

LM317

LINEAR INTEGRATED CIRCUIT

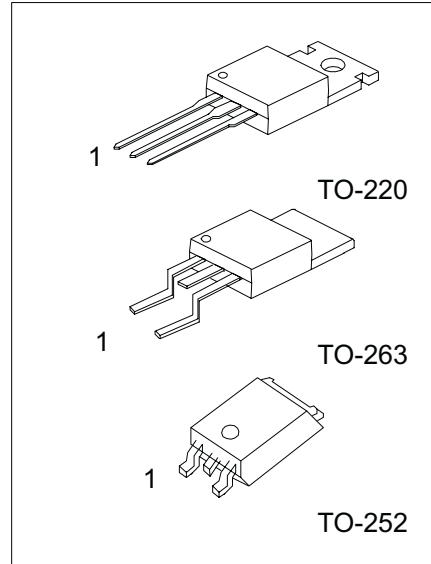
3-TERMINAL 1A POSITIVE ADJUSTABLE VOLTAGE REGULATOR

DESCRIPTION

The Contek 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.

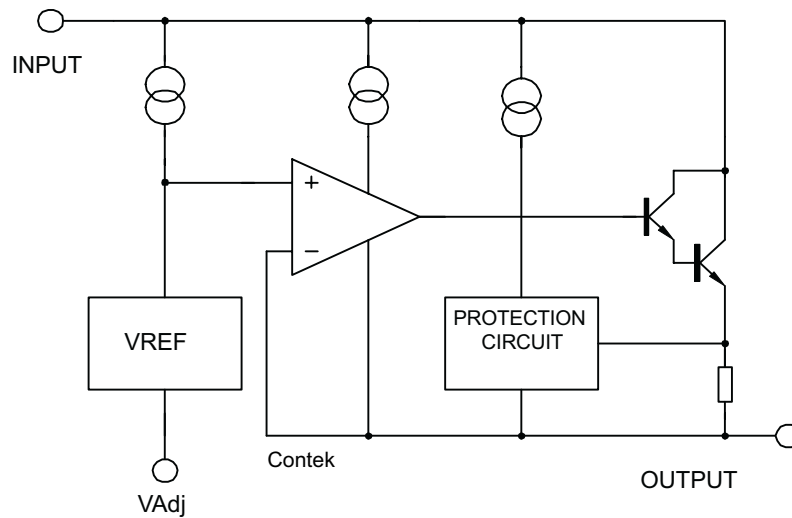
FEATURES

- *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

Contek LM317 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
		Ta=25 C VO<=6V		18	25	mV
Load Regulation	ΔVO	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	$\Delta IADJ$	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=10 μF		75		
Long-term Stability, TJ=THIGH	ST	TA=25 C, 1000 hr	66	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

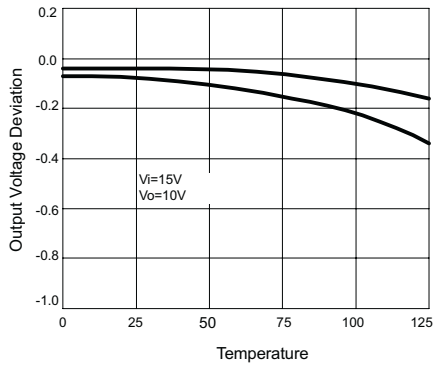


Fig.2 Adjustment Current vs Temperature

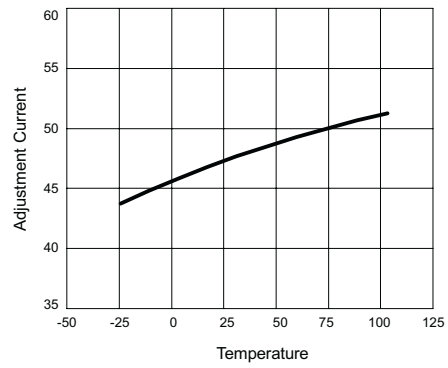


Fig.3. Dropout Voltage vs Input-Output Voltage Difference

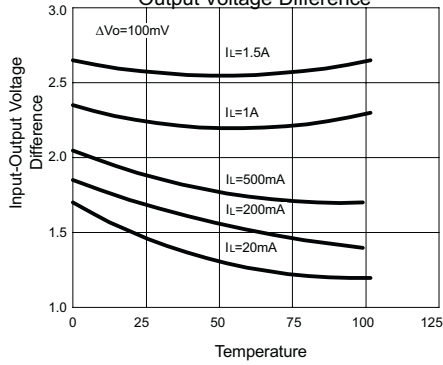
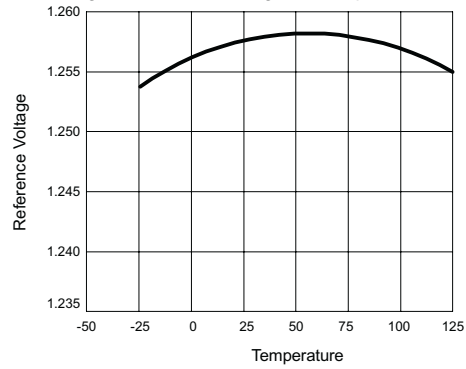


Fig.4 Reference Voltage vs Temperature



APPLICATION CIRCUIT

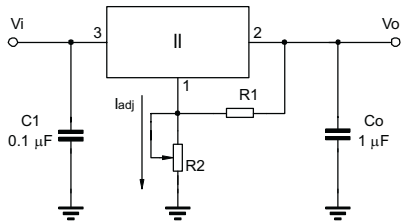


Fig.5 Programmable voltage regulator
 $V_o = 1.25V * (1 + R2/R1) + I_{adj} * R2$
 C1 is required when regulator is located an appreciated distance from power supply. Co is needed to improve transient response.

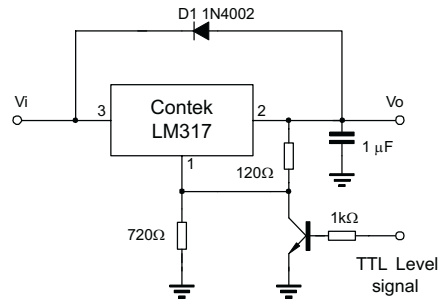


Fig.6 Regulator with On-off control

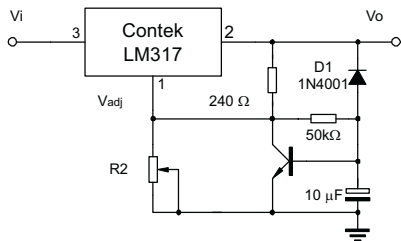


Fig.7 Soft start application

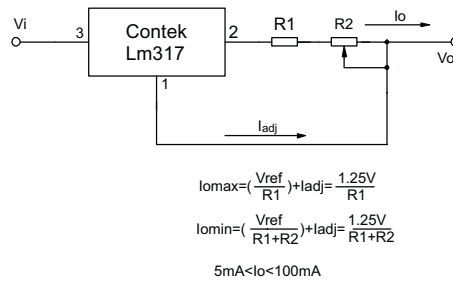


Fig.8 Constant current application