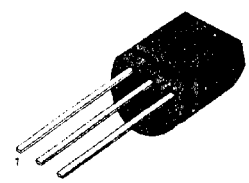
KA317L ADJUSTABLE VOLTAGE REGULATOR(POSITIVE)

3-TERMINAL 0.1A POSITIVE ADJUSTABLE REGULATOR

The KA317L is a 3-terminal adjustable positive voltage regulator capable of supplying in excess of 100mA over an output voltage range of 1 .2V to 37V. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage.

TO - 92



1: ADJ 2: Output 3: Input

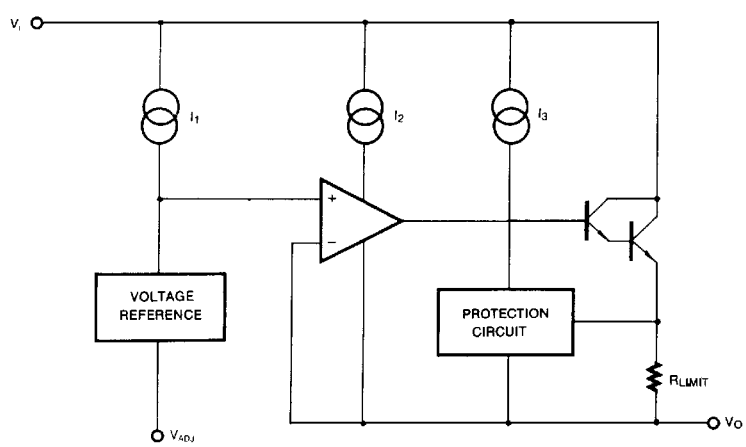
FEATURES

- Output current in excess of 100rnA
- Output adjustable between 1.2V and 37V,
- Internal thermal-overload protection
- Internal short-circuit current-limiting
- Output transistor safe-area compensatlon
- Floating operatlon for high-voltage applications

ORDERING INFORMATION

Device	Package	Operating Temperature
KA317LZ	TO-92	0 ~ 125℃

BLOCK DIAGRAM



FAIRCHILD SEMICONDUCTOR™

Rev. B

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ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Input-Output Voltage Differential	$V_I - V_O$	40	V
Power Dissipation	P_D	Internally Limited	
Operating Temperature Range	T_{OPR}	0 ~ + 125	℃
Storage Temperature	T_{STG}	-65 ~ + 150	℃

ELECTRICAL CHARACTERISTICS

($V_I - V_O$ = 5V, I_O = 40mA, 0℃ ≤ T_J ≤ 125℃, P_{DMAX} = 625mW, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
* Line Regulation	ΔV_O	T_A = 25℃ 3V ≤ V_I ≤ V_O ≤ 40V		0.01	0.04	%/V
		3V ≤ V_I ≤ V_O ≤ 40V		0.02	0.07	
* Load Regulation	ΔV_O	T_A = 25℃ 10mA ≤ I_O ≤ 100mA V_O ≤ 5V V_O 5V		 5 0.1	 25 0.5	 mV %/V_O
		10mA ≤ I_O ≤ 100mA V_O ≤ 5V V_O 5V		 20 0.3	 70 1.5	 mV %/V_O
Adjustment Pin Current	I_{ADJ}			50	100	μA
Adjustment Pin Current Change	ΔI_{ADJ}	3V ≤ V_I - V_O ≤ 40V 10mA ≤ I_O ≤ 100mA P_D < P_{DMAX}		0.2	5	μA
Reference Voltage	V_{REF}	3V < V_I - V_O < 40V 10mA ≤ I_O ≤ 100mA P_D ≤ P_{DMAX}	1.20	1.25	1.30	V
Temperature Stability	ST_T			0.7		%
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	$V_I - V_O$ = 40V		3.5	10	mA
Maximum Output Current	$I_{O(MAX)}$	$V_I - V_O$ = 5V P_D < P_{DMAX}	100	200		mA
		$V_I - V_O$ = 40V P_D < P_{DMAX}, T_A = 25℃	25	50		
RMS Noise, % of V_{OUT}	e_N	T_A = 25℃ 10Hz < f < 10KHz		0.003		%/V_O
Ripple Rejection	RR	V_O = 10V, f = 120Hz without C_{ADJ} C_{ADJ} = 10μF	66	65 80		dB
Long-Term Stability	ST	T_J = 125℃, 1000 Hours		0.3		%

* Load and Line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

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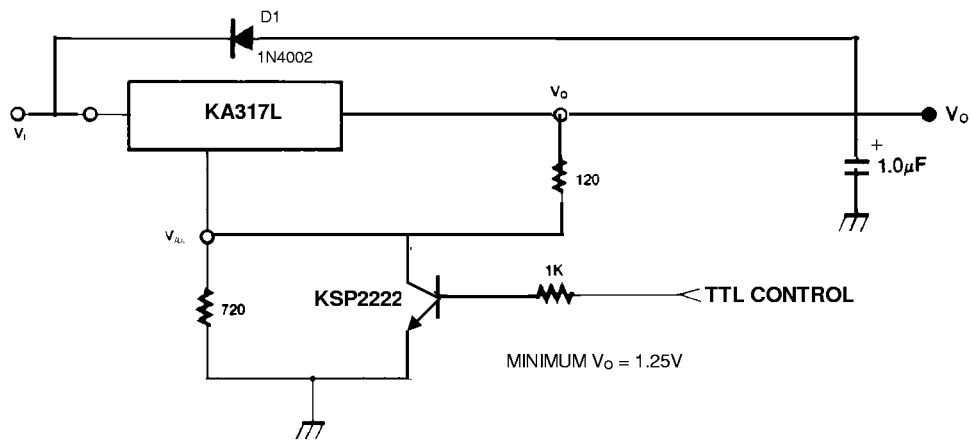
TYPICAL APPLICATIONS

Fig. 1 5V Electronic Shutdown Regulator



D1 protects the device during an input short circuit.

Fig. 2 Slow Turn On Regulator

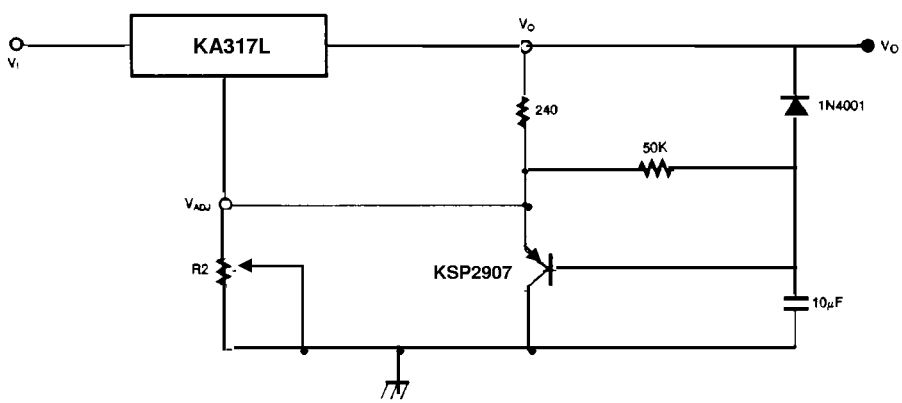


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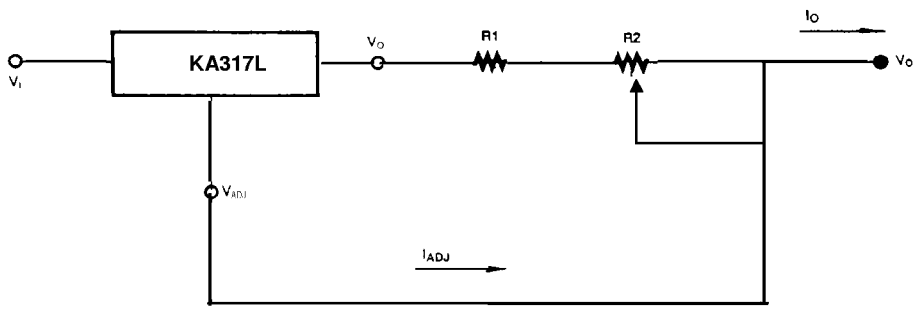
Fig. 3 Current Regulator



$$I_{OMAX} = \left(\frac{V_{REF}}{R1}\right) + I_{ADJ} \cong \frac{1.25V}{R1}$$

$$I_{OMIN} = \left(\frac{V_{REF}}{R1 + R2}\right) + I_{ADJ} \cong \frac{1.25V}{R1 + R2}$$

$5mA < I_O < 500mA$

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