

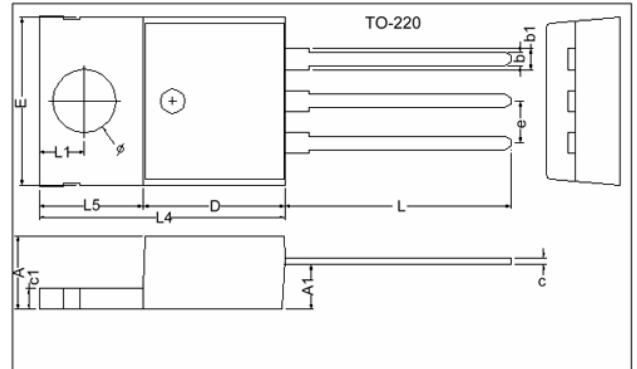
RoHS Compliant Product

Description

The SELM317 is an adjustable 3-terminal positive voltage regulator, designed to supply more than 1.5A of output current with voltage adjustable from 1.3 to 37V.

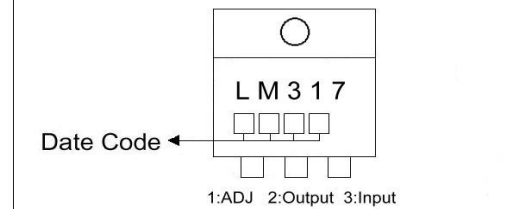
Features

- * Safe-Area Compensation For Output Transistor
- * Internal Short Circuit Protection
- * Internal Over Temperature Protection
- * Output Current Up To 1.5A
- * Output Voltage Adjustable From 1.3 to 37V

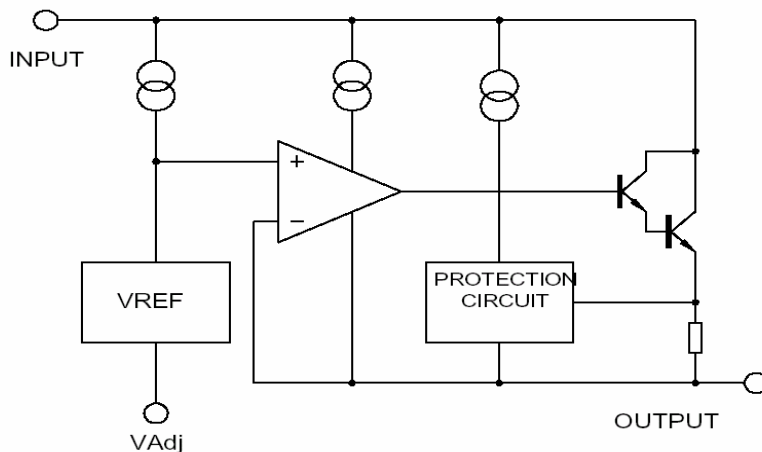


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c1	1.25	1.45
b	0.76	1.00	b1	1.17	1.47
c	0.36	0.50	L	13.25	14.25
D	8.60	9.00	e	2.54 REF.	
E	9.80	10.4	L1	2.60	2.89
L4	14.7	15.3	∅	3.71	3.96
L5	6.20	6.60	A1	2.60	2.80

Marking :



Block Diagram



Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Ratings	Unit
Input-Output Voltage Difference	V _{IN-VOUT}	40	V
Load Temperature	T _{LEAD}	230	°C
Power Dissipation	P _D	Internal Limited	
Storage Temperature Range	T _{STG}	-65~+150	°C
Operating Junction Temperature	T _{OPR}	0~125	°C

