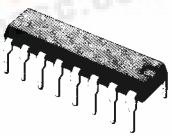
SGS-THOMSON MICROELECTRONICS

TDA3420/D

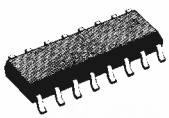
DUAL VERY LOW NOISE PREAMPLIFIER

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



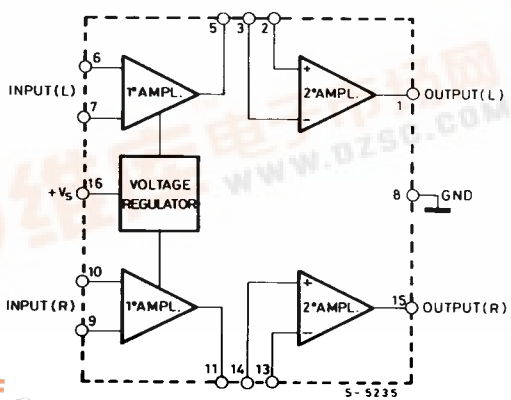
DIP-16 Plastic
(0.4)



SO-16J

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

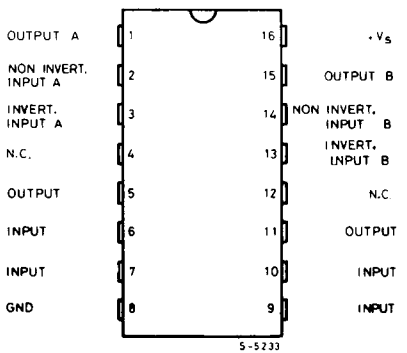
BLOCK DIAGRAM (Pin numbers refer to the DIP)



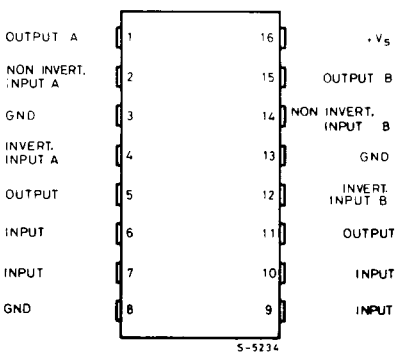
ABSOLUTE MAXIMUM RATINGS

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

CONNECTION DIAGRAMS



DIP



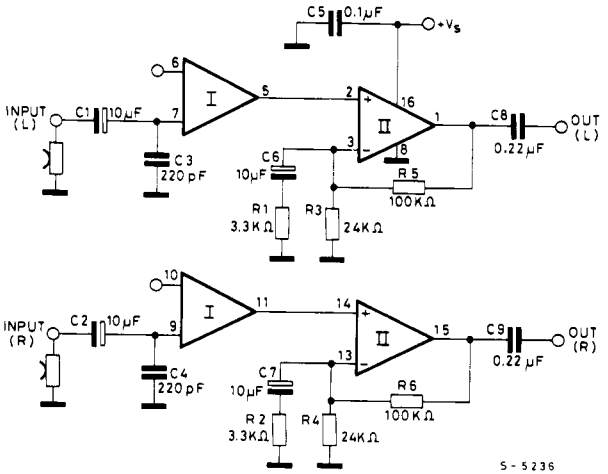
SO-16

THERMAL DATA

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

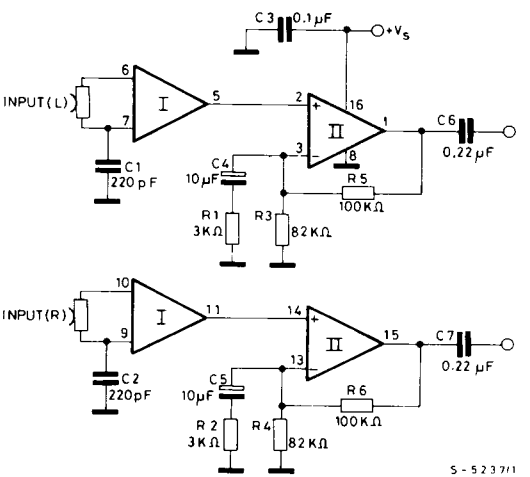
* The thermal resistance is measured with the device mounted on a ceramic substrate (25 x 16 x 0.6 mm).

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°C, V_s= 14.4V, G_v= 60 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 mV	f = 1 KHz f = 10 KHz		0.05 0.05		%
e_n	Total input noise (°)	R_s= 600Ω			0.4		μV
Z_o	Output impedance (pin 5)	f = 1 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
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 = 1 KHz (open loop)	150	500		KΩ

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

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

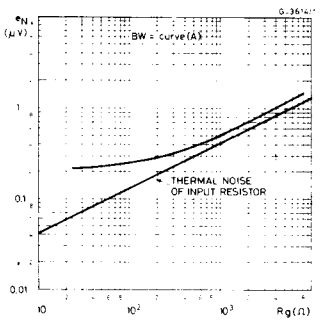


Fig. 4 - Total input noise vs. source resistance(BW=22Hz to 22 KHz)

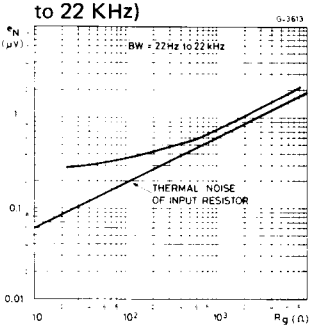


Fig. 5 - Total harmonic distortion vs. output voltage

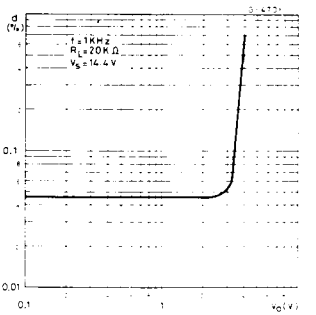


Fig. 6 - Output voltage vs. frequency

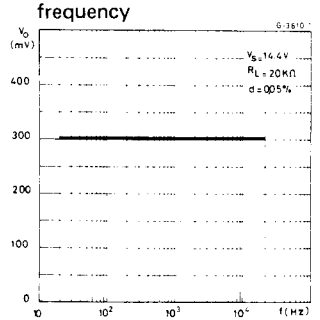


Fig. 7 - Distortion vs. input level (test circuit of fig. 1)

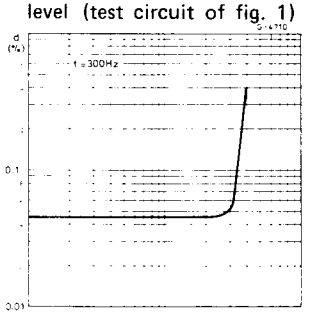


Fig. 8 - Frequency response of the circuit of fig. 10