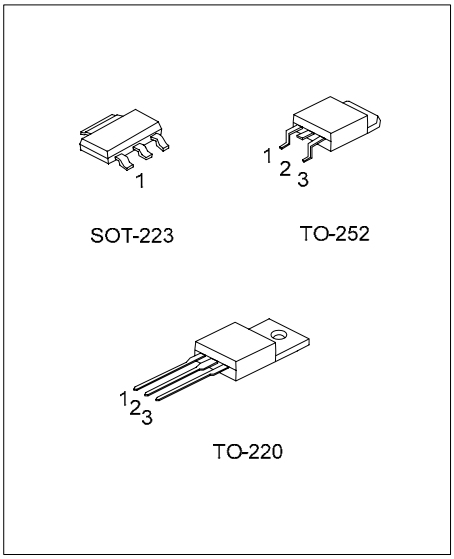
LM317M

LINEAR INTEGRATED CIRCUIT

MEDIUM CURRENT 1.2V TO 37V ADJUSTABLE VOLTAGE REGULATOR



*Pb-free plating product number: LM317ML

■ DESCRIPTION

The UTC **LM317M** is an adjustable 3-terminal positive voltage regulator, designed to supply 500mA of output current with voltage adjustable from 1.2V ~ 37V.

■ FEATURES

*Output voltage adjustable from 1.2V ~ 37V
*Output current in excess of 500mA
*Internal thermal overload protection
*Internal short circuit current limiting
*Output transistor safe area compensation

■ ORDERING INFORMATION

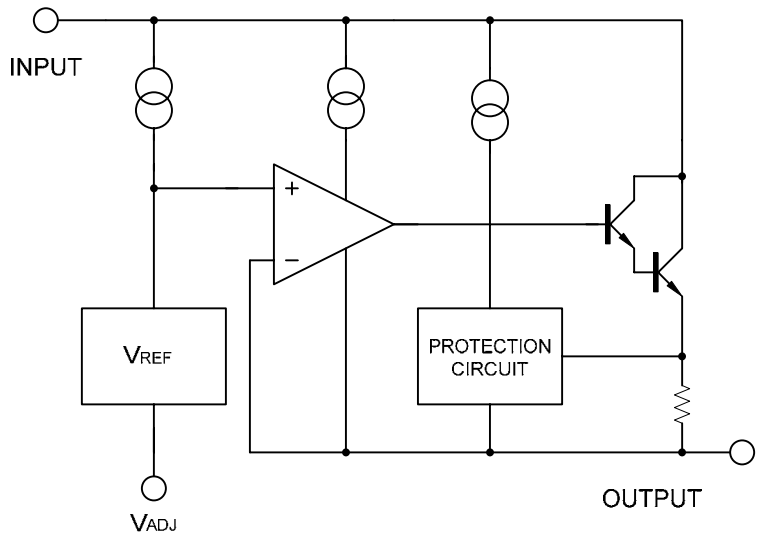
Ordering Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
LM317M-AA3-R	LM317ML-AA3-R	SOT-223	ADJ	O	I	Tape Reel
LM317M-TA3-T	LM317ML-TA3-T	TO-220	ADJ	O	I	Tube
LM317M-TN3-R	LM317ML-TN3-R	TO-252	ADJ	O	I	Tape Reel
LM317M-TN3-T	LM317ML-TN3-T	TO-252	ADJ	O	I	Tube

Note: Pin Assignment: I:V_{IN} O:V_{OUT}

LM317ML-AA3-R

(1)Packing Type	(1) R: Tape Reel, T: Tube
(2)Package Type	(2) AA3: SOT-223, TA3: TO-220, TN3: TO-252
(3)Lead Plating	(3) L: Lead Free Plating, Blank: Pb/Sn

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Input-Output Voltage Differential		V_{IN}-V_{OUT}	40	V
Power Dissipation	SOT-223	P_D	1.8	W
	TO-220		2	W
	TO-252		3.3	W
Junction Temperature		T_J	+125	℃
Operating Temperature		T_{OPR}	0 ~ +125	℃
Storage Temperature		T_{STG}	-40 ~ +150	℃

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}=0.1A, Ta=25℃, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Line Regulation	$\Delta V_{OUT}/V_{OUT}$	3V≦V_{IN}-V_{OUT}≦40V			0.01	0.04	%/V
Load Regulation	ΔV_{OUT}	10mA≦I_{OUT}≦0.5A	V_{OUT}≦5V		5	25	mV
			V_{OUT}≧5V		0.1	0.5	%
Adjustable Pin Current	I_{ADJ}				50	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	3V≦V_{IN}-V_{OUT}≦40V, 10mA≦I_{OUT}≦0.5A, P_D＜7.5W			0.2	5	μA
Reference Voltage	V_{REF}	3V≦V_{IN}-V_{OUT}≦40V, 10mA≦I_{OUT}≦0.5A, P_D＜7.5W		1.20	1.25	1.30	V
Temperature Stability		T_{MIN}≦T_J≦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≦7.5W		0.15	0.25		A
RMS Noise vs. %of V_{OUT}	eN	10H_Z≦f≦10KH_Z			0.003		%/V_{OUT}
Ripple Rejection	RR	V_{OUT}=10V,f=120H_Z	C_{ADJ}=0		65		dB
			C_{ADJ}=10μF	66	80		

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

■ APPLICATION CIRCUITS

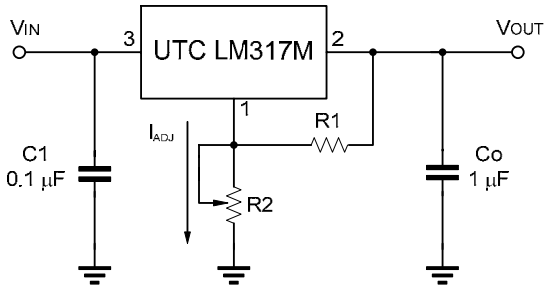


Fig.1 Programmable voltage regulator

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.

