

DUAL VERY LOW NOISE PREAMPLIFIER

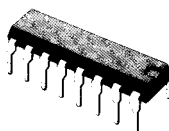
The TDA 3420D is a dual preamplifier for applications requiring very low noise performance, as **stereo cassette players** and quality audio systems. Each channel consists of two independent amplifiers.

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

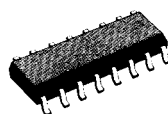
The TDA 3420D is available in two packages: 16-lead dual in-line plastic and 16 lead micro-package.

Its main features are:

- Very low noise
- High gain
- Low distortion
- Single supply operation
- Large output voltage swing
- Short circuit protection



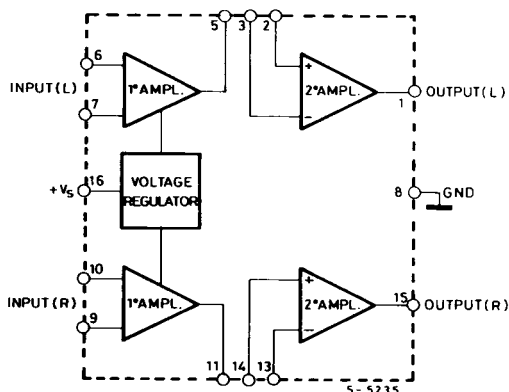
DIP-16 Plastic
(0.4)



SO-16J

ORDERING NUMBER: TDA3420 (DIP-16)
TDA3420D (SO-16)

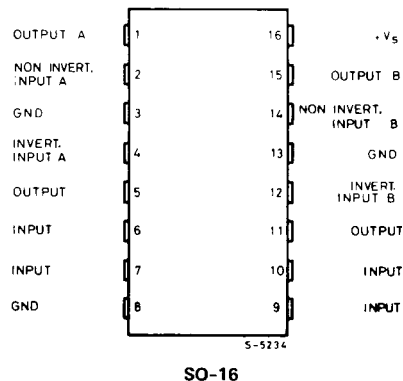
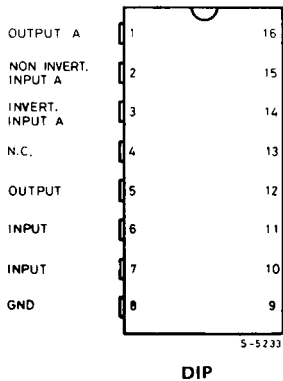
BLOCK DIAGRAM(Pin numbers refer to the DIP)



ABSOLUTE MAXIMUM RATINGS

V_s	Supply voltage	20	V
P_{tot}	Total power dissipation at $T_{amb} = 70^{\circ}\text{C}$ Dip-16 SO-16	550 400	mW mW
T_j, T_{stg}	Storage and junction temperature	-40 to 150	$^{\circ}\text{C}$

CONNECTION DIAGRAMS

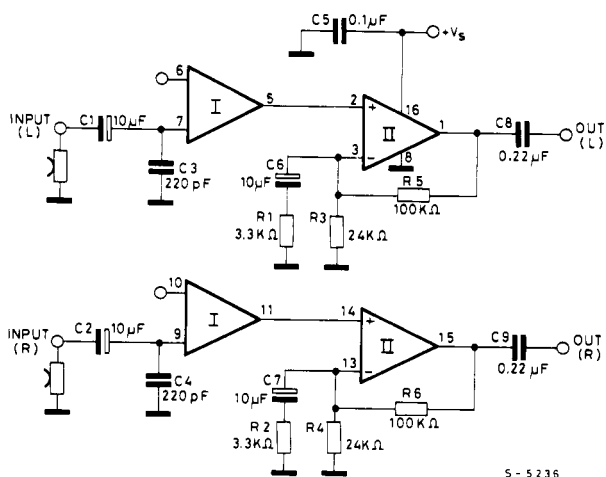


THERMAL DATA

		DIP	SO-16
$R_{th\ j-amb}$	Thermal resistance junction-ambient	max 150 $^{\circ}\text{C/W}$	200 $^{\circ}\text{C/W} (*)$

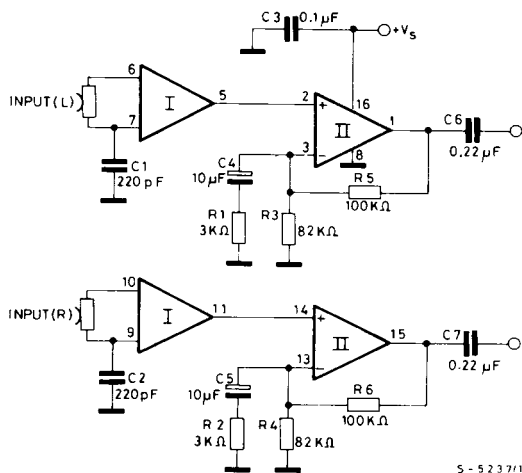
* The thermal resistance is measured with the device mounted on a ceramic substrate (25 x 16 x 0.6 mm).

