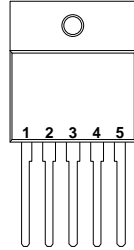


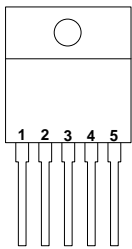
Pin 1 – V_P
Pin 2 – V_C
Pin 3 – N/C
Pin 4 – ADJ.
Case – V_O

K Package – TO-3



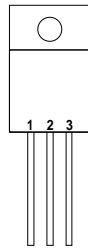
Pin 1 – V_C
Pin 2 – N/C
Pin 3 – V_O
Pin 4 – V_P
Pin 5 – ADJ.

V Package – TO-218



Pin 1 – V_C
Pin 2 – N/C
Pin 3 – V_O
Pin 4 – V_P
Case – ADJ.

T Package – TO-220



Pin 1 – V_C
Pin 2 – V_P
Pin 3 – ADJ.
Case – V_O

G Package – TO-257

3 AMP LOW DROPOUT POSITIVE ADJUSTABLE VOLTAGE REGULATOR

FEATURES

- 1% OUTPUT VOLTAGE TOLERANCE (–A VERSIONS)
- 0.3% LOAD REGULATION
- 0.01%/V LINE REGULATION
- 0.8V DROPOUT VOLTAGE AT 3A
- COMPLETE SERIES OF PROTECTIONS:
 - CURRENT LIMITING
 - THERMAL SHUTDOWN
 - SOA CONTROL

Description

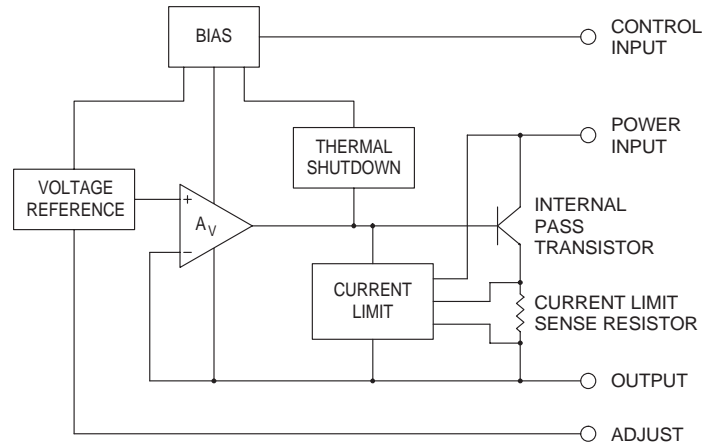
The IP3R07A series of low dropout adjustable voltage regulators are capable of supplying 3A of output current with an input-to-output voltage of just 0.8V. In applications where high efficiency is necessary it is now possible to obtain a low cost, single chip solution. These regulators are exceptionally easy to use, requiring only two external resistors to set the output voltage.

The IP3R07A exhibits an initial $\pm 1\%$ output voltage tolerance, and over all operating conditions the reference voltage is guaranteed not to vary more than $\pm 2\%$. These devices include internal current limiting, thermal overload protection, and power device safe operating area compensation.

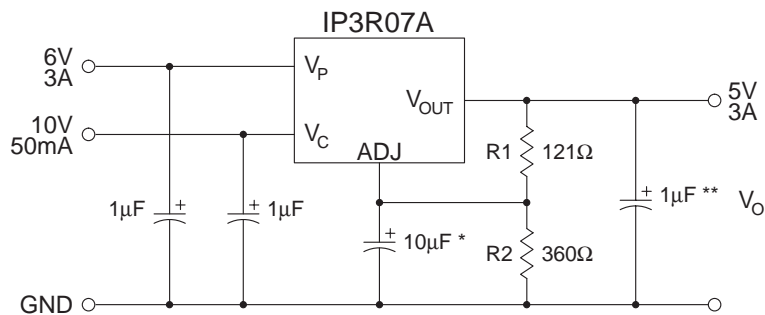
ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^\circ\text{C}$ unless otherwise stated)

