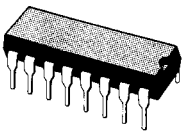
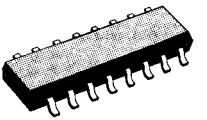
TDA3420

DUAL VERY LOW NOISE PREAMPLIFIER

- VERY LOW NOISE
- HIGH GAIN
- LOW DISTORTION
- SINGLE SUPPLY OPERATION
- LARGE OUTPUT VOLTAGE SWING
- SHORT-CIRCUIT PROTECTION



DIP-16
(Plastic 0.4)



SO-16J

ORDER CODES : TDA3420 (DIP-16)
TDA3420D (SO-16)

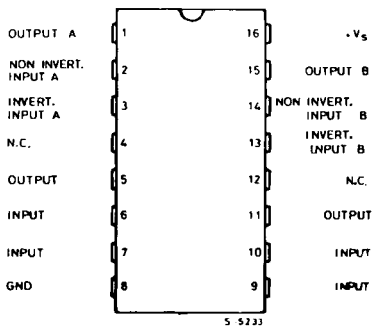
DESCRIPTION

The TDA3420 is a dual preamplifier for applications requiring very low noise performance, **as stereo cassette players** and quality audio systems. Each channel consists of two independent amplifiers.

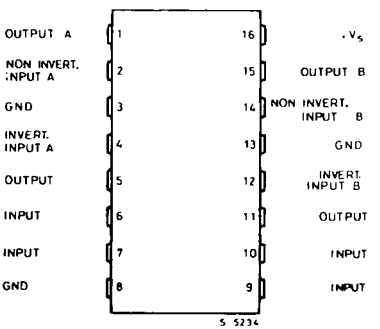
The first one has a fixed gain while the second one is an operational amplifier for audio application.

The TDA3420 is available in two packages : 16-lead dual in-line plastic and 16-lead micropackage.

PIN CONNECTIONS (top views)

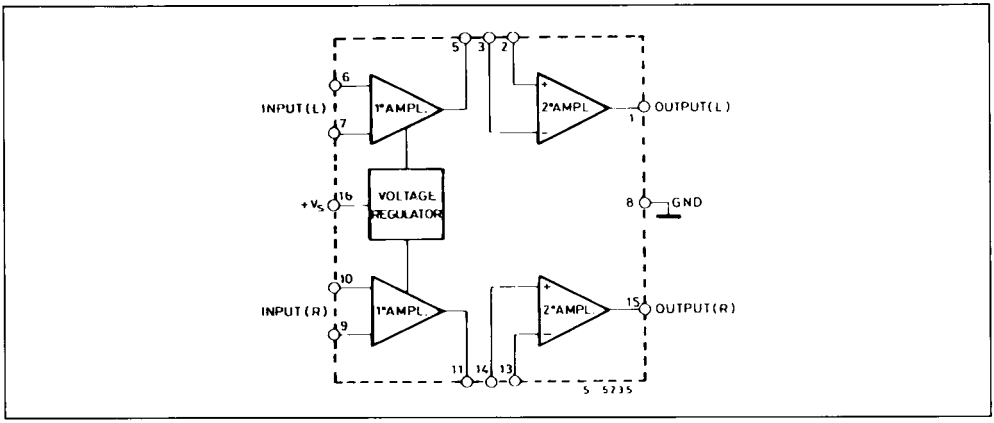


DIP



SO-16

BLOCK DIAGRAM (pin numbers refer to the DIP)



