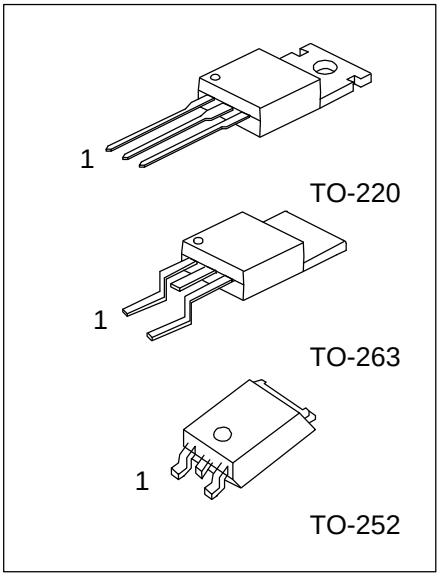
UTC LM317 LINEAR INTEGRATED CIRCUIT

3-TERMINAL 1A POSITIVE ADJUSTABLE VOLTAGE REGULATOR



1:ADJ 2:Output 3:Input

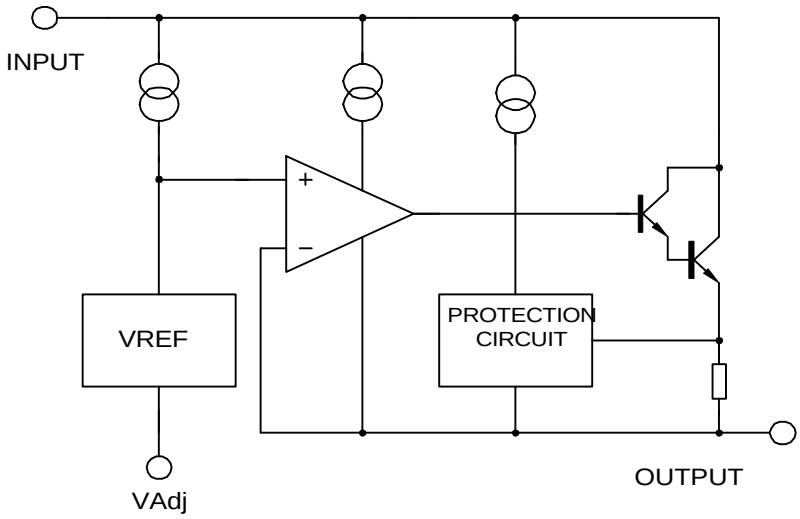
DESCRIPTION

The UTC LM317 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

*Output current up to 1.5A.
*Output voltage adjustable from 1.3V to 37V.
*Internal short circuit protection.
*Internal over temperature protection.
*Safe-Area compensation for output transistor.

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS(Ta=25°C, UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	VALUE	UNIT
Input - Output Voltage Difference	VI-VO	40	V
Lead Temperature	TLEAD	230	°C
Power Dissipation	PD	Internal limited	
Operating Temperature Range	TOPR	0~125	°C
Storage Temperature Range	TSTG	-65~150	°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		1.20	1.25	1.30	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,1000 hr			0.3	1	%
Junction to Case Thermal Resistance	R θ JC				5		°C/W

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

TYPICAL PERFORMANCE CHARACTERISTICS

Fig.1. Load Regulation vs temperature

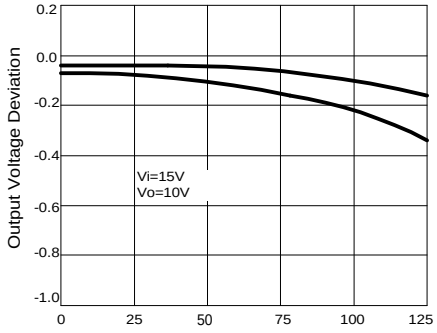


Fig.2 Adjustment Current vs Temperature

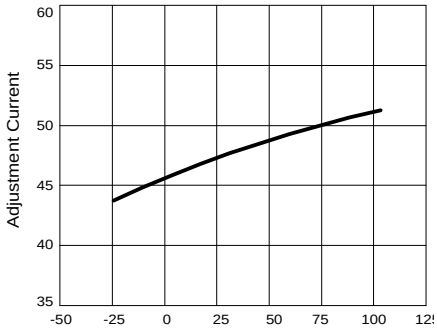


Fig.3. Dropout Voltage vs Input-Output Voltage Difference

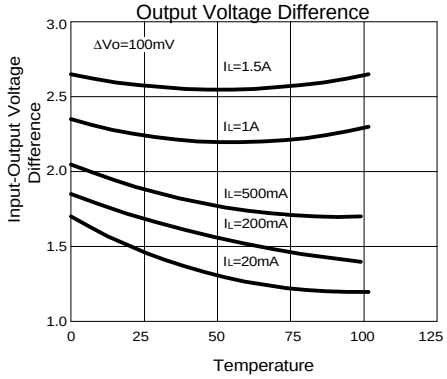
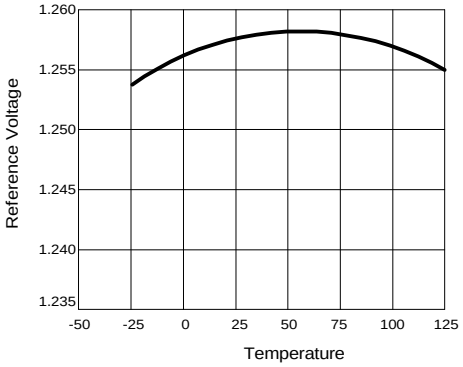


Fig.4 Reference Voltage vs Temperature



APPLICATION CIRCUIT

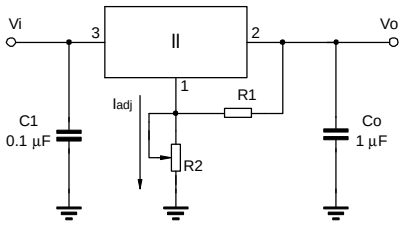


Fig.5 Programmable voltage regulator

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.

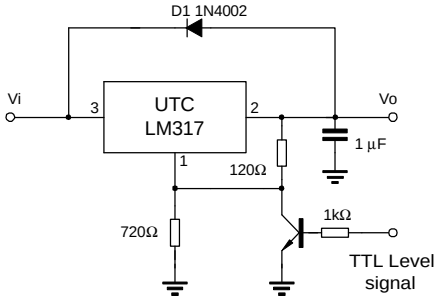


Fig.6 Regulator with On-off control

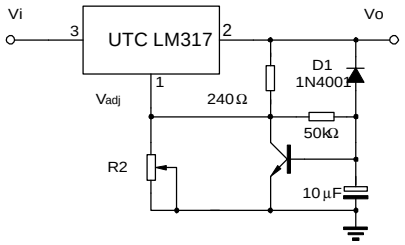
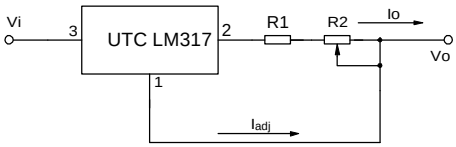


Fig.7 Soft start application



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

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

5mA<Io<100mA

Fig.8 Constant current application