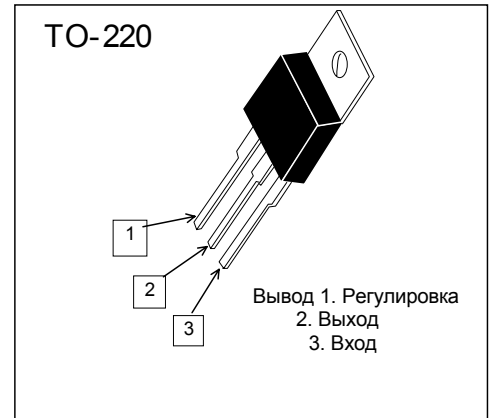## *IC of adjustable voltage regulator of positive polarity with low residual voltage and load current 3 A*

IC IL1084 is a powerful adjustable voltage regulator of positive polarity with low residual voltage and load current 3,2 A.
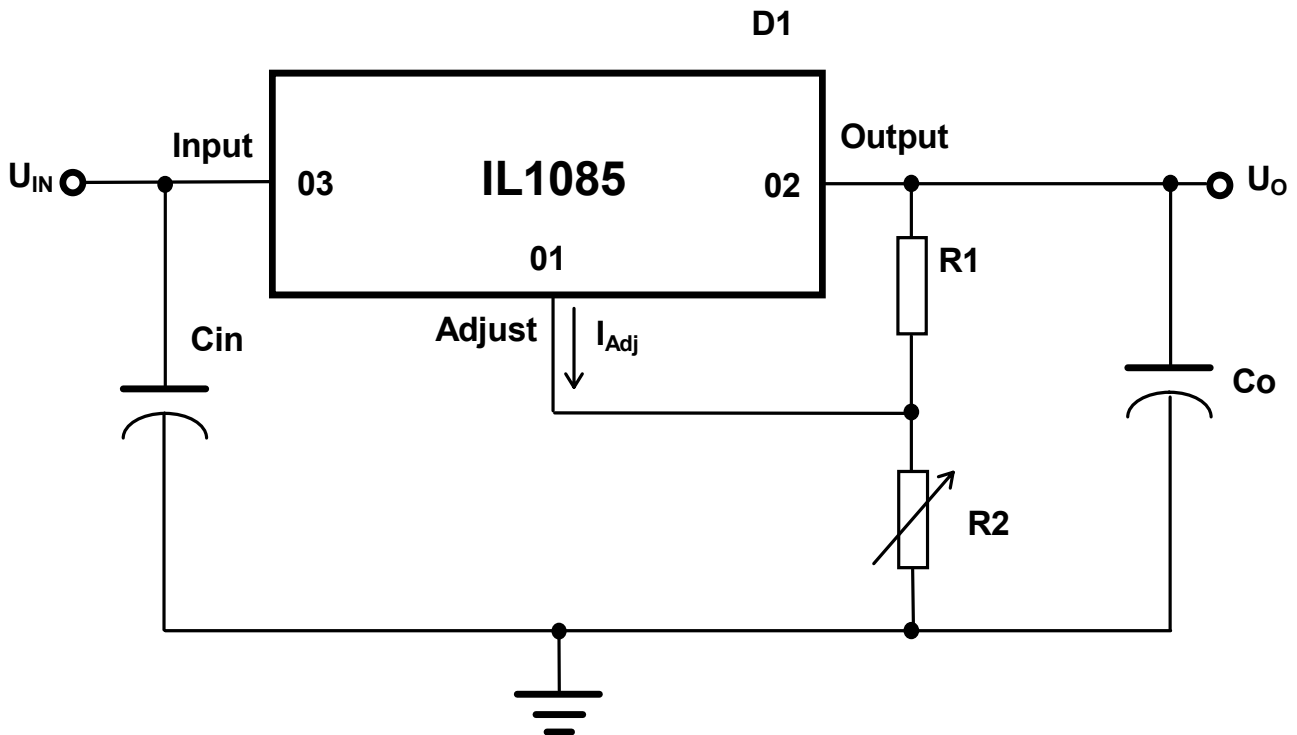
IC of powerful adjustable voltage regulator with low residual voltage lower than 1,5A and reference voltage 1,25 V is purposed for producing constant temperature-stabilized voltage of positive polarity by means of the value set by external resistive divider and used in electronic equipment as a source of stabilized supply.

TO-220

Вывод 1. Регулировка
2. Выход
3. Вход

Properties:

• Reference voltage 1,25V
• Output current up to 3,2 A
• Input-output voltage difference, $U_{IN} - U_O$ up to 30 V
• Residual voltage lower than 1,5 V
• Overload protection
• Embedded temperature protection
• Operation range of chip temperature from 0 up to +125°C.

Table 1 – Description of regulator IC pins in 3-pin package TO-220

Pin No.	Description	Name
01	Adjustment	Adjust
02	Output	Output
03	Input	Input

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C1, C2 – smoothing capacitors, C1=10 mkF, C2=100 mkF (Ta),

D1 - IC

R1, R2 - resistors, R1=121 Ом ± 1%, R2 – adjusted with accuracy 1%.

Output voltage U_o, V, is defined by formula::

$$U_O = U_{ref}(1 + \frac{R2}{R1}) + I_{Adj}R2 \ ,$$

Where U_{ref} - reference voltage, V,

   I_{Adj} - adjustment current, mkA.

Since I_{ADJ} has values not more than 120 mkA, inaccuracy dependent on this value for Uo – is minor..

Figure 1 – Connection circuit of adjustable voltage regulator

TABLE 2 – TABLE OF ELECTRICAL CHARACTERISTICS

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IL1085

Characteristic, measurement unit	Symbol	Measurement mode	Standard		Temperature T_J, ^{O}C
			min	Max	
Reference voltage, V	U_{ref}	I_O=10мА $(U_{IN} - U_O)$=3B	1,238	1,262	25$\pm$10
		10мА $\leq I_O \leq I_{FULL\ LOAD}$ 1,5B $\leq (U_{IN} - U_O) \leq$ 25B	1,225	1,270	0$\div$125
Change of output voltage when input voltage changes, %	Regline	I_O=10 мА, 1,5B $\leq (U_{IN} - U_O) \leq$ 15B	-	0,2	0$\div$125
Change of output voltage when load current changes, %		I_O=10 мА, 15B $\leq (U_{IN} - U_O) \leq$ 30B	-	0,5	0$\div$125
Residual voltage, V	Regload	$(U_{IN} - U_O)$ = 3B 10мА $\leq I_O \leq I_{FULL\ LOAD}$	-	0,3	25$\pm$10
Maximum output current, A			-	0,4	0$\div$125
	U_{ds}	ΔU_{ref} = 1 %, I_O= $I_{FULL\ LOAD}$	-	1,5	0$\div$125
Minimum output current, mA	$I_{O\ max}$	$(U_{IN} - U_O)$ = 5B	3,2	-	0$\div$125
Thermostabilization, %/W		$(U_{IN} - U_O)$ = 25B	0,2	-	0$\div$125
Pulsation smoothing ratio, dB	$I_{O\ min}$	$(U_{IN} - U_O)$ = 25B	-	10	0$\div$125
Adjustment current, mkA	Regterm	$t_{импульс}$=30мсT_A=25°C		0,020	
Change of adjustment current, mkA	RR	f=120Гц, C_{Adj}=25мкФ, C_O=25 мкФ (тантал), I_O=$I_{FULL\ LOAD}$, $(U_{IN} - U_O)$=3B	60	-	0$\div$125
Ratio of output voltage temporary instability, %	I_{Adj}	10мА $\leq I_O \leq I_{FULL\ LOAD}$ 1,5B $\leq (U_{IN} - U_O) \leq$ 25B	-	120	0$\div$125
Characteristic, measurement unit	ΔI_{Adj}	10мА $\leq I_O \leq I_{FULL\ LOAD}$ 1,5B $\leq (U_{IN} - U_O) \leq$ 25B	-	5	0$\div$125
	S	1000 ч ;T_J = 125 ^{O}C (при испытаниях)	-	1	25$\pm$10

Notes:

1 Measurement of electrical characteristics is carried out when capacitance C_{IN}=10 mkF is connected to the input and C_O=100 mkF – to the output;

2 Reference voltage U_{ref} in adjustable regulator is measured between outputs Output and Adjust on resistance R1 (figure 1);

3 Parameters stipulated in table 1 are ensured for constant chip temperature T_J. Measurement of parameters should be performed using heatsink and pulse technique;

4 $I_{FULL\ LOAD}$ – value of maximum output current dependent on input-output voltage difference $(U_{IN} - U_O)$ with power dissipation in package KT-28 - 30 W.

Table 3 – Typical values of electrical characteristics

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Characteristic, Measurement unit	Symbol.	Measurement mode	Typical value
Adjustment current, mkA	I_{Adj}	$T_J = 25\,^{O}C$	55
Temperature ratio of output voltage instability, %	TS	$T_J = 0 \div 125\,^{O}C$	0,5
Noise voltage on output, (%)	$U_{n\ rms}$	$T_J = 25\,^{O}C$ $10\ \text{Гц} \leq f \leq 10\ \text{кГц}$	0,003

Table 4 – Table of maximum and absolute maximum ratings

Parameter	Measure-ment unit	Maximum ratings		Absolute maxi-mum ratings	
		min	max	min	max
Input-output voltage difference, $U_{IN} - U_O$	V	2,77	30	0	31
Chip temperature, T_J	^{O}C	0	125	-65	150
Storage temperature, T_{stg}	^{O}C			-65	150

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