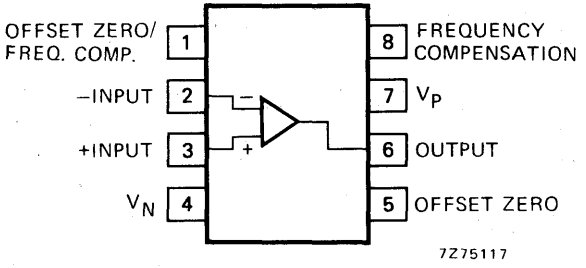
OPERATIONAL AMPLIFIER

The TDA0301D is a general purpose operational amplifier. It is equivalent to the LM301A, however, it is mounted in a miniature plastic package.
The device is intended for a wide range of applications where adaption of the frequency characteristics is desirable. Feed forward compensation can be applied.

Features

- Frequency characteristics adjustable with external capacitor
- Short-circuit protection
- Large input and output voltage range
- Offset voltage adjustable to zero
- Miniature plastic encapsulation

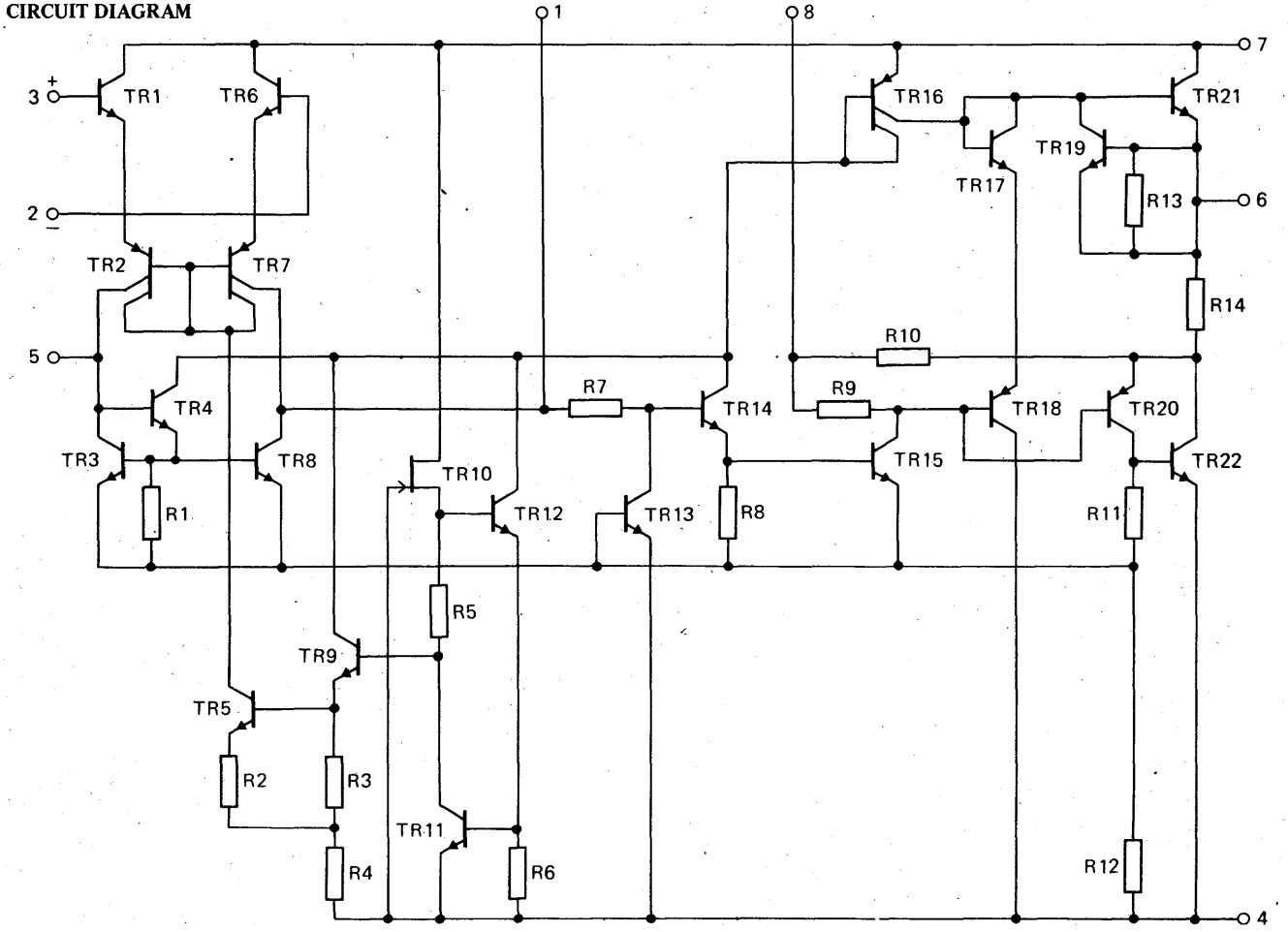
CONNECTION DIAGRAM



PACKAGE OUTLINE *(see general section)*

SO-8 (SOT-96A); plastic 8-lead flat pack.