Electrical Characteristics (Vi-Vo=5V, 0°C < Tj < 125°C, Io=500mA, IMax=1.5A, PMax=20W, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	TYP	Max	Unit	
Line Regulation	ΔVo	Ta=25°C, 3V ≤ Vi-Vo ≤ 40V	-	0.01	0.04	%/V	
		Ta=0~125°C, 3V ≤ Vi-Vo ≤ 40V	-	0.02	0.07	%/V	
Load Regulation	ΔVo	Ta=25°C, Vo ≤ 6V	-	18	25	mV	
		10mA ≤ Io ≤ IMax, Vo ≥ 5V	-	0.4	0.5	%/Vo	
		10mA ≤ Io ≤ IMax	Vo ≤ 5V	-	40	70	mV
			Vo ≥ 6V	-	0.8	1.5	%/Vo
Adjustable Pin Current	IADJ		-	46	100	μA	
Adjustable Pin Current Change	ΔIADJ	2.5V ≤ Vi-Vo ≤ 40V, 10mA ≤ Io ≤ IMax, PD ≤ PMax	-	2.0	5	μA	
Reference Voltage	VREF	3V ≤ Vi-Vo ≤ 40V, 10mA ≤ Io ≤ IMax, PD ≤ PMax	1.225	1.25	1.275	V	
Temperature Stability	STT		-	0.7	-	%/Vo	
Minimum Load Current for Regulation	IL(Min)	Vi-Vo=40V	-	3.5	10	mA	
Maximum Output Current	Io(Max)	Vi-Vo ≤ 15V, PD ≤ PMax	1.5	2.2	-	A	
		Vi-Vo ≤ 15V, PD ≤ PMax Ta=25°C	0.15	0.4	-		
RMS Noise v.s. % of Vout	eN	Ta=25°C, 10Hz ≤ f ≤ 10KHz	-	0.003	0.01	%/Vo	
Ripple Rejection	RR	Vo=10V, f=120Hz	-	60	-	dB	
		Vo=10V, f=120Hz, Cadj=10μF	66	75	-		
Long-term Stability, Tj=Thigh	ST	Ta=25°C, 1000hr	-	0.3	1	%	
Junction to Case Thermal Resistance	Rθjc	-	-	5	-	°C/W	

*Note: Testing with low duty pulse should be used to avoid heating effect.