ABSOLUTE MAXIMUM RATINGS

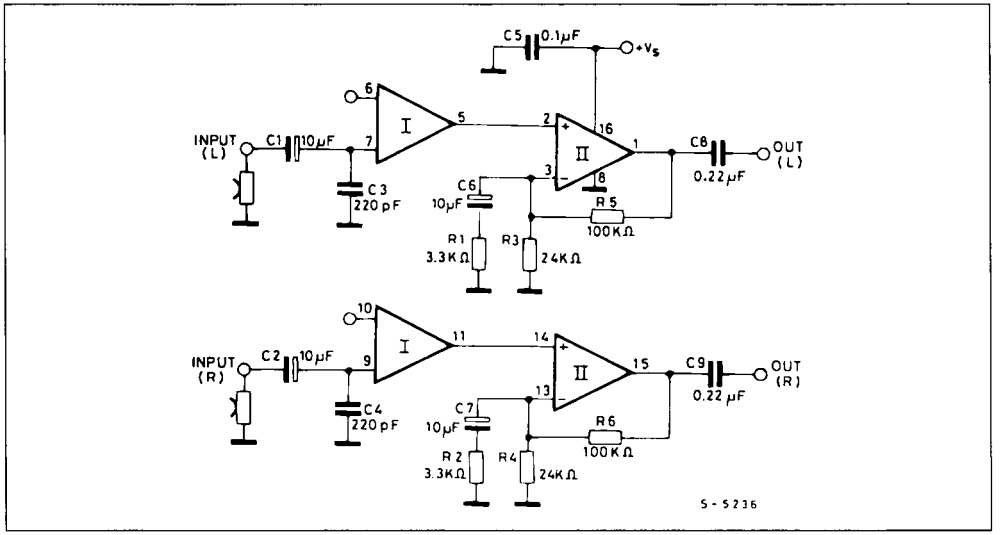
Symbol	Parameter	Value	Unit
V_s	Supply Voltage	20	V
P_{tot}	Total Power Dissipation at T_{amb} = 70°C DIP-16 SO-16	550 400	mW mW
T_j, T_{stg}	Storage and Junction Temperature	– 40 to 150	°C

THERMAL DATA

Symbol	Parameter		DIP-16	SO-16
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	150°C/W	200°C/W (*)

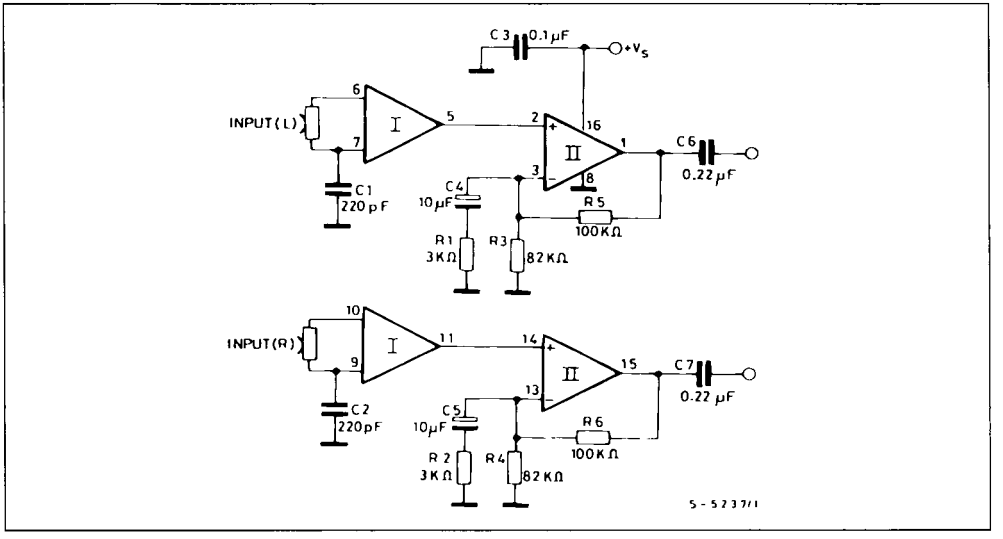
* The thermal resistance is measured with the device mounted on a ceramic substrate (25 x 16 x 0.6 mm).

Figure 1 : Test Circuit.



Note : Pin numbers refer to DIP.

Figure 2 : Test Circuit without Input Capacitors.



Note : Pin numbers refer to the DIP.

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C, V_s = 14.4V, G_v = 60dB refer to the test circuit of fig. 1, unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_s	Supply Current	V_s = 8V to 20V			8		mA
I_o	Output Current	Source	V_s = 8V to 20V		10		mA
		Sink			1		mA
G_v	Gain	f = 1KHz			60		dB
R_i	Input Resistance			50	100		KΩ
R_o	Output Resistance				50		Ω
THD	Total Harmonic Distortion Without Noise	V_o = 300mV	f = 1KHz		0.05		%
			f = 10KHz		0.05		%
V_o	Peak to Peak Output Voltage	f = 40Hz to 15KHz			12		V
e_n	Total Input Noise (°)	R_s = 50Ω R_s = 600Ω R_s = 5kΩ			0.25 0.4 1.3	0.7	μV μV μV
S/N	Signal to Noise Ratio (°)	V_{in} = 0.3mV V_{in} = 1mV	R_s = 600Ω R_s = 0		57 73		dB
	(°°)	Vin = 0.3mV Vin = 1mV	Rs = 600Ω Rs = 0		55 71		dB
CS	Channel Separation	f = 1KHz			60		dB
SVR	Supply Voltage Rejection (°°°)	f = 1KHz	Rs = 600Ω		110		dB

