

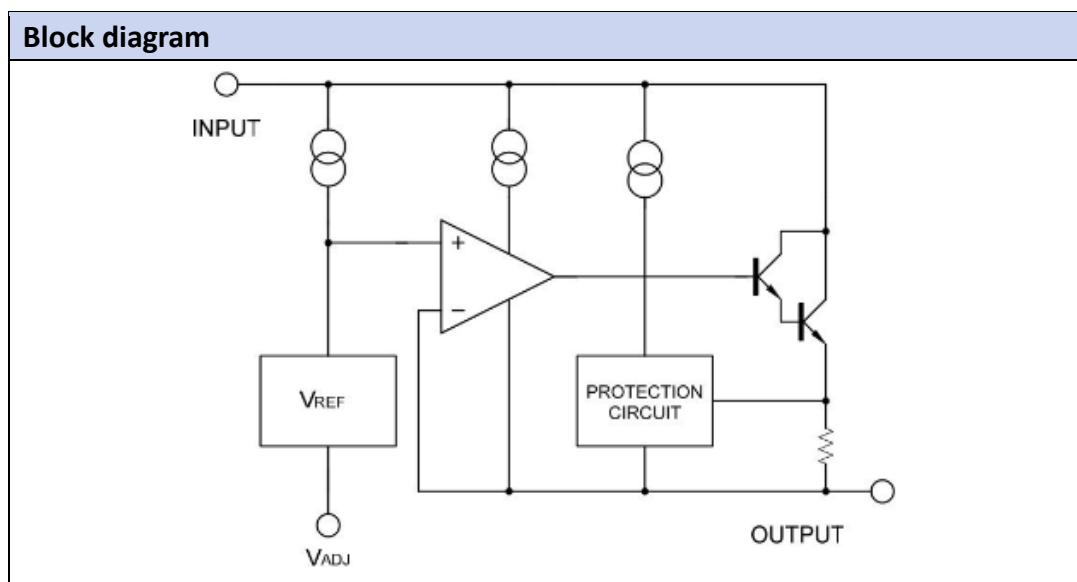
Adjustable Voltage Regulator

Primary characteristics		
Parameter	Value	Unit
Output voltage	1.25 ~ 37	V
Output current	100	mA

Features

- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe area compensation
- Pb-free and RoHS compliant

Case dimensions											
TO-92											
Unit mm	A	A ₁	b	b ₁	c	D	E	e	e ₁	L	L ₁
MIN	3.3	2.3	0.4	0.5	0.35	4.45	4.40	1.17	2.34	13.5	1.8
MAX	3.7	2.7	0.5	0.7	0.45	4.70	4.65	1.37	2.64	14.5	2.2



Absolute maximum ratings			
Parameter	Symbol	Rating	Unit
Input-output voltage differential	V _{IN} -V _{OUT}	40	V
Output current	I _O	Internally limited	
Operating temperature	T _{OPR}	0 ~ +125	°C
Storage Temperature	T _{STG}	-60 ~ +150	°C

Electrical characteristics

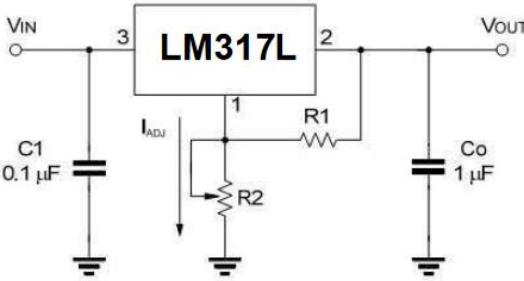
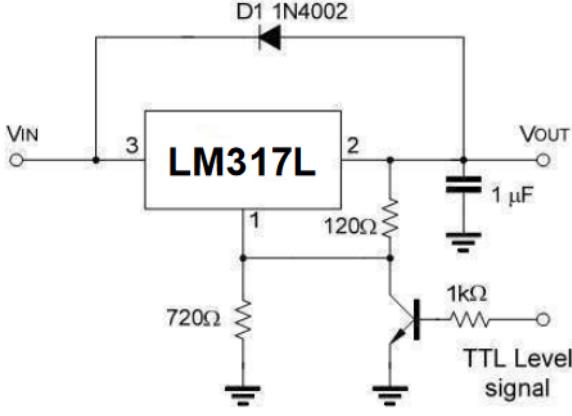
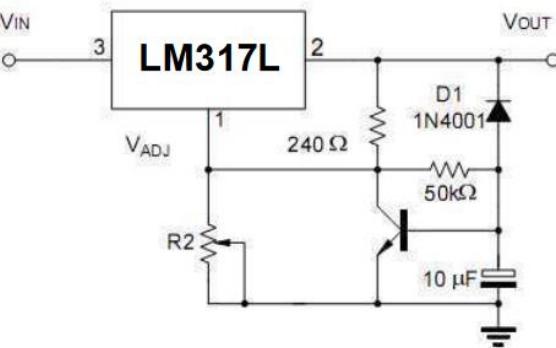
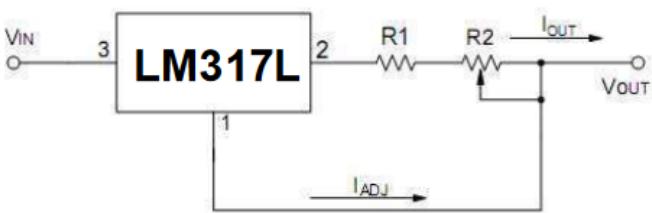
$V_{IN}-V_{OUT}=5.0V$, $I_{OUT}=500mA$, $I_{MAX}=1.5A$ and $P_{MAX}=20W$, unless otherwise specified

