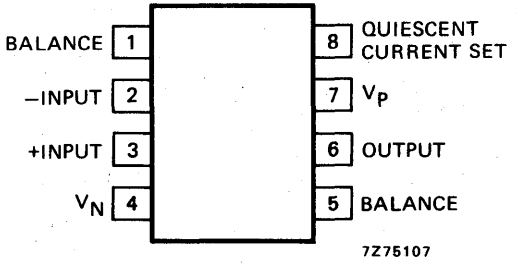
PROGRAMMABLE OPERATIONAL AMPLIFIER

The TDA4250B; D is a versatile, programmable monolithic operational amplifier, especially designed for applications requiring very low stand-by power consumption over a wide range of supply voltages.
The quiescent current of the amplifier can be set by a single external resistor or current source. With this programming, the power consumption, input current, slew rate and gain-bandwidth product can be adapted to a particular application.
The TDA4250B is mounted in a standard plastic 8-lead dual in-line.
The TDA4250D is mounted in a miniature plastic encapsulation, mainly intended for use in hybrid circuits.
The circuit is equivalent to the LM4250; C, SG4250; C, ICL8021 and similar to the μA776; C.

Features

- Programmable electrical parameters
- Very low stand-by power consumption
- No frequency compensation required
- ± 1 to ± 18 V power supply operation
- Short-circuit protection
- Offset voltage adjustable to zero
- Operating ambient temperature: −25 to +85 °C

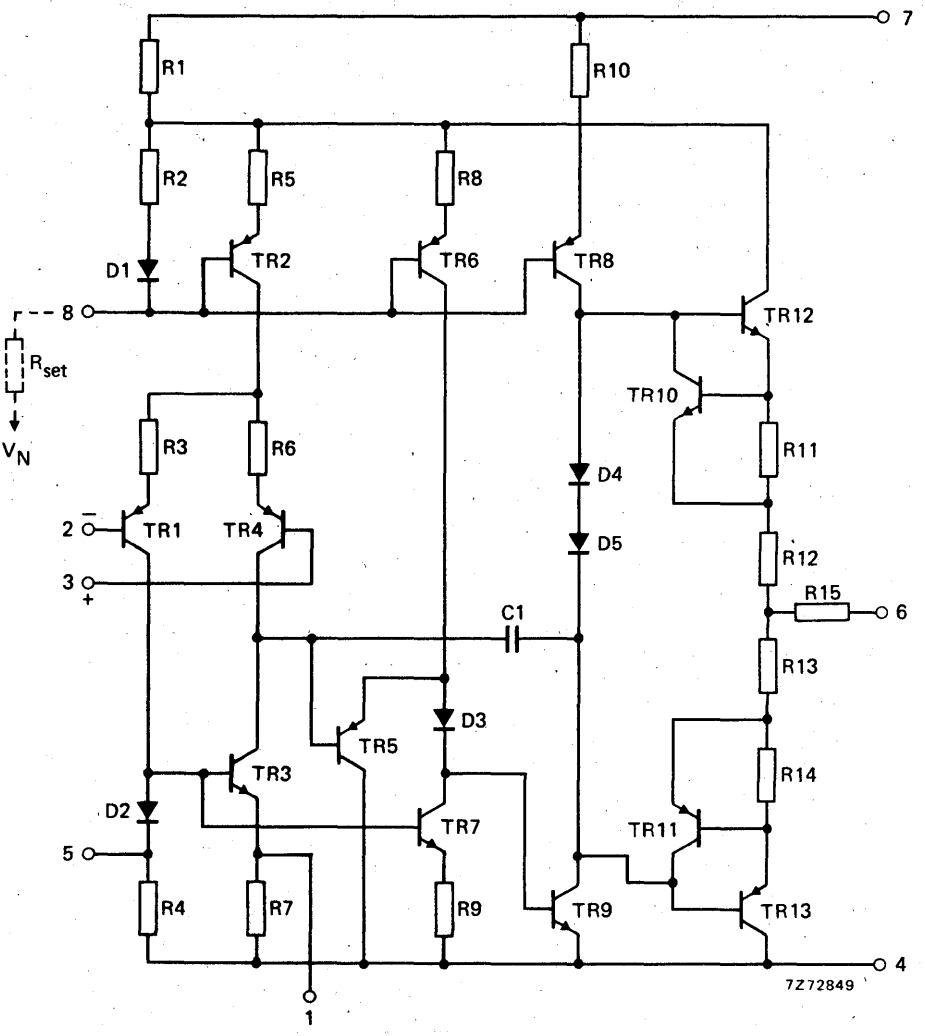
CONNECTION DIAGRAM



PACKAGE OUTLINE (see general section)

TDA4250B : plastic 8-lead dual in-line.
TDA4250D : SO-8 (SOT-96A); plastic 8-lead flat pack.

