

UTCLM317 LINEAR INTEGRATED CIRCUIT

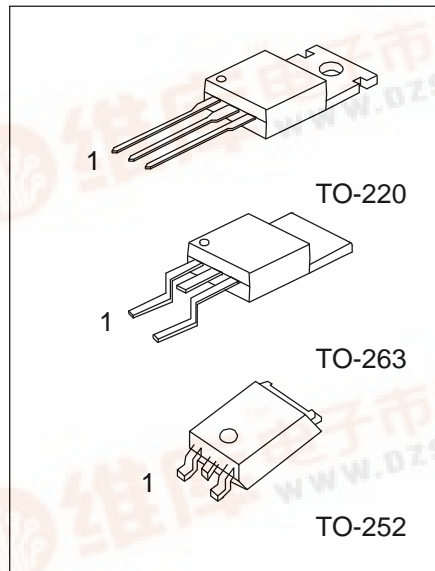
3-TERMINAL 1A POSITIVE ADJUSTABLE VOLTAGE REGULATOR

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.

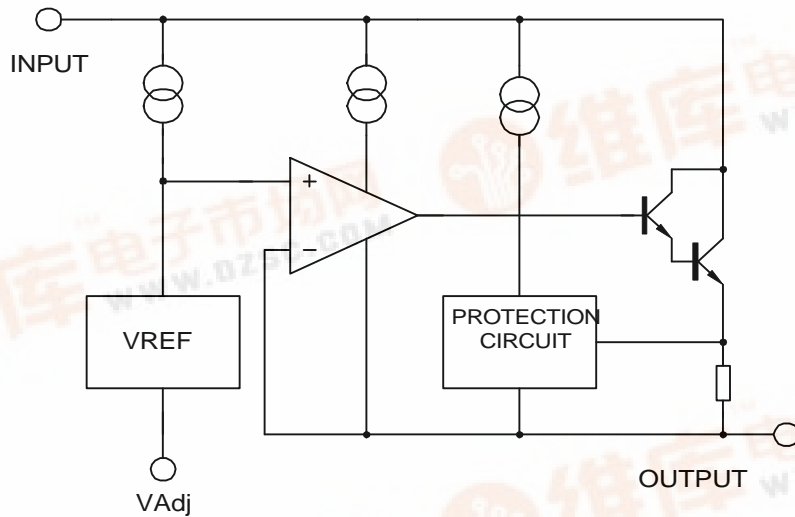
FEATURES

- *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.



1:ADJ 2:Output 3:Input

BLOCK DIAGRAM



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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.

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TYPICAL PERFORMANCE CHARACTERISTICS

Fig.1. Load Regulation vs temperature

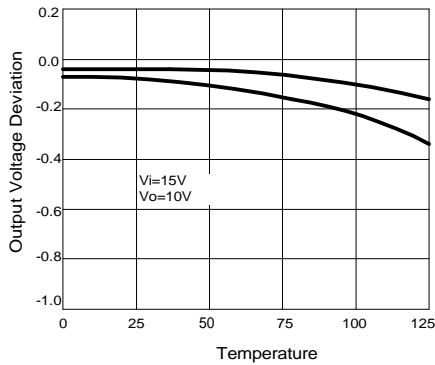


Fig.2 Adjustment Current vs Temperature

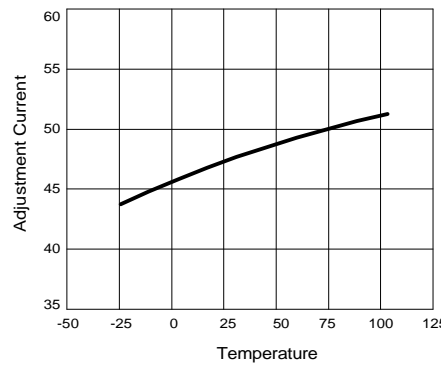


Fig.3. Dropout Voltage vs Input-Output Voltage Difference

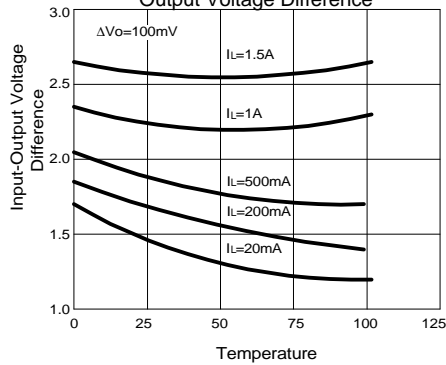
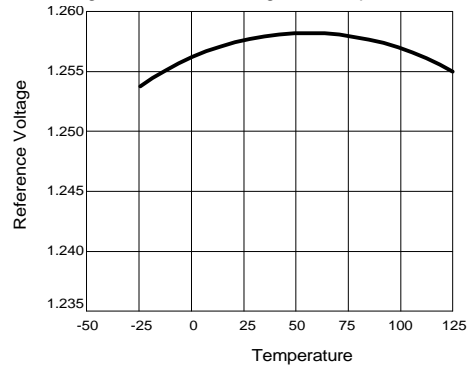


Fig.4 Reference Voltage vs Temperature



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APPLICATION CIRCUIT

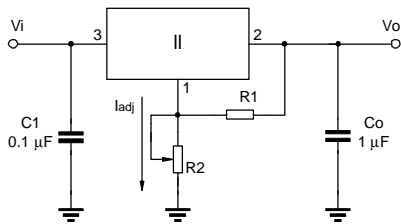


Fig.5 Programmable voltage regulator
 $V_o = 1.25V * (1 + R_2/R_1) + i_{adj} * R_2$
 C1 is required when regulator is located an appreciated distance from power supply. Co is needed to improve transient response.

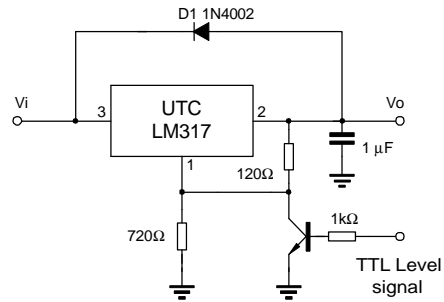


Fig.6 Regulator with On-off control

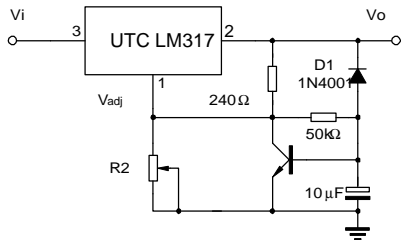


Fig.7 Soft start application

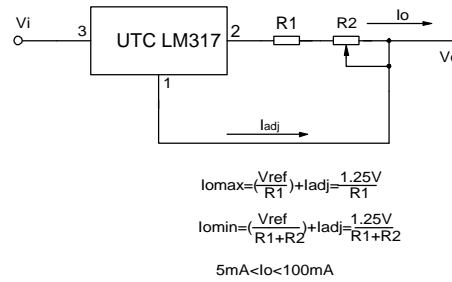


Fig.8 Constant current application