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Line regulation	$\Delta V_{OUT}/V_{OUT}$	$3V \leq V_{IN}-V_{OUT} \leq 40V$, $I_{LOAD} \leq 20mA$	-	-	0.04	%/V
Load regulation	ΔV_{OUT}	$10mA \leq I_{OUT} \leq 1.5A$	$V_{OUT} \leq 5V$	-	-	25 mV
			$V_{OUT} \geq 5V$	-	-	0.5 %
Adjustable pin current	I_{ADJ}	$T_J=25^\circ C$	-	-	100	μA
Adjustable pin current change	ΔI_{ADJ}	$3V \leq V_{IN}-V_{OUT} \leq 40V$ $5.0mA \leq I_{OUT} \leq 100mA$	-	-	5.0	μA
Reference voltage	V_{REF}	$3V \leq V_{IN}-V_{OUT} \leq 40V$ $5.0mA \leq I_{OUT} \leq 100mA$, $P_D < 625mW$	1.2	1.25	1.3	V
Minimum load current for regulation	$I_{L(MIN)}$	$V_{IN}-V_{OUT}=40V$	-	-	10	mA
Maximum output current	$I_{O(MAX)}$	$V_{IN}-V_{OUT}=40V$, $P_D \leq 625mW$	-	-	100	mA
RMS noise vs. % of V_{OUT}	eN	$10Hz \leq f \leq 10kHz$	-	-	0.01	% V_{OUT}
Ripple rejection	RR	$V_{OUT}=10V$, $f=120Hz$	$C_{ADJ}=0$	-	65	-
			$C_{ADJ}=10\mu F$	60	-	-

Notes:

C_{ADJ} is connected between adjust pin and ground

Application circuits

Programmable voltage regulator	Regulator with ON-OFF control
 $V_{OUT} = 1.25 \times \left(1 + \frac{R_2}{R_1}\right) + I_{ADJ} \times R$ <p>C_1 is required when regulator is located an appreciated distance from power supply. C_0 is needed to improve transient response.</p>	
Soft start application	Constant current application
	 $I_{OUT(MAX)} = \left(\frac{V_{REF}}{R_1}\right) + I_{ADJ} = \frac{1.25V}{R_1}$ $I_{OUT(MIN)} = \left(\frac{V_{REF}}{R_1 + R_2}\right) + I_{ADJ} = \frac{1.25V}{R_1 + R_2}$ <p>$5mA < I_{OUT} < 100mA$</p>