Characteristics Curve

Fig.1. Load Regulation vs temperature

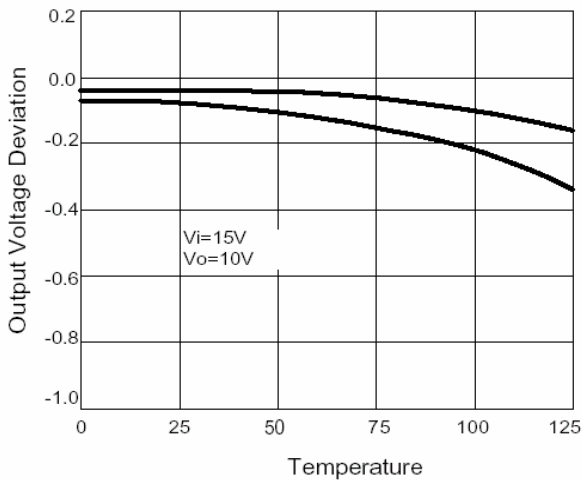


Fig.2 Adjustment Current vs Temperature

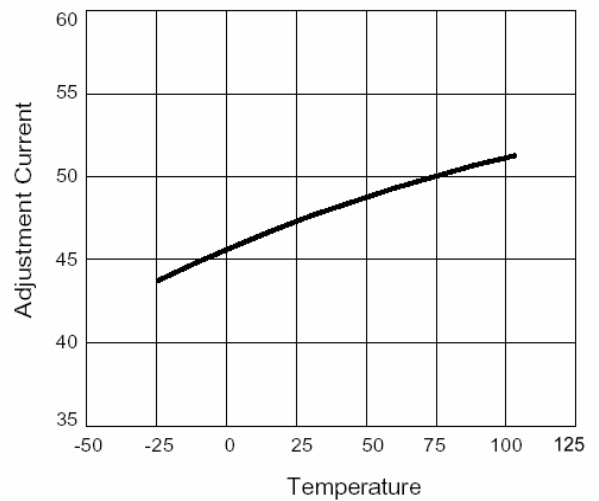


Fig.3. Dropout Voltage vs Input-Output Voltage Difference

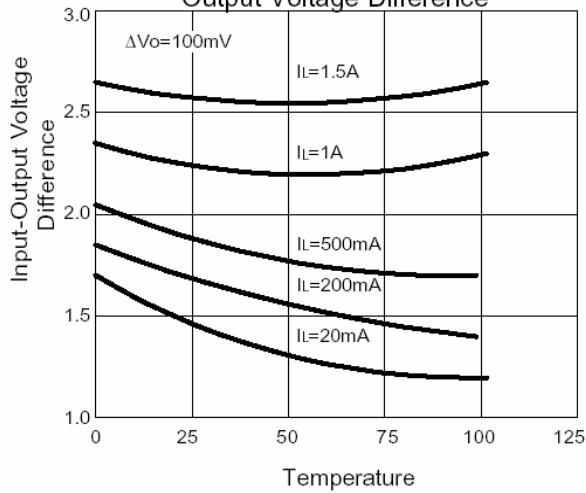
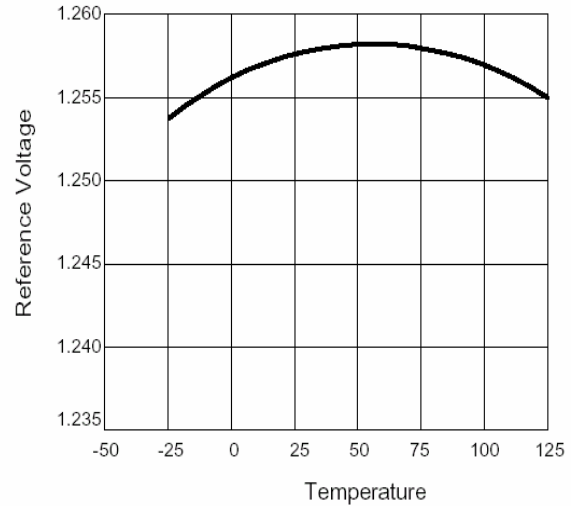


Fig.4 Reference Voltage vs Temperature



Application Circuit

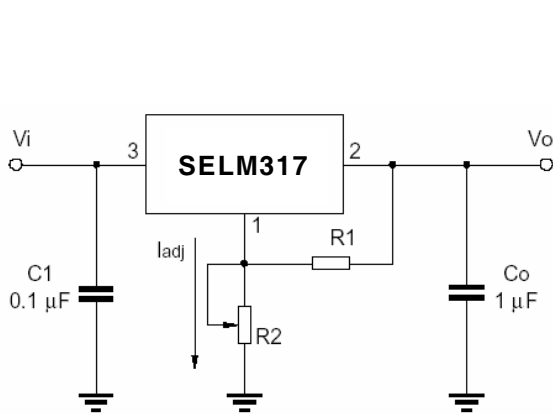


Fig.5 Programmable voltage regulator

$$V_o = 1.25V \cdot (1 + R_2/R_1) + I_{adj} \cdot R_2$$

C1 is required when regulator is located an appreciated distance from power supply. Co is needed to improve transient response.

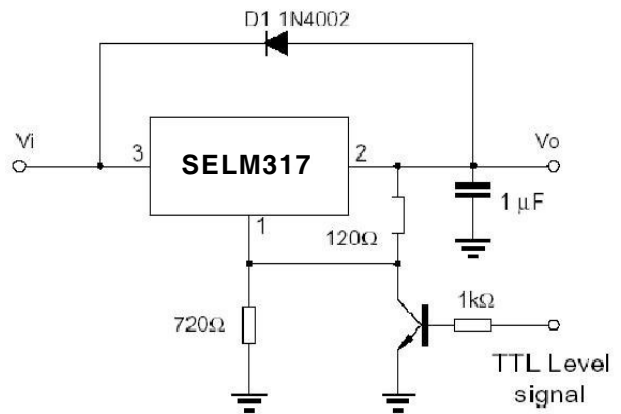


Fig.6 Regulator with On-off control

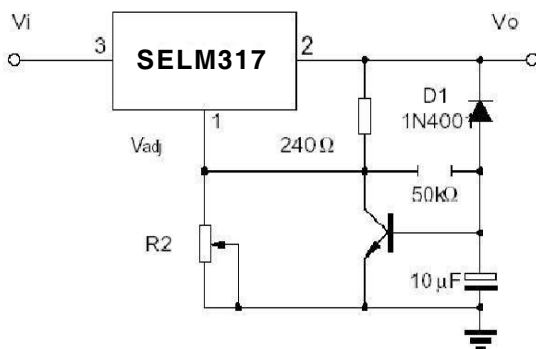
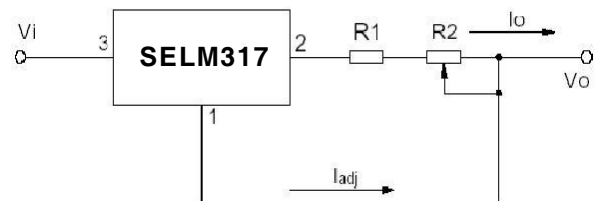


Fig.7 Soft start application



$$I_{o\max} = \left(\frac{V_{ref}}{R_1}\right) + I_{adj} = \frac{1.25V}{R_1}$$

$$I_{o\min} = \left(\frac{V_{ref}}{R_1 + R_2}\right) + I_{adj} = \frac{1.25V}{R_1 + R_2}$$

$$5mA < I_o < 100mA$$

Fig.8 Constant current application