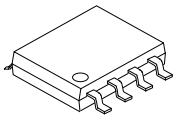
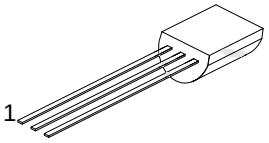
LM317L

LINEAR INTEGRATED CIRCUIT

LOW CURRENT 1.25V TO 37V ADJUSTABLE VOLTAGE REGULATOR



SOP-8



TO-92

Lead-free: LM317LK
Halogen-free: LM317LG

■ DESCRIPTION

The UTC **LM317L** is a monolithic integrated circuit, designed to supply 100mA of output current with voltage adjustable from 1.25V ~ 37V.

■ FEATURES

*Output voltage adjustable from 1.25V ~ 37V.
*Output current in excess of 100mA
*Internal thermal overload protection
*Internal short circuit current limiting
*Output transistor safe area compensation

■ ORDERING INFORMATION

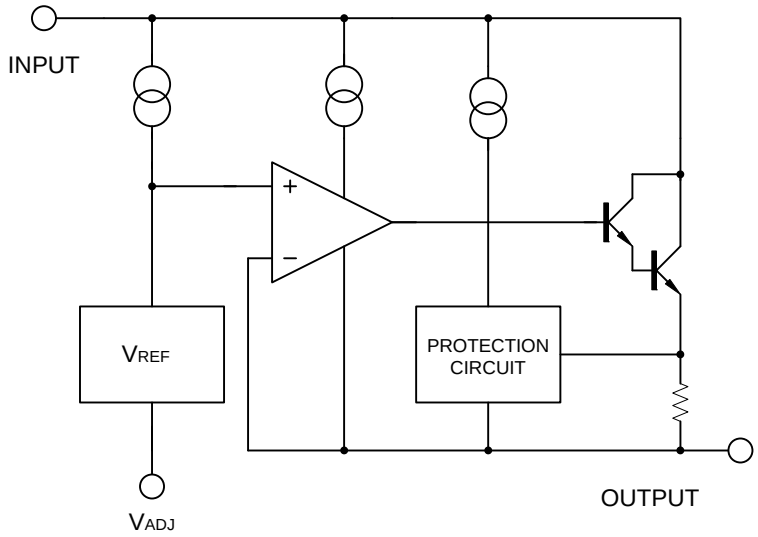
Ordering Number			Package	Pin Assignment								Packing
Normal	Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
LM317L-T92-B	LM317LK-T92-B	LM317LG-T92-B	TO-92	A	O	I	-	-	-	-	-	Tape Box
LM317L-T92-K	LM317LK-T92-K	LM317LG-T92-K	TO-92	A	O	I	-	-	-	-	-	Bulk
LM317L-S08-R	LM317LK-S08-R	LM317LG-S08-R	SOP-8	I	O	O	A	N	O	O	N	Tape Reel
LM317L-S08-T	LM317LK-S08-T	LM317LG-S08-T	SOP-8	I	O	O	A	N	O	O	N	Tube

Note: Pin Assignment: A:ADJ I:V_{IN} O:V_{OUT} N: No Connection

LM317LK-T92-B
(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) B: Tape Box, K: Bulk, R: Tape Reel, T: Tube
(2) T92: TO-92, S08: SOP-8
(3) G: Halogen Free, K: Lead Free, Blank: Pb/Sn

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNIT
Input-Output Differential Voltage	V_{IN}-V_{OUT}	40	V
Power Dissipation	P_D	Internally Limited	
Junction Temperature	T_J	+125	°C
Operating Junction Temperature	T_{OPR}	-40 ~ +85	°C
Storage Temperature Range	T_{STR}	-40 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS

(V_{IN}-V_{OUT}=5V, I_{OUT}=40mA, Ta=25°C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Line Regulation	$\Delta V_{OUT}/V_{OUT}$	$3V \leqq V_{IN}$-$V_{OUT} \leqq 40V$, $I_{LOAD}<20mA$			0.01	0.04	%/V
Load Regulation	ΔV_{OUT}	$5mA \leqq I_{OUT} \leqq 100mA$	$V_{OUT} \leqq 5V$		5	25	mV
			$V_{OUT} \geqq 5V$		0.1	0.5	%
Adjustable Pin Current	I_{ADJ}				50	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	$3V \leqq V_{IN}$-$V_{OUT} \leqq 40V$, $5mA \leqq I_{OUT} \leqq 100mA$, $P_D < 625mW$			0.2	5	μA
Reference Voltage	V_{REF}	$3V \leqq V_{IN}$-$V_{OUT} \leqq 40V$, $5mA \leqq I_{OUT} \leqq 100mA$, $P_D < 625mW$		1.20	1.25	1.30	V
Temperature Stability		$T_{MIN} \leqq T_J \leqq T_{MAX}$			0.7		%/V_{OUT}
Minimum Load Current for Regulation	$I_{L(MIN)}$	V_{IN}-V_{OUT}=40V			3.5	10	mA
Maximum Output Current	$I_{O(MAX)}$	V_{IN}-V_{OUT}=40V, $P_D \leqq 625mW$			50		mA
RMS Noise vs. %of V_{OUT}	eN	$10Hz \leqq f \leqq 10KHz$			0.003	0.01	%/V_{OUT}
Ripple Rejection	RR	V_{OUT}=10V,f=120Hz,	C_{ADJ}=0		65		dB
			C_{ADJ} =10μF	66	80		dB

Note: C_{ADJ} is connected between Adjust pin and Ground.

