



LM317MR

LINEAR INTEGRATED CIRCUIT

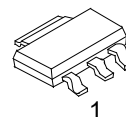
MEDIUM CURRENT 1.2V TO 37V ADJUSTABLE VOLTAGE REGULATOR

DESCRIPTION

The UTC **LM317MR** 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
- * Green Product



SOT-223

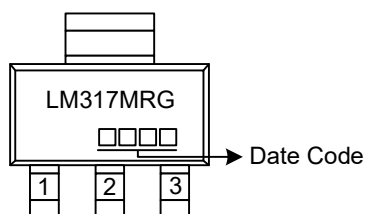
ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
LM317MRG-AA3-R	SOT-223	ADJ	O	I	Tape Reel

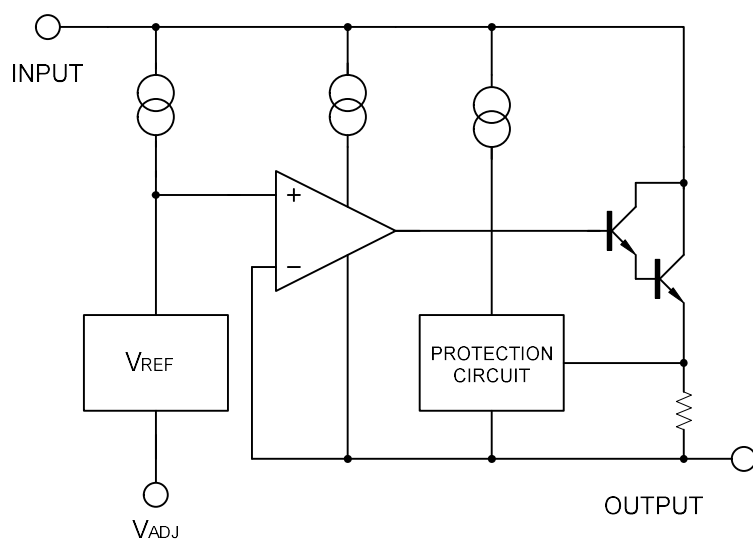
Note: Pin Assignment: ADJ: ADJ O: Output I: Input

LM317MRG-AA3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AA3: SOT-223
	(3)Green Package	(3) G: Halogen Free and Lead Free

MARKING



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input-Output Voltage Differential	$V_{IN}-V_{OUT}$	40	V
Power Dissipation	P_D	Internally Limited	W
Junction Temperature	T_J	+150	°C
Operating Temperature	T_{OPR}	-40 ~ +125	°C
Storage Temperature	T_{STG}	-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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	165	°C/W
Junction to Case	θ_{JC}	24	°C/W

■ ELECTRICAL CHARACTERISTICS

($V_{IN}-V_{OUT}=5V$, $I_{OUT}=0.1A$, $T_A=25^{\circ}C$, unless otherwise specified.)

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

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

■ APPLICATION CIRCUITS

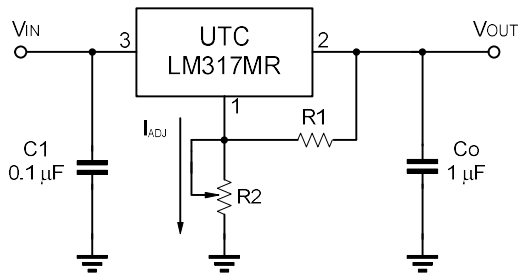


Fig.1 Programmable voltage regulator

$$V_{OUT} = 1.25V \times (1 + R2/R1) + I_{ADJ} \times R2$$

C1 is required when regulator is located an appreciated distance from power supply. Co is needed to improve transient response.

