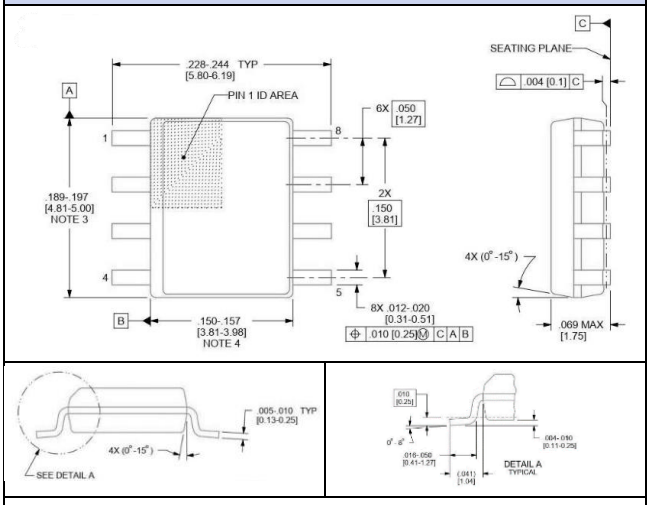
Adjustable Voltage Regulator

Primary characteristics		
Parameter	**Value**	**Unit**
Output voltage	1.2 ~ 37	V
Output current	1.5	A

Features

- Pb-free and **RoHS** compliant
- Complete series of protections:
  Current limiting;
  Thermal shutdown;
  SOA compensation;

Case dimensions



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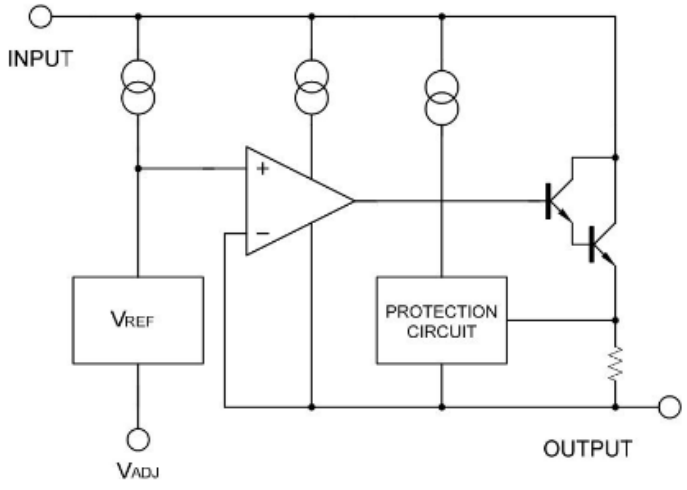
Unit		A	B	C	D	E	G	H	J	K
mm	MIN	4.8	3.8	1.3	0.3	0.4	1.17	0.1	0.1	5.8
	MAX	5.2	4.2	1.5	0.5	1.0	1.37	0.3	0.3	6.2

Block diagram



Absolute maximum ratings			
Parameter	**Symbol**	**Rating**	**Unit**
Input-output voltage differential	V_{IN}-V_{OUT}	40	V
Lead temperature	T_{LEAD}	230	°C
Operating temperature	T_{OPR}	-40 ~ +125	°C
Storage Temperature	T_{STG}	-55 ~ +125	°C
Temperature coefficient of output voltage	$\Delta V_O/\Delta T$	±0.02	%/°C

Electrical characteristics

V_{IN}-V_{OUT}=5.0V, I_{OUT}=500mA, 0°C≤T_J≤125°C I_{MAX}=1.5A and P_{MAX}=20W, unless otherwise specified

