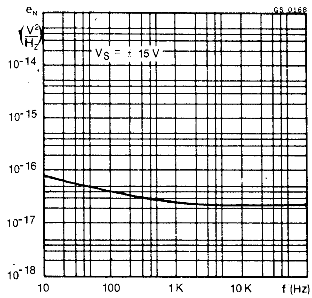


Fig. 7 - Input noise current vs. frequency

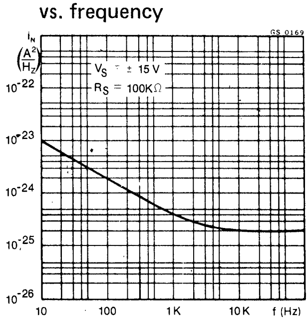


Fig. 8 - Closed loop gain vs. frequency

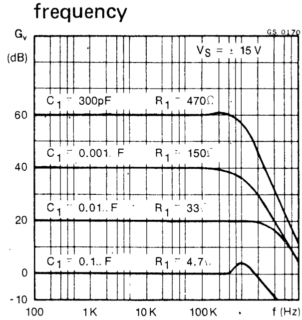
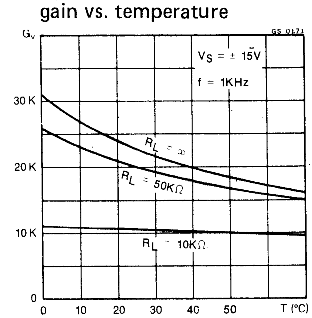


Fig. 9 - Open loop voltage gain vs. temperature



APPLICATION INFORMATION

Fig. 10 - TV remote control receiver