CIRCUIT DIAGRAM



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

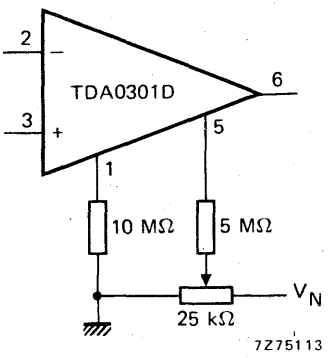
Supply voltage	$V_P - V_N$	max.	36	V
Differential input voltage	$V_{I+} - V_{I-}$	max.	±30	V
Common mode input voltage	V_{I+}; V_{I-}	V_N to V_P		

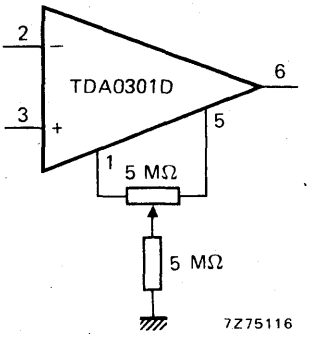
Temperatures

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

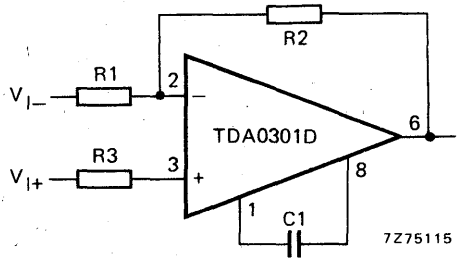
Power dissipation in free air; T_{amb} = 50 °C

Mounted on a ceramic substrate of 4 cm²	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 cm²	P_{tot}	max.	310	mW
derating factor for T_{amb} > 50 °C	$1/R_{th}$	=	4,2	mW/°C

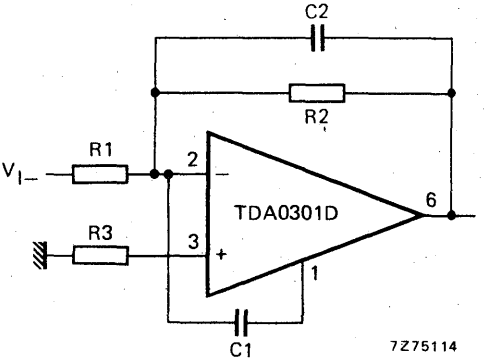




Offset voltage adjust circuits.



Single pole compensation.



Feed forward compensation.

CHARACTERISTICS at $V_P = -V_N = 5$ to 15 V; $T_{amb} = 25\ ^oC$ unless otherwise specified

Parameter	Conditions	Symbol	min.	typ.	max.	Unit
Input offset voltage		V_{io}	–	2	7,5	mV
Input offset current		I_{io}	–	3	50	nA
Input bias current		I_i	–	70	250	nA
Input resistance		R_i	0,5	2	–	MΩ
Large signal voltage gain	$V_P = -V_N = 15$ V; $V_o = \pm 10$ V; $R_L \geqslant 2$ kΩ	G_v	25	160	–	V/mV
Supply current	$V_P = -V_N = 15$ V	$I_{P;N}$	–	1,8	3	mA

CHARACTERISTICS at $V_P = -V_N = 5$ to 15 V; $T_{amb} = 0$ to +70 °C

Parameter	Conditions	Symbol	min.	typ.	max.	Unit
Input offset voltage		V_{io}	–	–	10	mV
Input offset current		I_{io}	–	–	70	nA
Input bias current		I_i	–	–	300	nA
Average temperature coefficient of V_{io}			–	6	30	μV/°C
Average temperature coefficient of I_{io}	$T_{amb} = 25$ to 70 °C $T_{amb} = 0$ to 125 °C		– –	0,01 0,02	0,3 0,6	nA/°C nA/°C
Input voltage range	$V_P = -V_N = 15$ V	V_i	±12	–	–	V
Common mode rejection ratio		CMRR	70	90	–	dB
Power supply rejection ratio		PSRR	70	96	–	dB
Large signal voltage gain	$V_P = -V_N = 15$ V; $V_o = \pm 10$ V; $R_L \geqslant 2$ kΩ	G_v	15	–	–	V/mV
Output voltage range	$V_P = -V_N = 15$ V; $R_L = 10$ kΩ $R_L = 2$ kΩ	V_o V_o	±12 ±10	±14 ±13	– –	V V