

LM317M

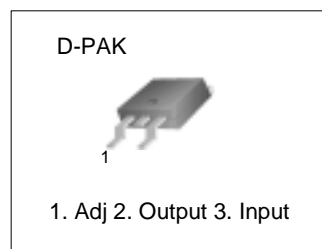
3-terminal 0.5A positive adjustable regulator

Features

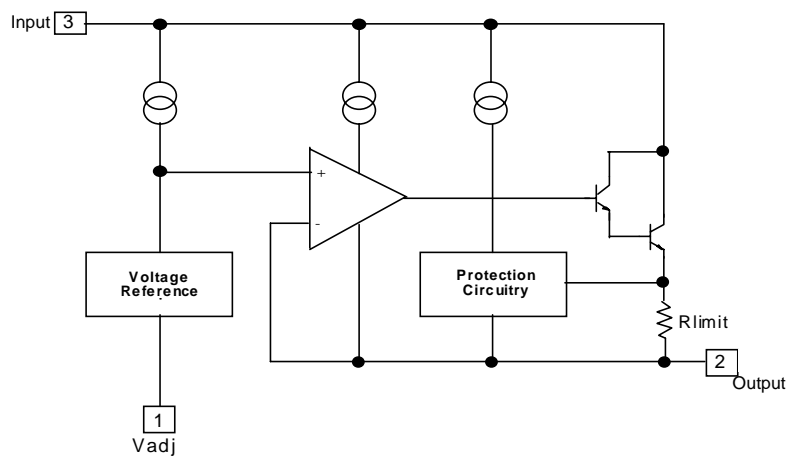
- Output current in excess of 0.5A
- Output adjustable between 1.2V and 37V
- Internal thermal-overload protection
- Internal short-circuit current-limiting
- Output transistor safe-area compensation
- Floating operation for high-voltage applications

Description

The LM317M is a 3-terminal adjustable positive voltage regulator capable of supplying in excess of 500mA 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.



Internal Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input-Output Voltage Differential	$V_I - V_O$	40	V
Power Dissipation	P_D	Internally limited	W
Operating Temperature Range	T_{OPR}	0 ~ +125	°C
Storage Temperature Range	T_{STG}	-65 ~ +125	°C

Electrical Characteristics

($V_I - V_O = 5V$, $I_O = 0.1A$, $0^\circ C \leq T_J \leq +125^\circ C$, $P_{DMAX} = 7.5W$, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
*Line Regulation	Rline	$T_A = +25^\circ C$ $3V \leq V_I - V_O \leq 40V$	-	0.01	0.04	% / V
		$3V \leq V_I - V_O \leq 40V$	-	0.02	0.07	
*Load Regulation	Rload	$T_A = +25^\circ C$ $10mA \leq I_O \leq 0.5A$ $V_O \leq 5V$ $V_O \geq 5V$	-	5 0.1	25 0.5	mV % / V_O
		$10mA \leq I_O \leq 0.5A$ $V_O \leq 5V$ $V_O \geq 5V$	-	20 0.3	70 1.5	mV % / V_O
Adjustment Pin Current	I_{ADJ}	-	-	50	100	μA
Adjustment Pin Current Change	ΔI_{ADJ}	$3V \leq V_I - V_O \leq 40V$ $10mA \leq I_O \leq 0.5A$ $P_D < P_{DMAX}$	-	0.2	5	μA
Reference Voltage	V_{REF}	$3V < V_I - V_O < 40V$ $10mA \leq I_O \leq 0.5A$ $P_D < P_{DMAX}$	1.20	1.25	1.30	V
Temperature Stability	STT	-	-	0.7		% / V_O
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	$V_I - V_O \leq 40V$	-	3.5	10	mA
Maximum Output Current	$I_{O(MAX)}$	$V_I - V_O \leq 15V$ $P_D < P_{DMAX}$	0.5	0.9	-	A
		$V_I - V_O \leq 40V$ $P_D < P_{DMAX}$, $T_A = +25^\circ C$	0.15	0.25	-	
RMS Noise, % of V_{OUT}	e_N	$T_A = +25^\circ C$ $10Hz < f < 10KHz$	-	0.003	-	% / V_O
Ripple Rejection	RR	$V_O = 10V$, $f = 120Hz$ without CADJ CADJ = 10 μF	66	65 80	-	dB
Long-Term Stability	ST	$T_J = +125^\circ C$, 1000Hours	-	0.3	1	% / 1000Hrs

- 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.

