

LOW DROPOUT, 3 AMP POS. ADJUSTABLE REGULATORS

IP1R07A, IP1R07, IP3R07A, IP3R07 Series

DESCRIPTION

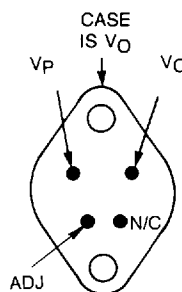
The IP3R07A series of low dropout adjustable voltage regulators are capable of supplying 3A of output current with an input-to-output voltage of just 0.8V. In applications where high efficiency is necessary it is now possible to obtain a low cost, single chip solution. These regulators are exceptionally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

FEATURES

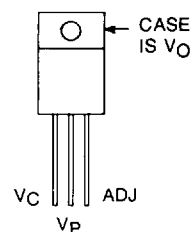
- 0.8V dropout voltage at 3A
- Guaranteed 1% output voltage tolerance
- Guaranteed 0.3% load regulation
- Guaranteed 0.01%/V line regulation
- Available in TO-218, TO-220, TO-3 and Hermetic TO-257 packages

CONNECTIONS

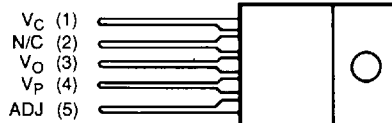
(Bottom View)
TO-3



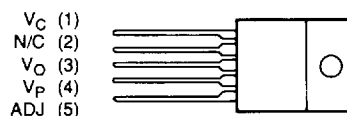
(Top View)
TO-257



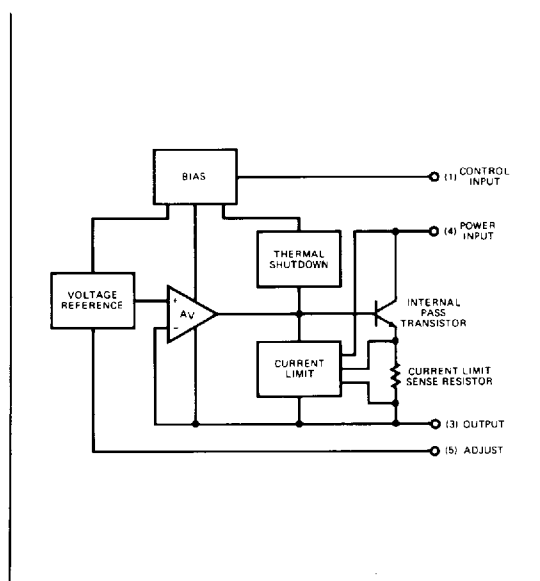
(Top View)
TO-218



(Top View)
TO-220



BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS

T-58-11-23

Power Dissipation	Internally Limited	Operating Junction Temperature	IP1R07A, IP1R07 - 55°C to +150°C IP3R07A, IP3R07 0°C to +125°C
Control Input to Output Voltage	35V	Storage Temperature Range	- 65°C to +150°C
Power Input to Output Voltage	15V	Lead Temperature (Soldering, 10 sec.)	+300°C

Absolute maximum ratings are those values beyond which the safety of the device cannot be guaranteed. They are not meant to imply that the device should be operated at these limits. The electrical characteristics provide conditions for actual device operation.

ELECTRICAL CHARACTERISTICS

Parameter	Conditions (Note 1)	IP1R07A/IP3R07A			IP1R07/IP3R07			Units
		Min	Typ	Max	Min	Typ	Max	
Reference Voltage	$I_O = 10\text{mA}$	1.238	1.250	1.262				V
	$3\text{V} \leq V_C - V_O \leq 35\text{V}$ $1.5\text{V} \leq V_P - V_O \leq 7\text{V}$ $10\text{mA} \leq I_O \leq 3\text{A}$, $P \leq 20\text{W}$	• 1.225	1.250	1.270	1.20	1.25	1.30	V
Line Regulation	$3\text{V} \leq V_C - V_O \leq 35\text{V}$		0.005	0.01		0.005	0.03	%/V
		•	0.02	0.05		0.02	0.07	%/V
Load Regulation (% V_{OUT})	$10\text{mA} \leq I_O \leq 3\text{A}$		0.10	0.30		0.10	0.50	%
		•	0.30	1.0		0.30	1.5	%
Thermal Regulation	20 msec Pulse		0.002	0.01		0.002	0.03	%/W
Ripple Rejection (Control Input)	$V_O = 10\text{V}$, $f = 120\text{Hz}$		65			65		dB
	$C_{Adj} = 0$ $C_{Adj} = 10\mu\text{F}$	• 66	86		66	86		dB
Dropout Voltage (Power Input)	$\Delta V_O = 50\text{mV}$		0.8	1.0		0.8	1.0	V
Adjust Pin Current		•	50	100		50	100	μA
Adjust Pin Current Change	$3\text{V} \leq V_C - V_O \leq 35\text{V}$ $1.5\text{V} \leq V_P - V_O \leq 7\text{V}$ $10\text{mA} \leq I_O \leq 3\text{A}$	•	0.2	5		0.2	5	μA
Minimum Load Current	$V_C - V_O = 35\text{V}$	•	3.5	5		3.5	10	mA
Current Limit	$V_P - V_O \leq 7\text{V}$	•	3	4.5	3	4.5		A
Thermal Resistance Junction-to-Case, θ_{JC}	V Pkg		1.2			1.2		°C/W
	K Pkg		0.5			0.5		°C/W
	T Pkg		2.3			2.3		°C/W
	G Pkg		0.7			0.7		°C/W

The • denotes specifications which apply over the full operating temperature range, all others apply at $T_j = 25^\circ\text{C}$ unless otherwise specified.

Note 1: Unless otherwise specified, $V_C - V_O = 5\text{V}$, $V_P - V_O = 3\text{V}$, $I_O = 3\text{A}$. Although power dissipation is internally limited, these specifications apply for dissipations up to 20W.

Note 2: Line and load regulation are electrically independent and are measured using pulsed testing techniques at low duty cycle, in order to maintain constant junction temperature. To determine the effects on the output voltage due to device heating see thermal regulation specification.

SEAGATE MICROELECTRONICS



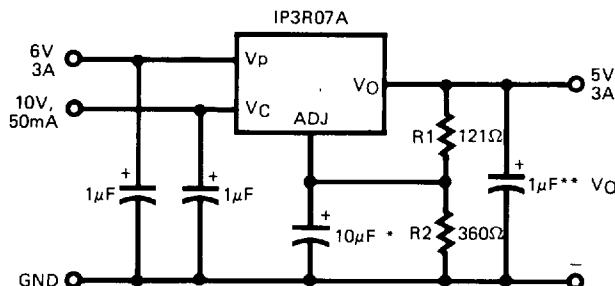
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TYPICAL APPLICATION

T-58-11-23

6 VOLT INPUT, 5 VOLT OUTPUT REGULATOR



*IMPROVES RIPPLE REJECTION
 **IMPROVES TRANSIENT RESPONSE

NOTE: $V_O = 1.25V (1 + \frac{R_2}{R_1})$

SEAGATE MICROELECTRONICS

ORDER INFORMATION

Part Number	Temperature Range	Package
IP1R07AK, IP1R07K	-55°C to +150°C	TO-3
IP1R07AG, IP1R07G	-55°C to +150°C	TO-257
IP3R07AK	0°C to +125°C	TO-3
IP3R07K	0°C to +125°C	TO-3
IP3R07AV	0°C to +125°C	TO-218
IP3R07V	0°C to +125°C	TO-218
IP3R07AT	0°C to +125°C	TO-220
IP3R07T	0°C to +125°C	TO-220

