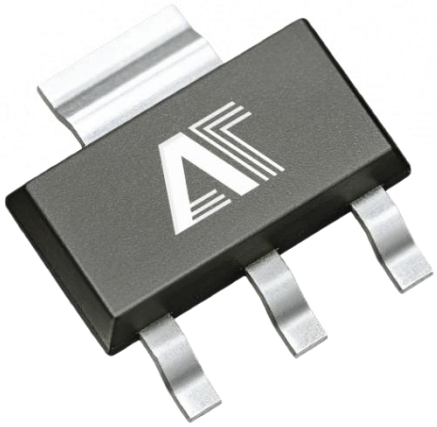
AOTE SEMICONDUCTOR



Adjustable 3-terminal positive voltage regulator

LM317G(AT)

Product Data Sheet

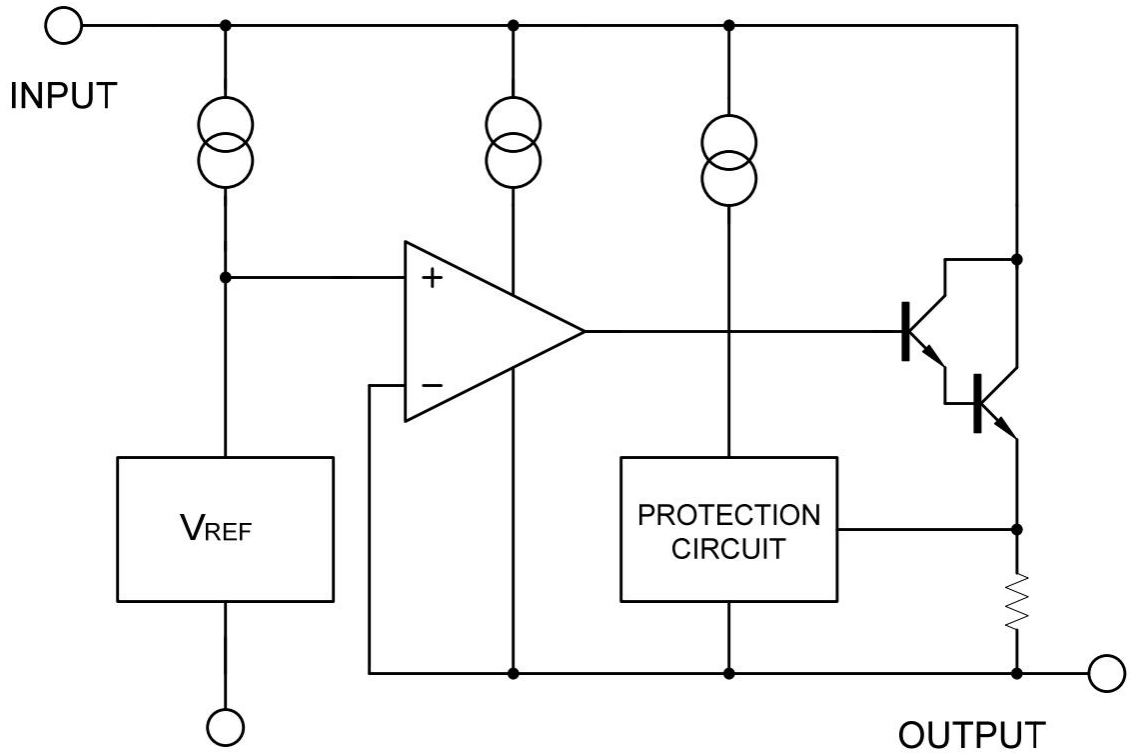
AOTE DCC
RELEASE

◆ Summary ：

The LM317 is an adjustable 3-terminal positive voltage regulator, designed to supply 1.4A of output current with voltage adjustable from 1.2V ~ 37V.

◆ Product features

- Output voltage adjustable from 1.2V ~ 37V
- Output current in excess of 1.4A
- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe area compensation



◆ Order Information

Type	Package
LM317G	SOT-223

◆ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input-Output Voltage Differential	V_{IN}-V_{OUT}	40	V
Power Dissipation	P_D	nternally limited	-
Junction Temperature	T_J	+125	℃
Operating Temperature	T_{OPR}	-40~+85	℃
Storage Temperature	T_{STG}	-65~+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.