Fig. 1 - Test circuit



Note: Pin numbers refer to DIP.

Fig. 2 - Test circuit without input capacitors



Note: Pin numbers refer to the DIP.

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

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 = 1 KHz			60		dB
R _i	Input resistance			50	100		KΩ
R _o	Output resistance				50		Ω
THD	Total harmonic distortion without noise	V _o = 300 mV	f = 1 KHz		0.05		%
			f = 10 KHz		0.05		%
V _o	Peak to peak output voltage	f = 40 Hz to 15 KHz			12		V
e _n	Total input noise (°)	R _s = 50 Ω R _s = 600 Ω R _s = 5 KΩ			0.25 0.4 1.3	0.7	μV μV μV
S/N	Signal to noise ratio (°)	V _{in} = 0.3 mV V _{in} = 1 mV	R _s = 600 Ω R _s = 0		57 73		dB
	(°°)	V _{in} = 0.3 mV V _{in} = 1 mV	R _s = 600 Ω R _s = 0		55 71		dB
CS	Channel separation	f = 1 KHz			60		dB
SVR	Supply voltage rejection (°°°)	f = 1 KHz	R _s = 600 Ω		110		dB

AMPLIFIER N° 1

G_v Gain (pin 6 to pin 5)		27.5	28.5	29	dB
d Distortion	$V_o = 300\text{ mV}$ $f = 1\text{ KHz}$ $f = 10\text{ KHz}$		0.05 0.05		%
e_n Total input noise ($^{\circ}$)	$R_s = 600\ \Omega$		0.4		μV
Z_o Output impedance (pin 5)	$f = 1\text{ KHz}$		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)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
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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 ($^{\circ}$)	$R_S = 600\Omega$	2		μV
R_i	Input impedance	$f = 1 \text{ KHz}$ (open loop)	150	500	$K\Omega$

($^{\circ}$) Weighting filter : curve A.

($^{\circ\circ}$) Weighting filter : Dolby CCIR/ARM.

($^{\circ\circ\circ}$) Referred to the input.

Fig. 3 - Total input noise vs. source resistance (curve A)

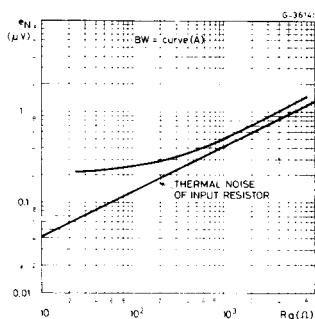


Fig. 4 - Total input noise vs. source resistance (BW=22Hz to 22 KHz)

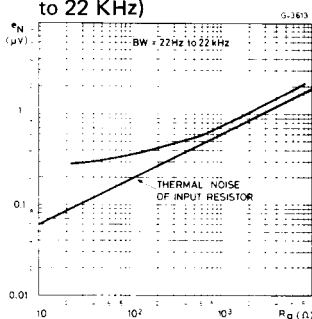


Fig. 5 - Total harmonic distortion vs. output voltage

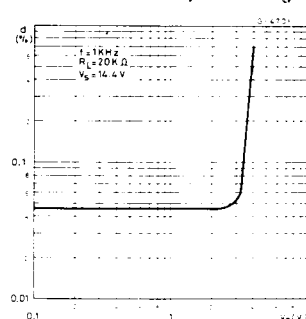


Fig. 6 - Output voltage vs. frequency

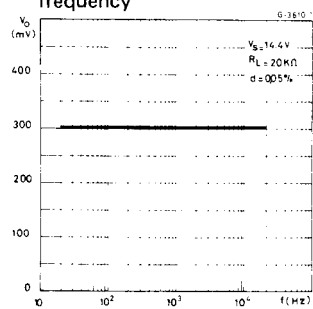


Fig. 7 - Distortion vs. input level (test circuit of fig. 1)

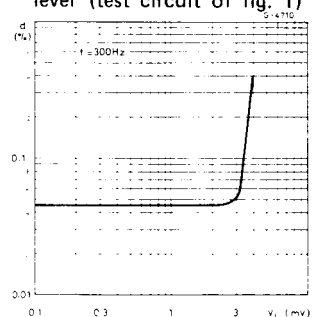


Fig. 8 - Frequency response of the circuit of fig. 10