	Control Input to Output Voltage	35V
	Power Input to Output Voltage	15V
P_D	Power Dissipation	Internally limited
T_J	Operating Junction Temperature Range	See Order Information Table
T_{STG}	Storage Temperature	-65 to $+150^\circ\text{C}$
T_L	Lead Temperature (Soldering, 10 sec.)	$+300^\circ\text{C}$

BLOCK DIAGRAM



TYPICAL APPLICATION



* Improves Ripple Rejection.
** Improves Transient Response.

NOTE: $V_o = 1.25V \left(1 + \frac{R2}{R1} \right)$

Order Information

Part Number	K-Pack (TO-3)	G-Pack (TO-257)	T-Pack (TO-220)	V-Pack (TO-218)	Temp. Range	Note:
IP1R07A	✓	✓			-55 to +150°C	To order, add the package identifier to the part number.
IP1R07	✓	✓			"	
IP3R07A	✓		✓	✓	0 to 125°C	eg. IP1R07AK
IP3R07	✓		✓	✓	"	

Parameter	Test Conditions ²	IP1R07A IP3R07A			IP1R07 IP3R07			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
V _{REF} Reference Voltage	I _O = 10mA	1.238	1.250	1.262				V
	I _O = 10mA to 3A V _C - V _O = 3V to 35V V _P - V _O = 1.5V to 7V P ≤ 20W T _J = Over Temp. Range ¹	1.225	1.250	1.270	1.20	1.25	1.30	V
$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$ Line Regulation ¹	V _C - V _O = 3V to 35V		0.005	0.010		0.005	0.030	% / V
	T _J = Over Temp. Range ¹		0.020	0.050		0.020	0.070	
$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$ Load Regulation ¹	I _O = 10mA to 3A		0.10	0.30		0.10	0.50	%
	T _J = Over Temp. Range ¹		0.30	1.0		0.30	1.5	
Thermal Regulation	t _p = 20ms		0.002	0.010		0.002	0.030	%/W
Ripple Rejection	V _O = 10V f = 120Hz		C _{ADJ} = 0 65			65		dB
			66	86		66	86	
Dropout Voltage (Power Input)	ΔV _O = 50mV		0.8	1.0		0.8	1.0	V
I _{ADJ} Adjust Pin Current	T _J = Over Temp. Range ¹		50	100		50	100	μA
ΔI _{ADJ} Adjust Pin Current Change	I _O = 10mA to 3A V _P - V _O = 1.5V to 7V V _C - V _O = 3V to 35V T _J = Over Temp. Range ¹		0.2	5		0.2	5	μA
I _{MIN} Minimum Load Current	V _C - V _O = 35V T _J = Over Temp. Range ¹		3.5	5		3.5	10	mA
I _{CL} Current Limit	V _P - V _O ≤ 7V T _J = Over Temp. Range ¹		3	4.5		3	4.5	A
R _{θJC} Thermal Resistance Junction to Case	K Package		Power Transistor			1.2		°C/W
	V Package		Control Circuitry			0.5		
	T Package		Power Transistor			2.3		
	G Package		Control Circuitry			0.7		

Notes

- 1) Applies over full temperature range :-
T_J = -55 to +150°C for IP1R07A / IP1R07
T_J = 0 to +125°C for IP3R07A / IP3R07
All other specifications apply at T_J = 25°C unless otherwise stated.
- 2) Test conditions unless otherwise stated :-
V_C - V_O = 5V , V_P - V_O = 3V , I_{OUT} = 3A.
Although Power Dissipation is internally limited, these specifications apply for Power Dissipation up to 50W.
- 3) Load and Line regulation are electrically independent and are measured using pulse techniques at low duty cycle in order to maintain constant junction temperature. To determine the effects on the output voltage due to device heating, refer to thermal regulation specification.