Elektronische Bauelemente

SELM317

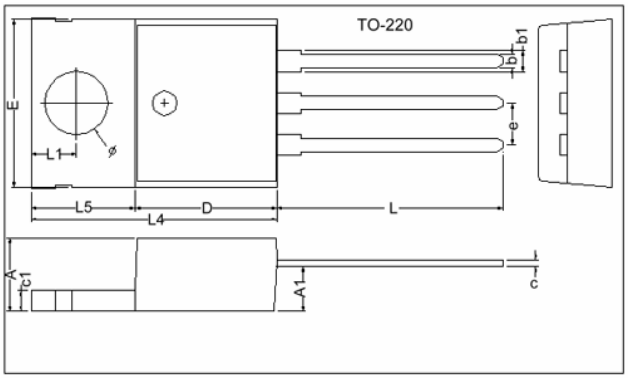
3-Terminal

Positive Adjustable Voltage Regulator

RoHS Compliant Product

Description

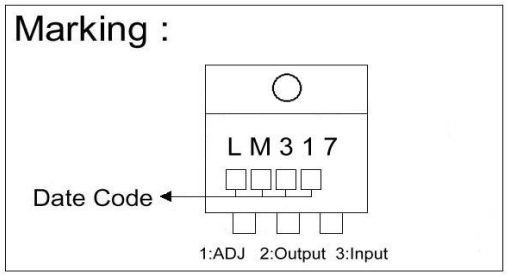
The SELM317 is an adjustable 3-terminal positive voltage regulator, designed to supply more than 1.5A of output current with voltage adjustable from 1.3 to 37V.



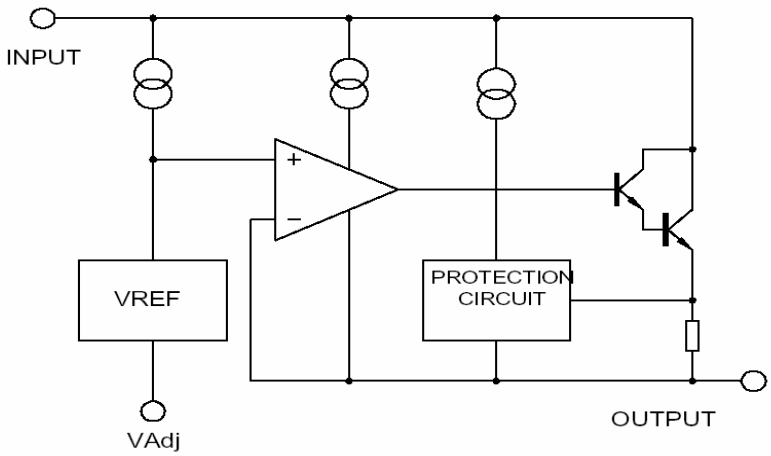
Features

* 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	Ø	3.71	3.96
L5	6.20	6.60	A1	2.60	2.80



Block Diagram



Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Ratings	Unit
Input-Output Voltage Difference	V_{IN}-V_{OUT}	40	V
Load Temperature	T_{LEAD}	230	°C
Power Dissipation	P_D	Internal Limited	
Storage Temperature Range	T_{STG}	-65~+150	°C
Operating Juction Temperature	T_{OPR}	0~125	°C

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

Parameter	Symbol	Test Conditions		Min	TYP	Max	Unit
Line Regulation	ΔVo	Ta=25℃, 3V≦Vi-Vo≦40V		-	0.01	0.04	%/V
		Ta=0~125℃, 3V≦Vi-Vo<≦40V		-	0.02	0.07	%/V
Load Regulation	ΔVo	Ta=25℃	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℃		0.15	0.4	-	
RMS Noise v.s. % of Vout	eN	Ta=25℃, 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℃,1000hr		-	0.3	1	%
Junction to Case Thermal Resistance	Rθjc	-		-	5	-	℃/W