■ APPLICATION CIRCUITS

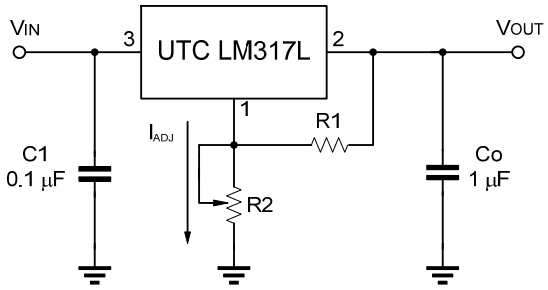


Fig.1 Programmable voltage regulator

V_{OUT}= 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.

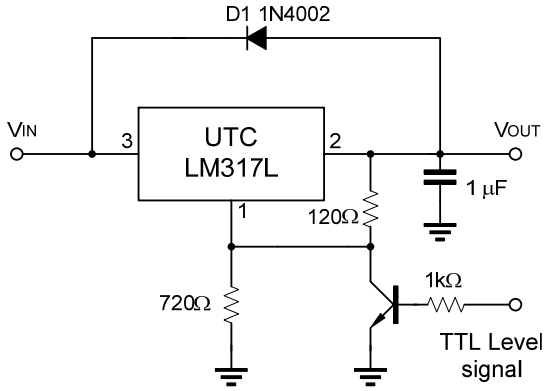


Fig.2 Regulator with On-off control

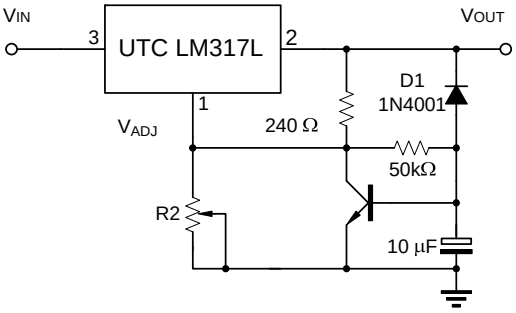
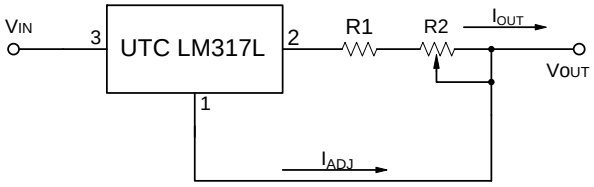


Fig.3 Soft Start Application



$I_{O(MAX)}=(\frac{V_{REF}}{R1})+I_{ADJ}=\frac{1.25V}{R1}$

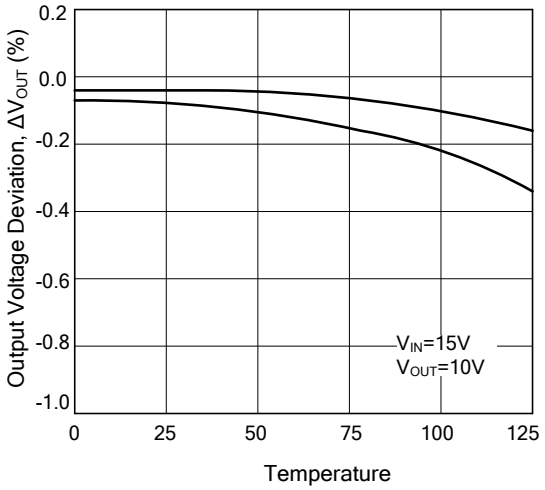
$I_{O(MIN)}=(\frac{V_{REF}}{R1+R2})+I_{ADJ}=\frac{1.25V}{R1+R2}$

5mA<I_{OUT}<100mA

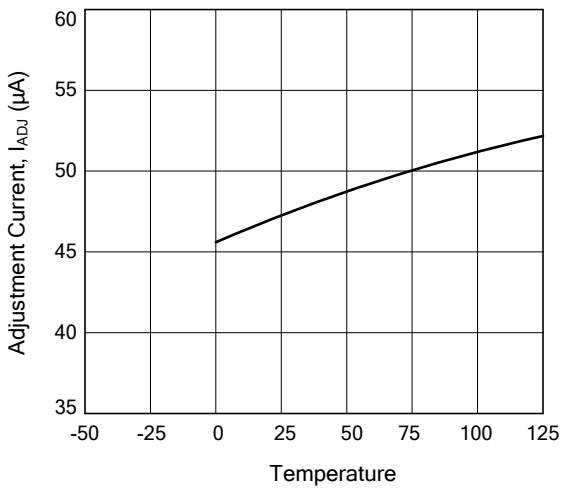
Fig.4 Constant Current Application

■ TYPICAL CHARACTERISTICS

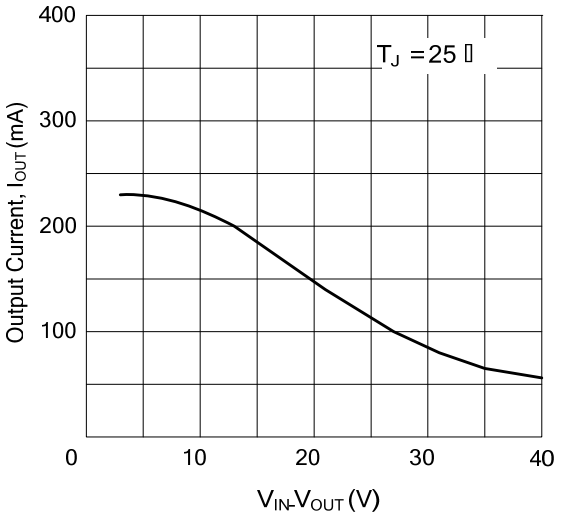
Load Regulation vs. temperature



Adjustment Current vs. Temperature



Current Limit



Minimum Operating Current