AMPLIFIER N° 1

G_v	Gain (pin 6 to pin 5)			27.5	28.5	29	dB
d	Distortion	V_o = 300mV	f = 1KHz f = 10KHz		0.05 0.05		%
e_n	Total Input Noise (°)	R_s = 600Ω			0.4		μV
Z_o	Output Impedance (pin 5)	f = 1KHz			100		Ω
I_o	Output Current (pin 5)				1		mA
V5	DC Output Voltage (pin 5)	Test Circuit Fig. 2			2.8		V
		Test Circuit Fig. 1		1.0	1.5		

ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
AMPLIFIER N° 2						
G_v	Open Loop Voltage Gain			100		dB
I_B	Input Bias Current			0.2		µA
V_{os}	Input Offset Voltage			2		mV
I_{os}	Input Offset Current			50		nA
e_n	Total Input Noise(°)	R_s = 600Ω		2		µV
R_i	Input Impedance	f = 1KHz (open loop)	150	500		KΩ

(°) Weighting filter : curve A.
(°°) Weighting filter : Dolby CCIR/ARM.
(°°°) Referred to the input.

Figure 3 : Total Input Noise vs. Source Resistance (curve A).

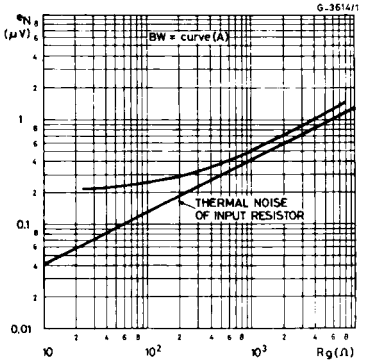


Figure 4 : Total Input Noise vs. Source Resistance (BW = 22 Hz to 22 KHz).

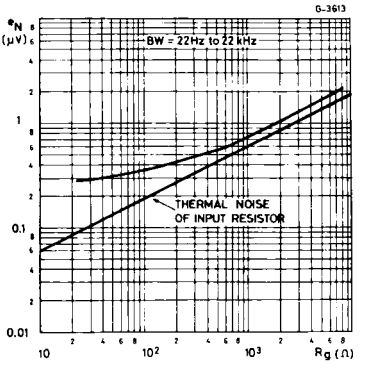


Figure 5 : Total Harmonic Distorsion vs. Output Voltage.

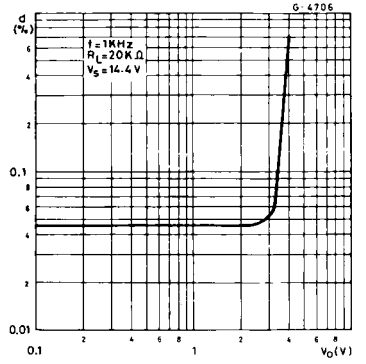


Figure 6 : Output Voltage vs. Frequency.

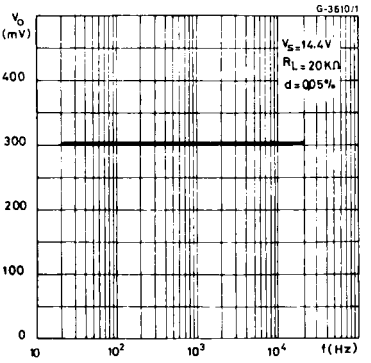


Figure 7 : Distortion vs. Input Level (test circuit of Figure 1).

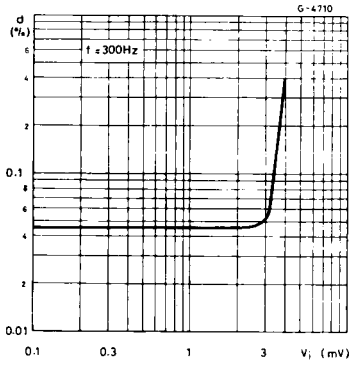


Figure 8 : Frequency Response of the Circuit of Figure 10.