◆ THERMAL DATA

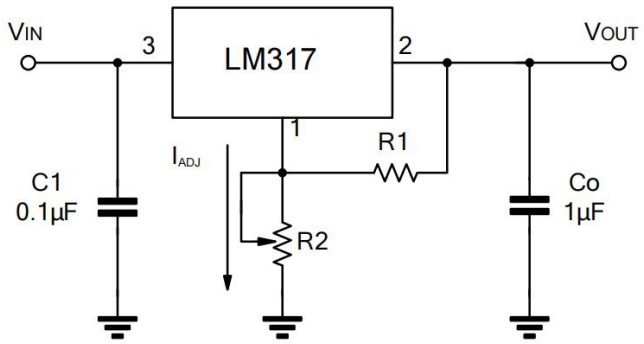
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-223	θ_{JA}	140	℃/W
Junction to Case	SOT-223	θ_{JC}	23.5	℃/W

◆ ELECTRICAL CHARACTERISTICS

(V_{IN}-V_{OUT}=5V, I_{OUT}=0.5A, P_{MAX}=20W, T_A=25℃, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYPE	MAX	UNIT
Line Regulation	ΔV_{OUT}/ V_{OUT}	3V≤V_{IN}-V_{OUT}≤40V, I_{OUT}=100mA		-	0.01	0.04	%/V
Load Regulation	ΔV_{OUT}	10mA≤I_{OUT} ≤1.5A	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} ≤500mA		-	0.2	5	μA
Reference Voltage	V_{REF}	3V≤V_{IN}-V_{OUT} ≤40V, 10mA≤I_{OUT} ≤1.5A, P_D < P_{MAX}		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		-	-	4.5	mA
Maximum Output Current	$I_{O\ (MAX)}$	V_{IN}-V_{OUT}=40V, P_D ≤P_{MAX}		0.3	0.4	-	A
		V_{IN}-V_{OUT}=15V, P_D < P_{MAX}		1.5	2.2	-	A
RMS Noise vs. %of VOUT	eN	10HZ≤f≤10KHZ		-	0.003	-	%/V_{OUT}
Ripple Rejection	RR	V_{OUT}=10V, f=120HZ	C_{ADJ}=0	-	65	-	dB
			C_{ADJ}=10μF	66	80	-	dB

◆ APPLICATION CIRCUITS



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

C1 is required when regulator is located an a ppreciated distance from power supply.
Co is ne eded to improve transient response.

Fig.1 Programmable voltage regulator

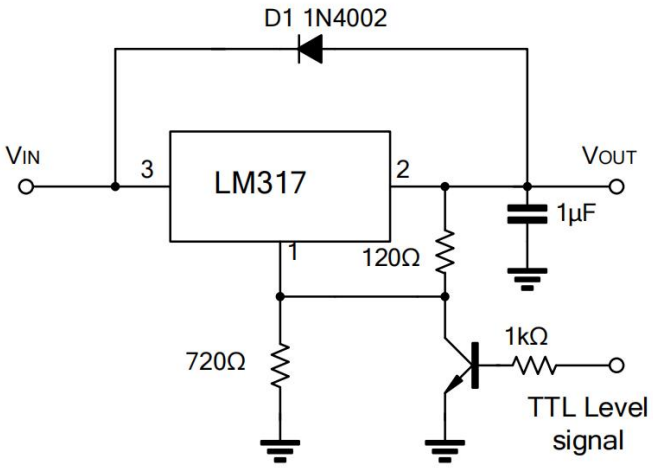


Fig.2 Regulator with On-off control

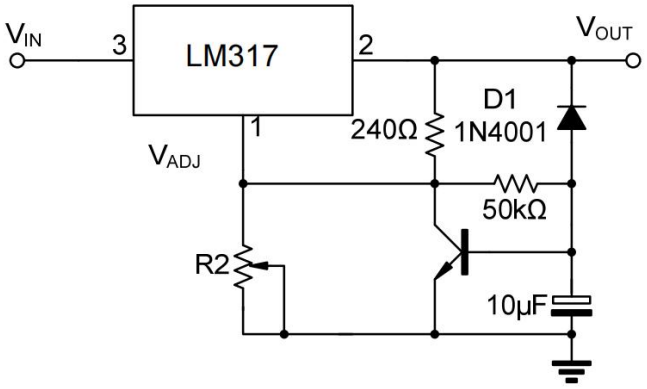
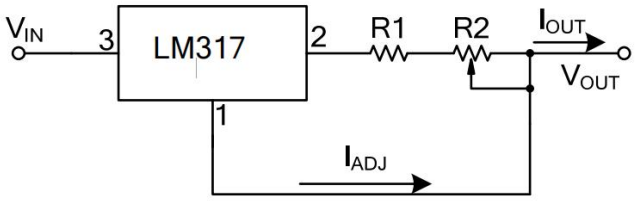