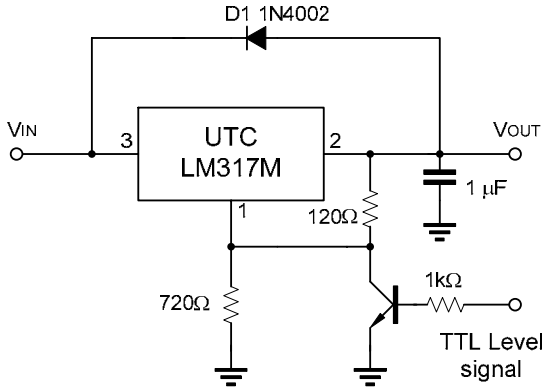


Fig.2 Regulator with On-off control

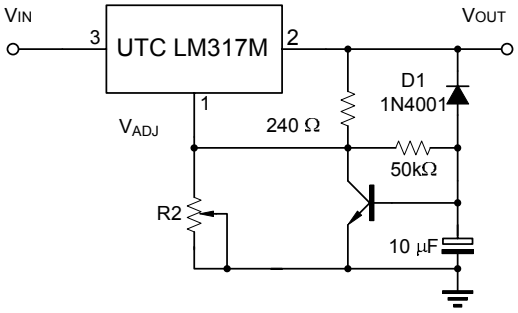
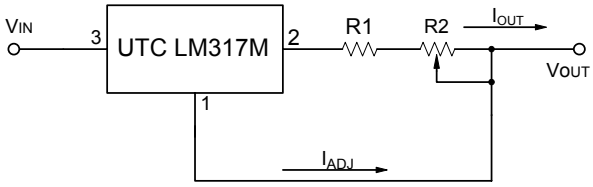


Fig.3 Soft Start Application



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

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

5mA<I_{OUT}<100mA

Fig.4 Constant Current Application

■ TYPICAL CHARACTERISTICS

Fig.1 Load Regulation vs. temperature

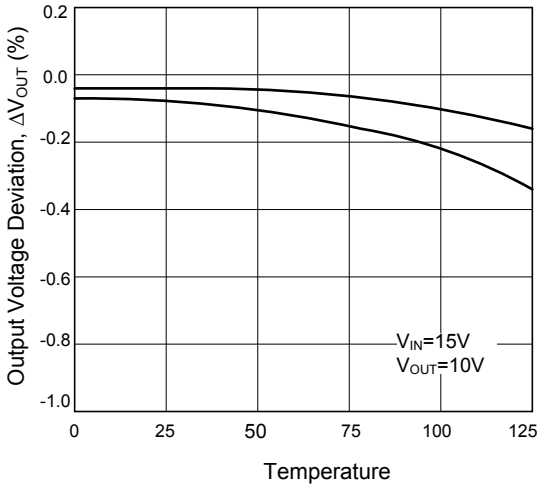


Fig.2 Adjustment Current vs. Temperature

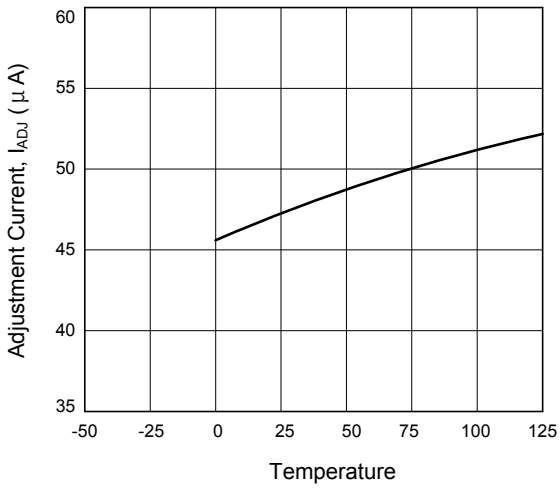


Fig. 3 Current Limit

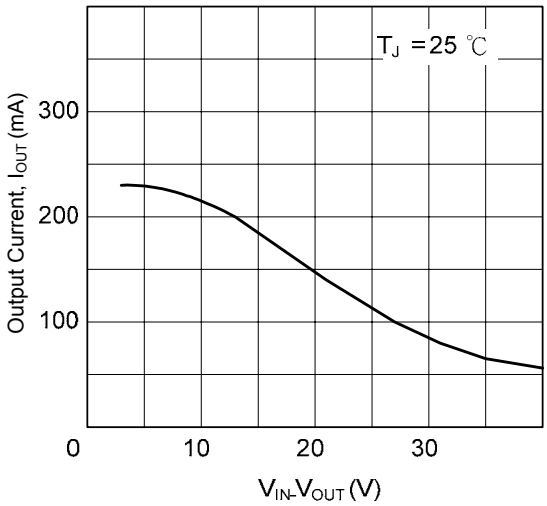


Fig. 4 Minimum Operating Current