Typical Application

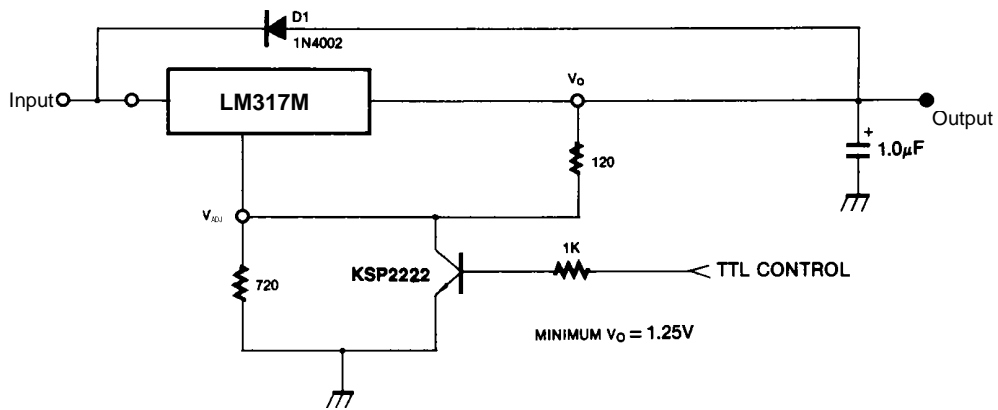


Figure 1. 1.5V Electronic Shutdown Regulator

D1 protects the device during an input short circuit.

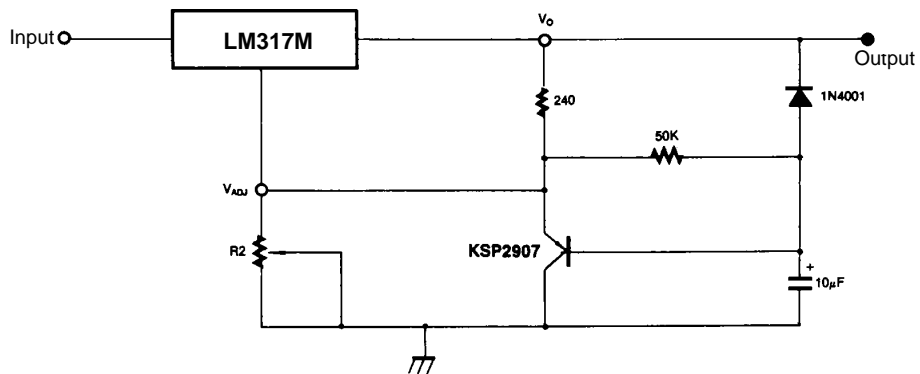
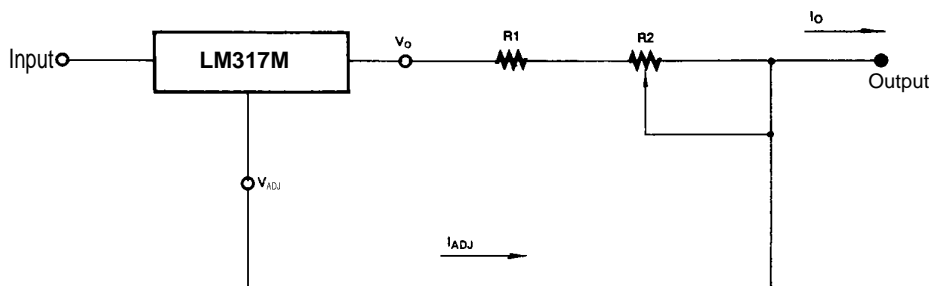