Fig.3 Soft Start Application



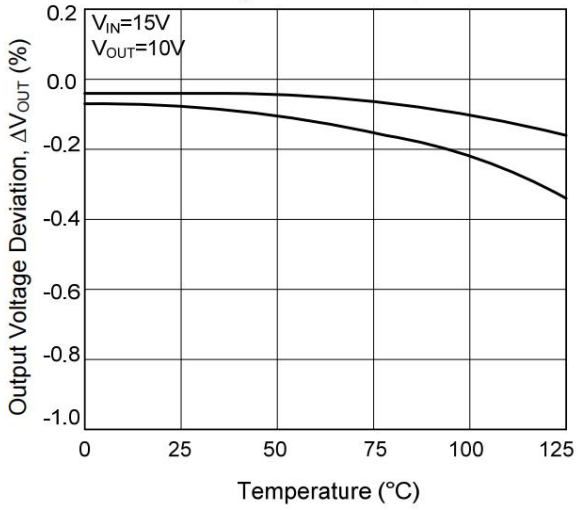
$$I_{O(MAX)} = \left(\frac{V_{REF}}{R1}\right) + I_{ADJ} = \frac{1.25V}{R1}$$

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

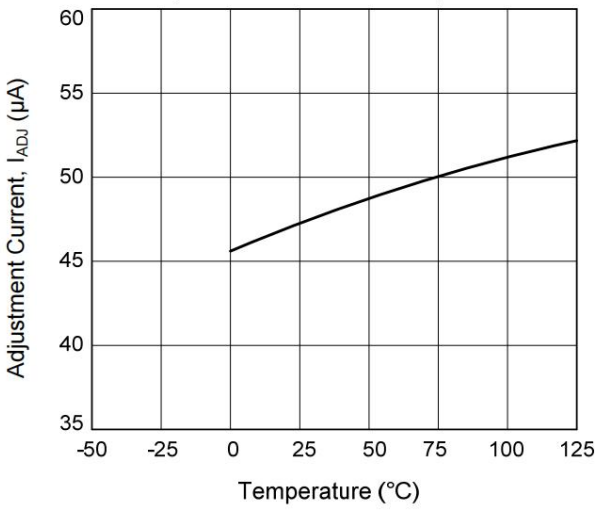
Fig.4 Constant Current Application

◆ TYPICAL CHARACTERISTICS

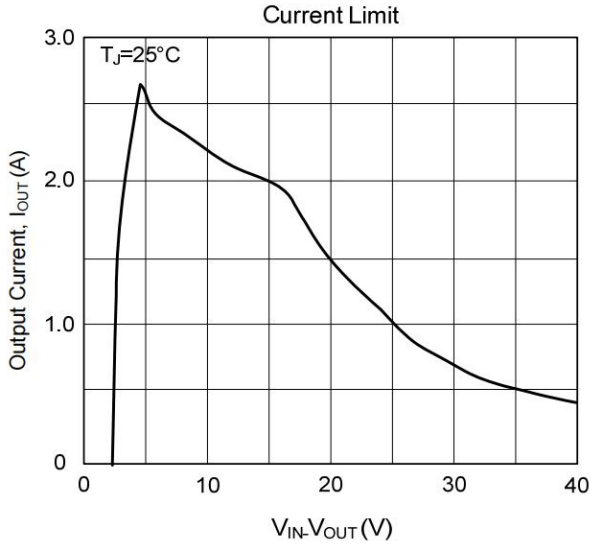
Load Regulation vs. Temperature



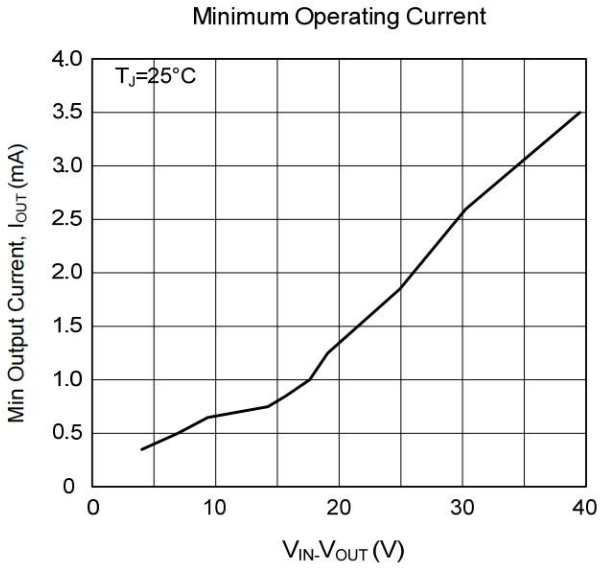
Adjustment Current vs. Temperature



Current Limit



Minimum Operating Current



◆ Attention

- AOTE implements dynamic technical updates. Specifications are subject to change. Refer to the official website for the latest version.
- Users must strictly adhere to specified conditions. Failures caused by misuse (overload, high temperature, incompatible circuits) are excluded from warranty.
- Contact technical support for customized validation in critical applications (medical devices, industrial control).
- This document is valid until December 31, 2026. Updates will be notified on the official website.
- For further clarification on technical specifications or application solutions, please contact us through official channels: