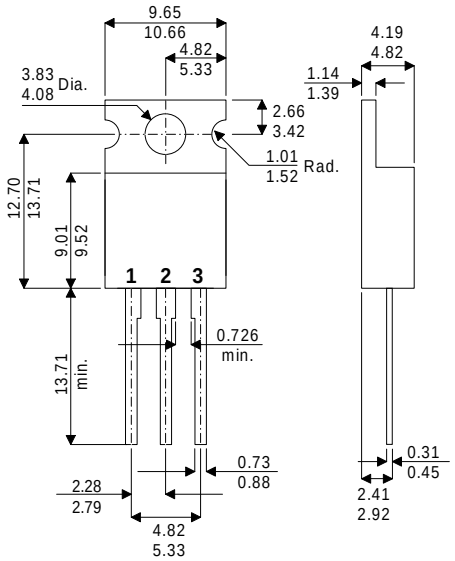
IP1085

TO–220 Isolated Plastic Package



Pinouts

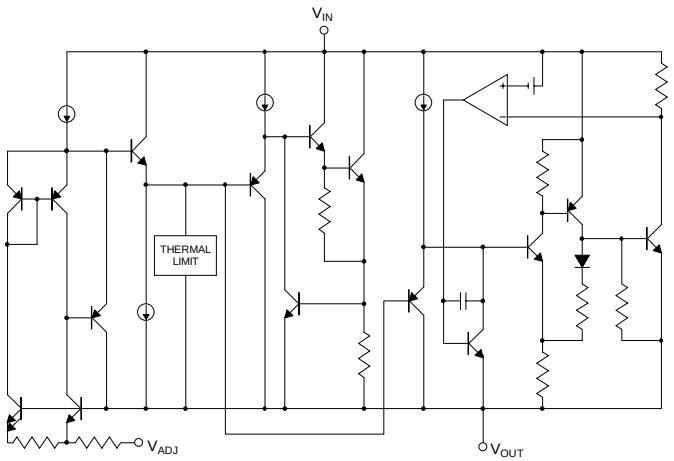
1 – ADJUST 2 – OUTPUT 3 – INPUT

LOW DROPOUT 3 AMP POSITIVE VOLTAGE REGULATOR

FEATURES

- **Low Dropout Performance**
- **Adjustable Voltage Regulator**
- **Output Current 3A**
- **Line Regulation 0.015% / V Typical.**
- **Load Regulation 0.1% Typical.**

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{I-O}	Input–Output Differential Voltage	Adjustable		30V
P_D	Power Dissipation			Internally limited
V_{IN}	Operating Input Voltage			25V
T_J	Operating Junction Temperature Range		Control	0 to 125°C
			Power	0 to 150°C
T_{STG}	Storage Temperature Range			–65 to 150°C
T_{LEAD}	Lead Temperature (for 10 sec.)			300°C

* Although the devices' maximum operating voltage is limited to 25V the devices are guaranteed to withstand transient input voltages up to 30V. For input voltages greater than the maximum operating input voltage, some degradation of specifications will occur.

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DESCRIPTION

The IP1085 is designed to provide 3A with higher efficiency than currently available devices. All internal circuitry is designed to operate down to 1V input to output differential and the dropout voltage is fully specified as a function of load current. Dropout is guaranteed at a maximum of 1.5V at maximum output current, decreasing at lower load currents. On-chip trimming adjusts the reference output voltage to 1%. Current limit is also trimmed, minimising the stress on both the regulator and power source circuitry under overload conditions.

The IP1085 is pin compatible with older 3 terminal adjustable regulators. A 10µF output capacitor is required on these new devices; however, this is usually included in most regulator designs.

Unlike PNP regulators, where up to 10% of the output current is wasted as quiescent current, the IP1085 quiescent current flows into the load, increasing efficiency.

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
V_{REF}	Reference Voltage	$V_{IN} - V_{OUT}$ = 3V	I_{OUT}= 10mA	1.238	1.25	1.262	V
		$V_{IN} - V_{OUT}$ = 1.5 to 15V I_O = 10mA to 3A	T_J = 0 to 150°C	1.225	1.25	1.270	V
$REG_{(LINE)}$	Line Regulation [1]	$V_{IN} - V_{OUT}$ = 1.5 to 15V I_{LOAD} = 10mA	T_J = 25°C		0.015	0.2	%
			T_J = 0 to 150°C		0.035	0.2	
$REG_{(LOAD)}$	Load Regulation [1]	$V_{IN} - V_{OUT}$ = 3V I_O = 10mA to 3A	T_J = 25°C		0.1	0.3	%
			T_J = 0 to 150°C		0.2	0.4	
V_D	Dropout Voltage [3]	ΔV_{REF} = 1% I_{OUT} = 3A	T_J = 0 to 150°C		1.3	1.5	V
I_{CL}	Current Limit	$V_{IN} - V_{OUT}$ = 5V	T_J = 0 to 150°C	3.2	4		A
		$V_{IN} - V_{OUT}$ = 25V	T_J = 0 to 150°C	0.2	0.5		
I_Q	Quiescent Current Minimum Load Current	$V_{IN} - V_{OUT}$ = 25V	T_J = 0 to 150°C		5	10	mA
$REG_{(THERM)}$	Thermal Regulation	T_P = 30ms	T_A = 25°C		0.004	0.02	%/W
R_A	Ripple Rejection	C_{OUT} = 25µF Tantalum f = 120Hz I_O = 3A	T_J = 0 to 150°C $V_{IN} - V_{OUT}$ = 3V C_{ADJ} = 25µF		60	75	dB
I_{PIN}	Adjust Pin Current		T_J = 25°C		55		µA
			T_J = 0 to 150°C			120	
ΔI_{PIN}	Adjust Pin Current Change	$V_{IN} - V_{OUT}$ = 1.5 to 15V I_O = 10mA to 3A	T_J = 0 to 150°C		0.2	5	µA
T_S	Temperature Stability		T_J = 0 to 150°C		0.5		%
	Long Term Stability	T_A = 125°C	T = 1000 Hrs		0.3	1	%
V_N	RMS Output Noise	f = 10Hz to 10kHz	T_A = 25°C		0.003		%

Notes:

1. See thermal regulation specifications for changes in output voltage due to heating effects. Load and line regulation are measured at a constant junction temperature by low duty cycle pulse testing. Load regulation is measured at the output lead ≈ $^1/_8$" from the package.

2. Line and load regulation are guaranteed up to the maximum power dissipation of 45W. Power dissipation is determined by the input - output differential and the output current. Guaranteed maximum power dissipation will not be available over the full input - output voltage range.

3. Dropout voltage is specified over the full output current range of the device.

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