Figure 2. Slow Turn-On Regulator



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

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

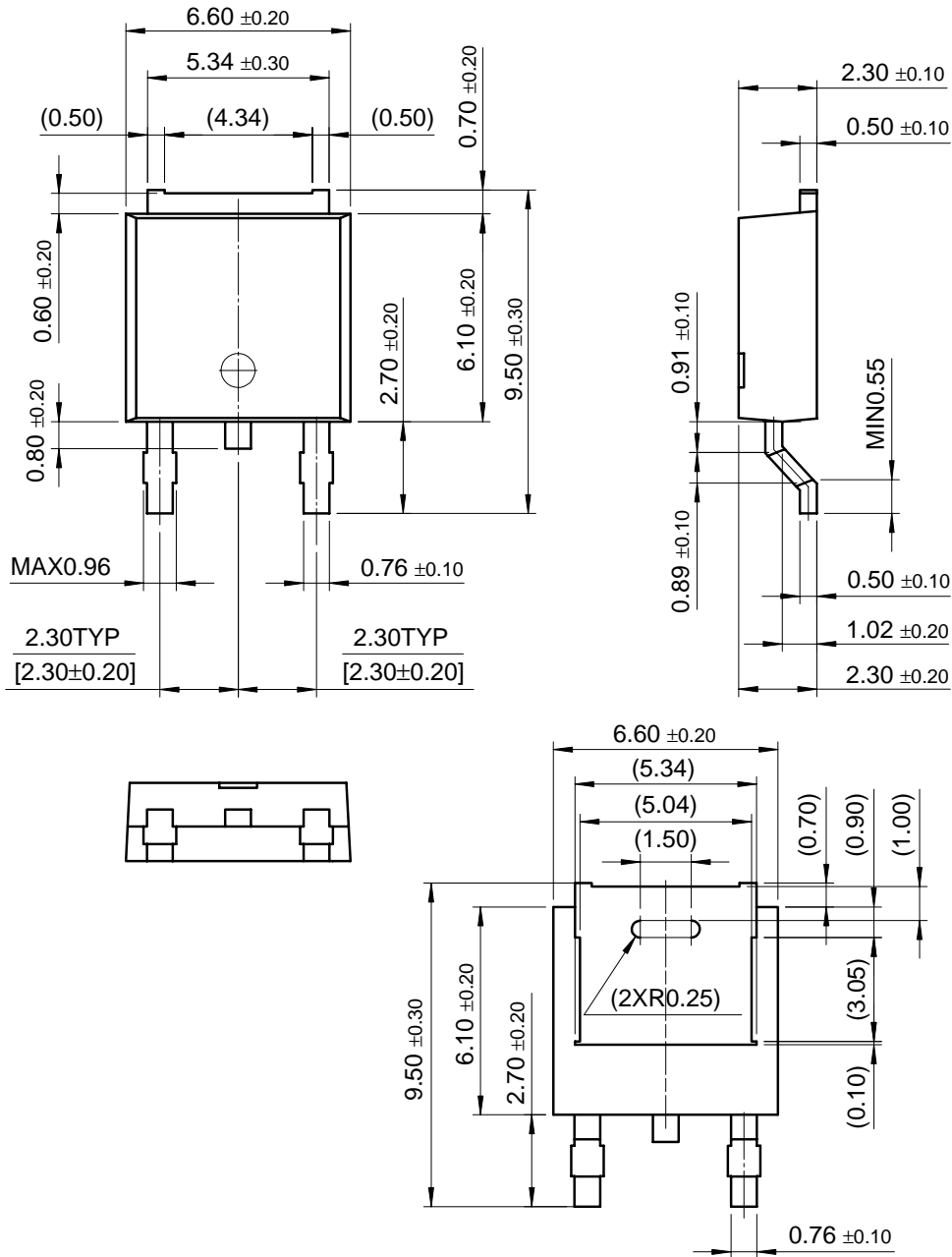
$$5mA < I_o < 500mA$$

Figure 3. Current Regulator

Mechanical Dimensions (Continued)

Package

D-PAK



Ordering Information

Product Number	Package	Operating Temperature
LM317MDT	D-PAK	0 ~ 125 °C

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