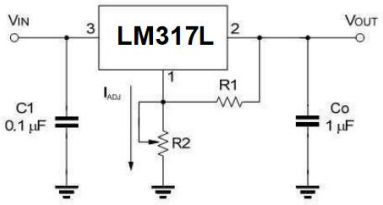
Parameter	Symbol	Test conditions		Min.	Typ.	Max.	Unit
Line regulation [1]	R_{line}	T_A=25°C 3.0V≤V_I-V_O≤40V		-	0.01	0.04	%/V
		3.0V≤V_I-V_O≤40V		-	0.02	0.07	
Load regulation [1]	R_{load}	10mA≤I_O≤I_{MAX}; T_A=25°C	V_{OUT}<5.0V	-	18	25	mV
			V_{OUT}≥5.0V	-	0.4	0.5	
		10mA≤I_O≤I_{MAX}	V_{OUT}<5.0V	-	40	70	%V_O
			V_{OUT}≥5.0V	-	0.8	1.5	
Adjustable pin current	I_{ADJ}	-		-	46	100	µA
Adjustable pin current change	ΔI_{ADJ}	3.0V≤V_I-V_O≤40V 10mA≤I_O≤I_{MAX}, P_D≤P_{MAX}		-	0.2	5.0	µA
Reference voltage	V_{REF}	3.0V≤V_I-V_O≤40V 10mA≤I_O≤I_{MAX}, P_D≤P_{MAX}		1.2	1.25	1.3	V
Temperature stability	ST_T	-		-	0.7	-	%/V_O
Minimum load current to maintain regulation	$I_{L(MIN)}$	V_I-V_O=40V		-	3.5	5.0	mA
Maximum Output Current	$I_{O(MAX)}$	V_I-V_O≤3.0V-13V, P_D≤P_{MAX}		100	200	-	mA
		V_I-V_O≤40V, P_D≤P_{MAX}		-	50	-	
RMS Noise, % of V_{OUT}	e_N	T_A=25°C, 10Hz≤f≤10kHz		-	0.003	0.01	%/V_O
Ripple rejection	RR	V_O=10V, f=120Hz,	without C_{ADJ}	-	65	-	dB
			C_{ADJ}=10µF [2]	66	80	-	
Long-term stability, T_J=T_{HIGH}	ST	T_A=25°C for end point measurements, 1000 hrs		-	0.3	1.0	%
Thermal resistance junction to case	$R_{\theta JC}$	-		-	25.2	-	°C/W

Notes:

1) Load and line regulation are specified at constant junction temperature. Change in V_D due to heating effects must be taken into account separately. Pulse testing with low duty is used. (P_{MAX}=20W)
2) C_{ADJ}. When used, is connected between the adjustment pin and ground.

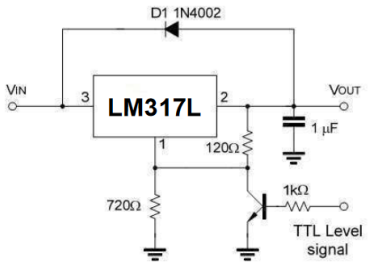
Application circuits

Programmable voltage regulator

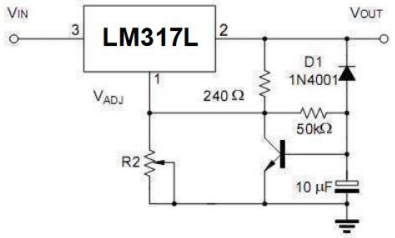


$$V_{OUT} = 1.25 \times \left(1 + \frac{R_2}{R_1}\right) + I_{ADJ} \times R$$

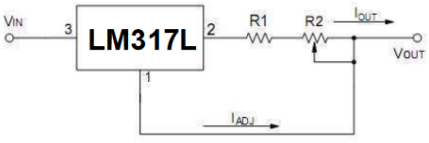
Regulator with ON-OFF control

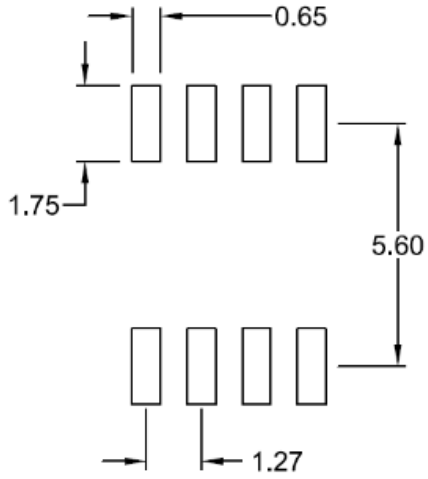


Soft start application



Constant current application



Suggested soldering pad layout

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Ordering information			
Part Number	**Package**	**Shipping Quantity**	**Dimensions**
LM317LD	SOP-8	**2500 pcs / reel**	---

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