

**DUAL VERY LOW NOISE PREAMPLIFIER**

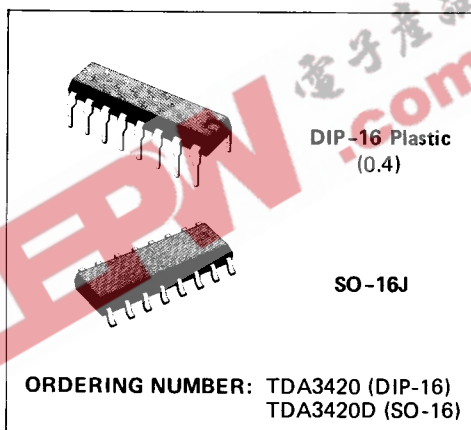
The TDA 3420D is a dual preamplifier for applications requiring very low noise performance, as **stereo cassette players** and quality audio systems. Each channel consists of two independent amplifiers.

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

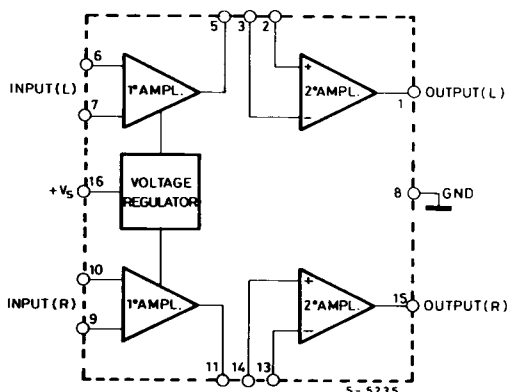
The TDA 3420D is available in two packages: 16-lead dual in-line plastic and 16 lead micro-package.

Its main features are:

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



**BLOCK DIAGRAM**(Pin numbers refer to the DIP)

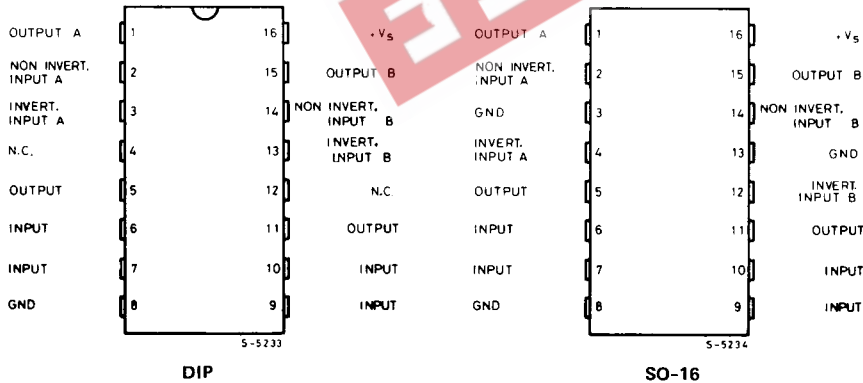


## TDA3420/D

### ABSOLUTE MAXIMUM RATINGS

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

### CONNECTION DIAGRAMS



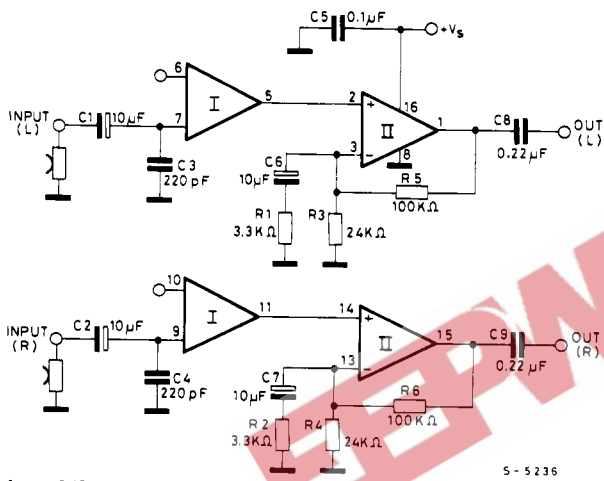
### THERMAL DATA

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

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

TDA3420/D

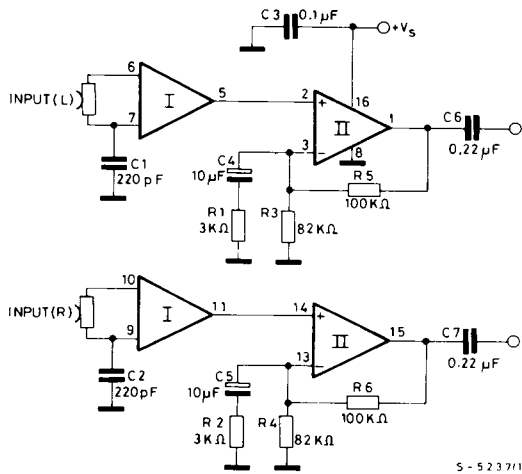
Fig. 1 - Test circuit



Note: Pin numbers refer to DIP.