Performance curves

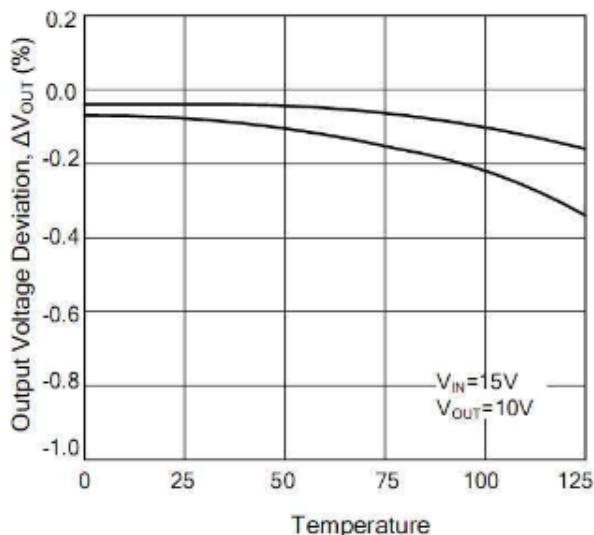


Fig.1. Load Regulation vs. temperature

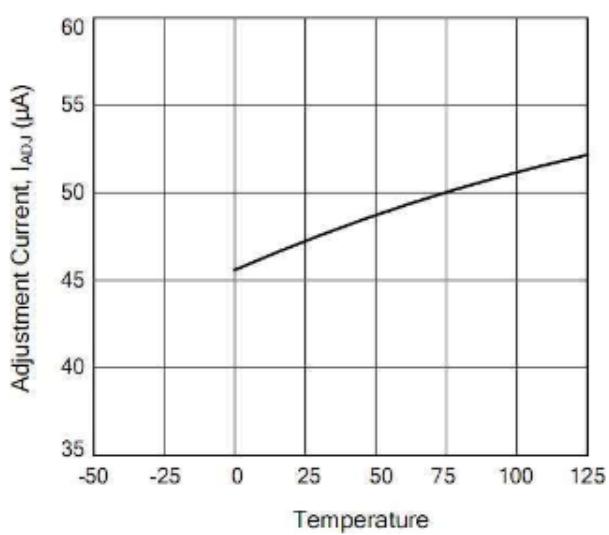


Fig.2. Adjustment Current vs. Temperature

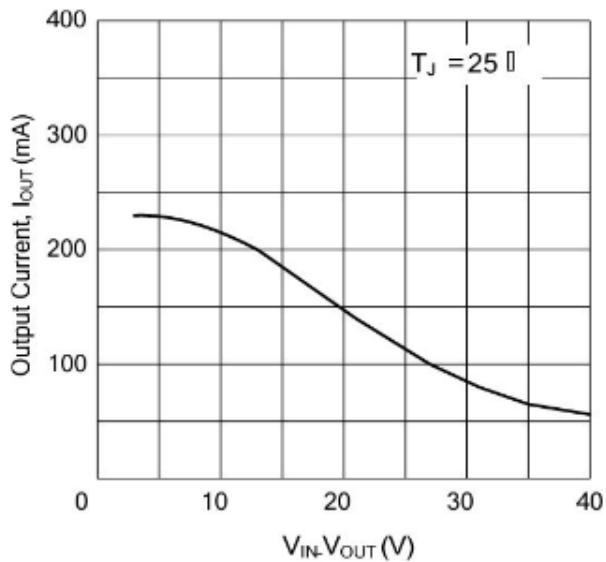


Fig.3. Currents Limit

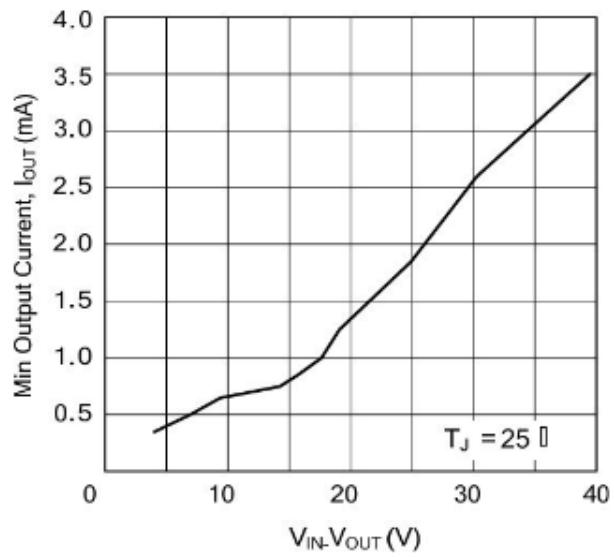


Fig.4. Minimum Opreating Current

Ordering information

Part Number	Package	Shipping Quantity	Dimensions
LM317L	TO-92	1000 pcs / bag (bulk)	---
LM317L	TO-92	2000 pcs / box (tape)	

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