CIRCUIT DIAGRAM



RATINGS Limiting values in accordance with the Absolute Maximum System (IEC 134)

Supply voltage	V_P; $-V_N$	max.	18	V
Common mode input voltage (pins 2 and 3)	V_{I+}; V_{I-}	V_P to $-V_N$		
Differential input voltage	$V_{I+} - V_{I-}$	max.	±30	V
Output short-circuit duration	indefinite			

Temperatures

Operating ambient temperature	T_{amb}	−25 to	+85	°C
Storage temperature	T_{stg}	−65 to	+125	°C
Junction temperature	T_j	max.	125	°C

Power dissipation in free air; T_{amb} = 50 °C

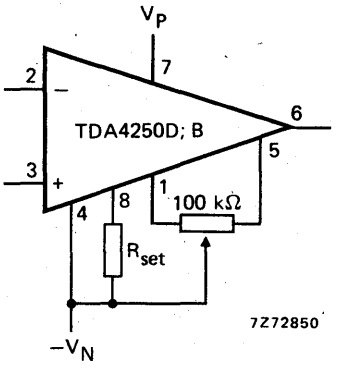
TDA4250B

Mounted on PC board	P_{tot}	max.	440	mW
derating factor for T_{amb} > 50 °C	$1/R_{th}$	=	5,8	mW/°C

TDA4250D

Mounted on a ceramic substrate of 4 cm^2	P_{tot}	max.	470	mW
derating factor for T_{amb} > 50 °C	$1/R_{th}$	=	6,3	mW/°C
Mounted on PC board of 4 cm^2	P_{tot}	max.	310	mW
derating factor for T_{amb} > 50 °C	$1/R_{th}$	=	4,2	mW/°C

CHARACTERISTICS



Offset voltage adjustment circuit.

CHARACTERISTICS at I_{set} = 10 μA; V_P = 6 V; $-V_N$ = 6 V; T_{amb} = −25 to +85 °C unless otherwise specified

Parameter	Conditions	Symbol	min.	typ.	max.	Unit
Input offset voltage		V_{io}	–	–	7,5	mV
	T_{amb} = 25 °C	V_{io}	–	2	6	mV
Input offset current		I_{io}	–	–	25	nA
	T_{amb} = 25 °C	I_{io}	–	–	20	nA
Input bias current		I_i	–	–	85	nA
	T_{amb} = 25 °C	I_i	–	–	80	nA
Input voltage range	V_P = 15 V; $-V_N$ = 15 V	V_i	±13,5	±14	–	V
Output voltage swing	V_P = 15 V; $-V_N$ = 15 V; R_L = 10 kΩ	V_o	±12,5	±13,5	–	V
Supply current	I_{set} included	$I_{P;\,N}$	–	60	100	μA
D.C. voltage gain	R_L = 10 kΩ; V_o = ±3 V	G_v	50	200	–	V/mV
A.C. voltage gain	f = 1 kHz; R_L = 10 kΩ	G_v	–	300	–	
Slew rate		S	–	0,25	–	V/μs
Common mode rejection ratio		CMRR	70	–	–	dB
Power supply rejection ratio		PSRR	76	–	–	dB

At I_{set} = 1 μA

Parameter	Conditions	Symbol	min.	typ.	max.	Unit
Input offset voltage		V_{io}	–	–	6,5	mV
	T_{amb} = 25 °C	V_{io}	–	2	5	mV
Input offset current		I_{io}	–	–	6	nA
	T_{amb} = 25 °C	I_{io}	–	–	4	nA
Input bias current		I_i	–	–	12	nA
	T_{amb} = 25 °C	I_i	–	–	10	nA
Input voltage range	V_P = 15 V; $-V_N$ = 15 V	V_i	±13,5	±14	–	V
Output voltage swing	V_P = 15 V; $-V_N$ = 15 V; R_L = 100 kΩ	V_o	±13	±14	–	V
Supply current	I_{set} included	$I_{P;\,N}$	–	7	11	μA
D.C. voltage gain	R_L = 100 kΩ; V_o = ±3 V	G_v	50	200	–	V/mV
A.C. voltage gain	f = 1 kHz; R_L = 100 kΩ	G_v	–	75	–	
Slew rate		S	–	0,025	–	V/μs
Common mode rejection ratio		CMRR	70	–	–	dB
Power supply rejection ratio		PSRR	76	–	–	dB