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

Characteristics Curve

Fig.1. Load Regulation vs temperature

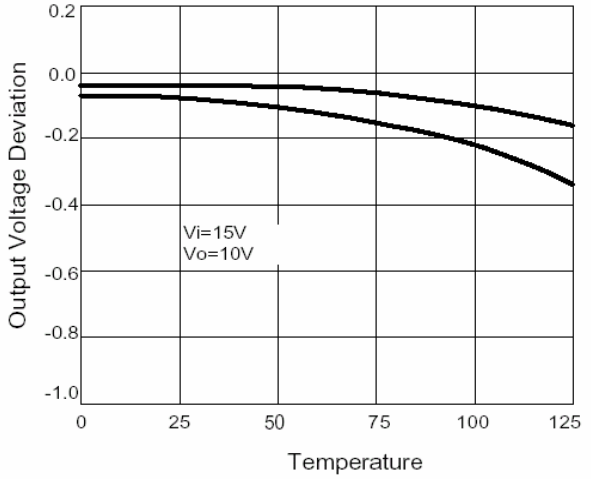


Fig.2 Adjustment Current vs Temperature

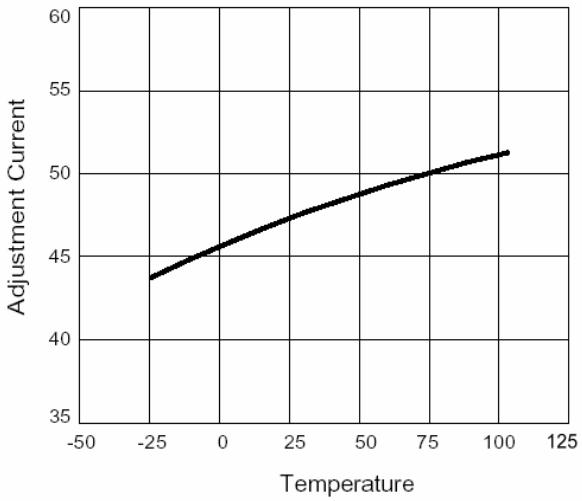


Fig.3. Dropout Voltage vs Input-Output Voltage Difference

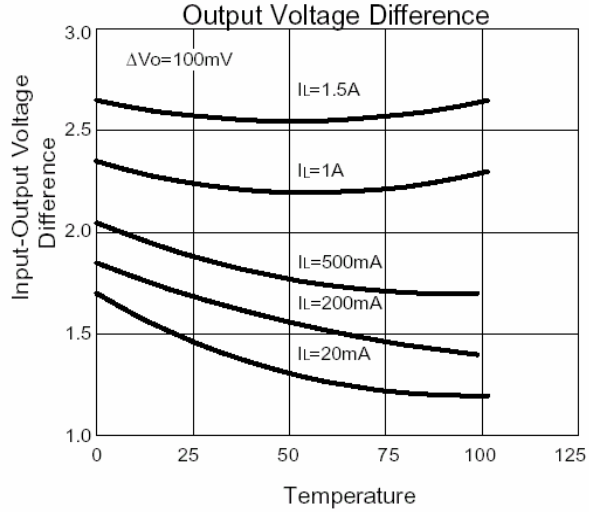
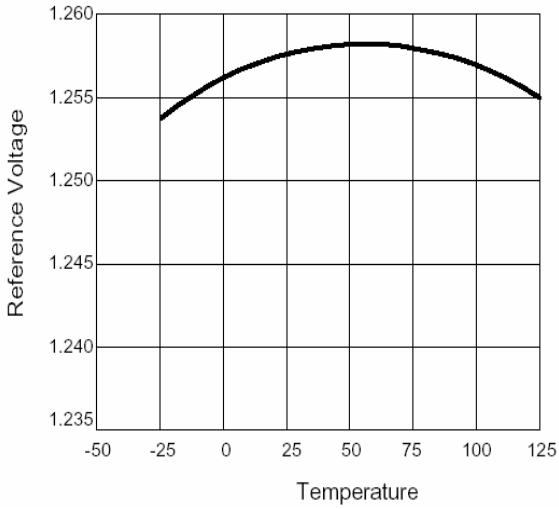


Fig.4 Reference Voltage vs Temperature



Application Circuit

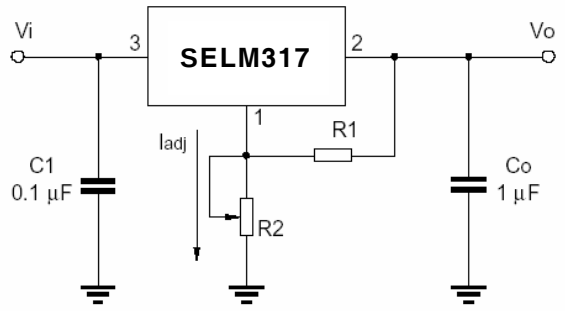


Fig.5 Programmable voltage regulator

Vo=1.25V*(1+R2/R1)+Iadj*R2

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

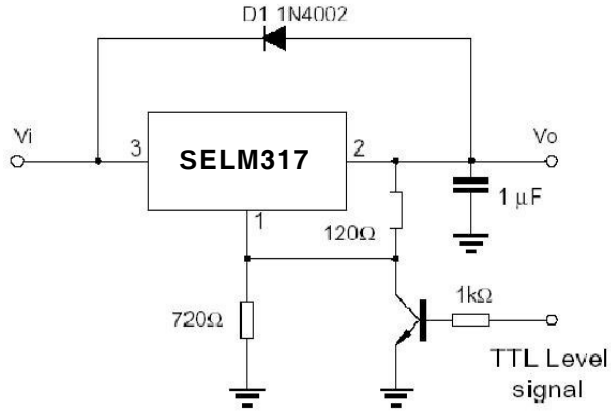


Fig.6 Regulator with On-off control

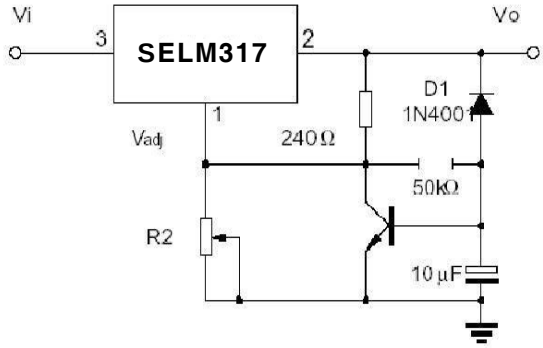
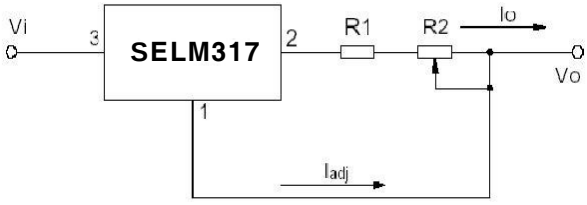


Fig.7 Soft start application



$$Iomax=(\frac{Vref}{R1})+Iadj=\frac{1.25V}{R1}$$

$$Iomin=(\frac{Vref}{R1+R2})+Iadj=\frac{1.25V}{R1+R2}$$

5mA<Io<100mA

Fig.8 Constant current application