5 - 5236

Fig. 2 - Test circuit without input capacitors



Note: Pin numbers refer to the DIP.

5 - 5237/1

## TDA3420/D

**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	$V_s = 8\text{V to } 20\text{V}$		8		mA
$I_o$ Output current	Source	$V_s = 8\text{V to } 20\text{V}$	10		mA
	Sink		1		mA
$G_v$ Gain			60		dB
$R_i$ Input resistance	$f = 1\text{ KHz}$	50	100		$\text{K}\Omega$
$R_o$ Output resistance			50		$\Omega$
THD Total harmonic distortion without noise	$V_o = 300\text{ mV}$	$f = 1\text{ KHz}$	0.05		%
		$f = 10\text{ KHz}$	0.05		%
$V_o$ Peak to peak output voltage	$f = 40\text{ Hz to } 15\text{ KHz}$		12		V
$e_n$ Total input noise ( $^{\circ}$ )	$R_s = 50\ \Omega$ $R_s = 600\ \Omega$ $R_s = 5\ \text{K}\Omega$		0.25	0.7	$\mu\text{V}$
			0.4		$\mu\text{V}$
			1.3		$\mu\text{V}$
S/N Signal to noise ratio ( $^{\circ}$ )	$V_{in} = 0.3\text{ mV}$ $V_{in} = 1\text{ mV}$	$R_s = 600\ \Omega$ $R_s = 0$	57		dB
			73		
	$V_{in} = 0.3\text{ mV}$ $V_{in} = 1\text{ mV}$	$R_s = 600\ \Omega$ $R_s = 0$	55		dB
			71		
CS Channel separation	$f = 1\text{ KHz}$		60		dB
SVR Supply voltage rejection ( $^{\circ\circ\circ}$ )	$f = 1\text{ KHz}$ $R_s = 600\ \Omega$		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		$\mu\text{V}$
$Z_o$ Output impedance (pin 5)	$f = 1\text{ KHz}$		100		$\Omega$
$I_o$ 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
<b>AMPLIFIER N° 2</b>					
$G_V$	Open loop voltage gain		100		dB
$I_B$	Input bias current		0.2		$\mu A$
$V_{OS}$	Input offset voltage		2		mV
$I_{OS}$	Input offset current		50		nA
$e_n$	Total input noise (°)	$R_s = 600\Omega$	2		$\mu V$
$R_i$	Input impedance	$f = 1 \text{ KHz (open loop)}$	150	500	$K\Omega$

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

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

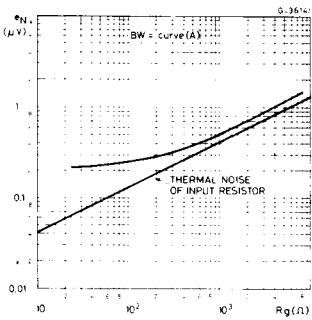


Fig. 4 - Total input noise vs. source resistance (BW=22 Hz to 22 KHz)

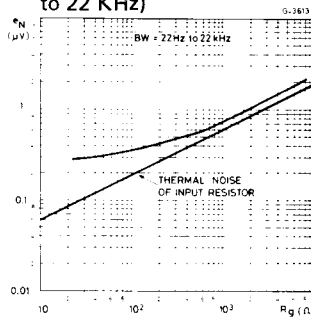


Fig. 5 - Total harmonic distortion vs. output voltage

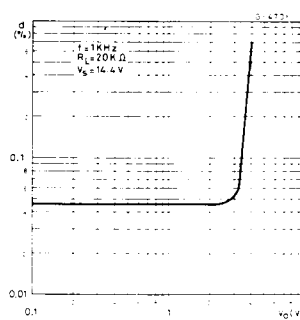


Fig. 6 - Output voltage vs. frequency

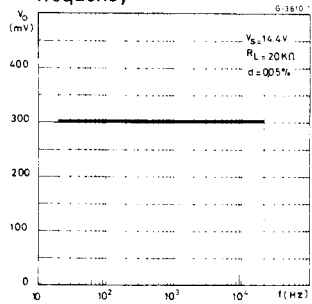


Fig. 7 - Distortion vs. input level (test circuit of fig. 1)

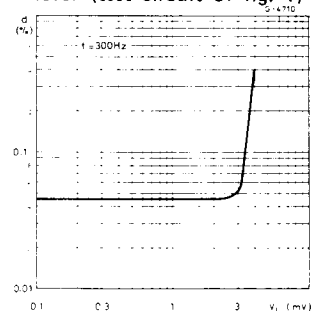


Fig. 8 - Frequency response of the circuit of fig. 10