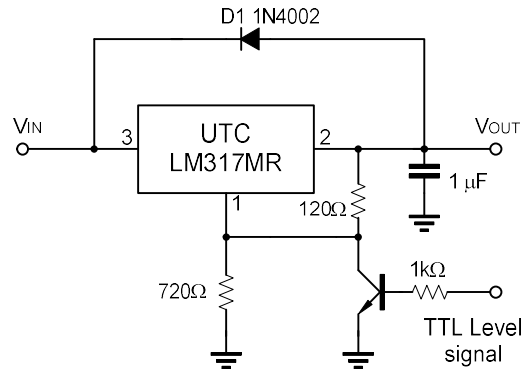


Fig.2 Regulator with On-off control

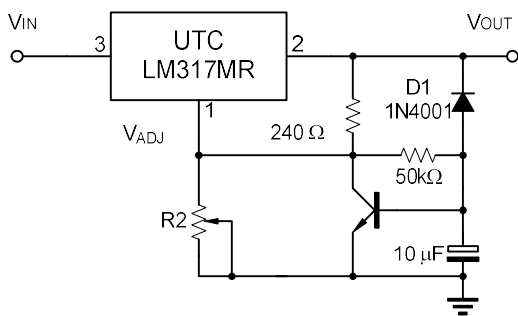
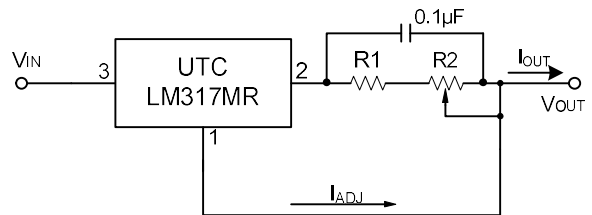


Fig.3 Soft Start Application



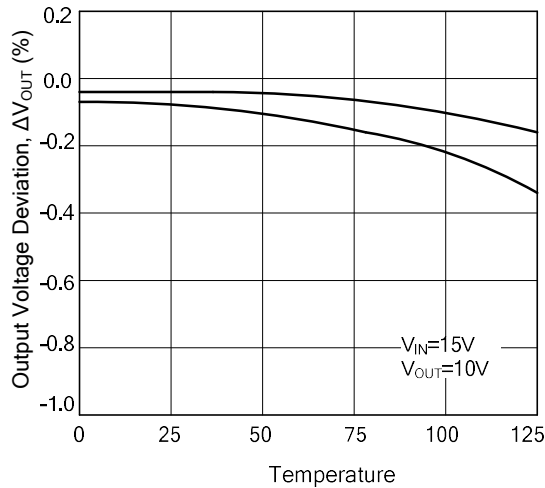
$$I_{O(MAX)} = \left(\frac{V_{REF}}{R1} \right) + I_{ADJ} = \frac{1.25V}{R1}$$

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

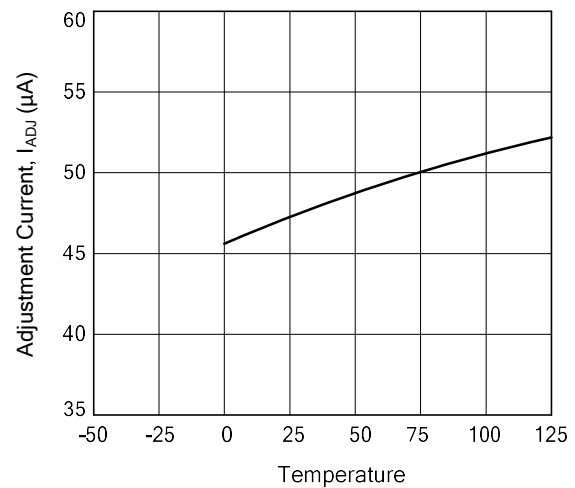
Fig.4 Constant Current Application

■ TYPICAL CHARACTERISTICS

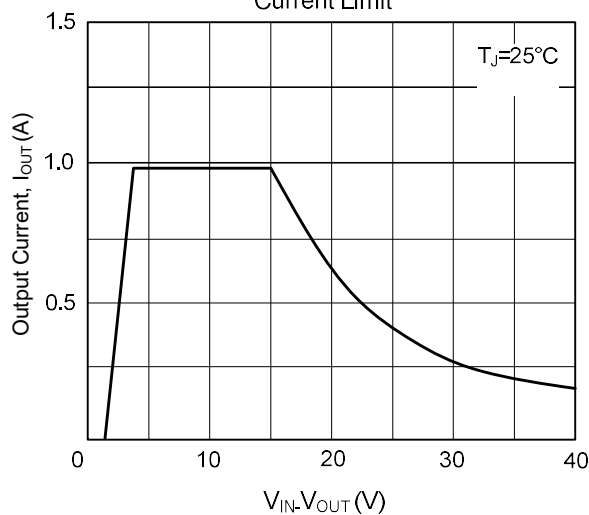
Load Regulation vs. temperature



Adjustment Current vs. Temperature



Current Limit



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