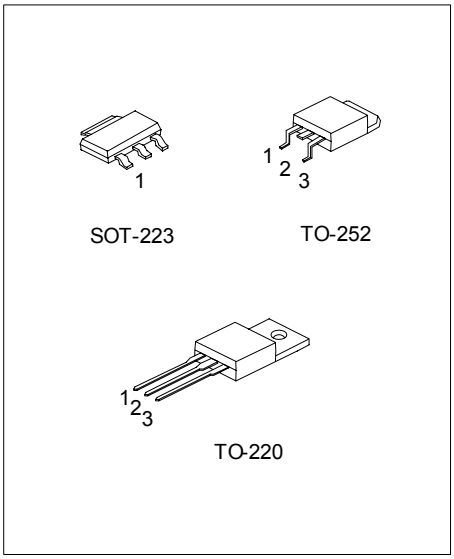
LM317M

LINEAR INTEGRATED CIRCUIT

3-TERMINAL 0.5A POSITIVE ADJUSTABLE REGULATOR



*Pb-free plating product number: LM317ML

■ DESCRIPTION

The UTC **LM317M** is a 3-terminal adjustable positive voltage regulator capable of supplying in excess of 500mA over an output voltage range of 1.2V ~ 37V. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage.

■ FEATURES

*Output Current in Excess of 0.5A
*Output Adjustable Between 1.2V and 37V
*Internal Thermal Overload Protection
*Internal Short Circuit Current Limiting
*Output Transistor Safe Area Compensation
*Floating Operation for High Voltage Applications

■ ORDERING INFORMATION

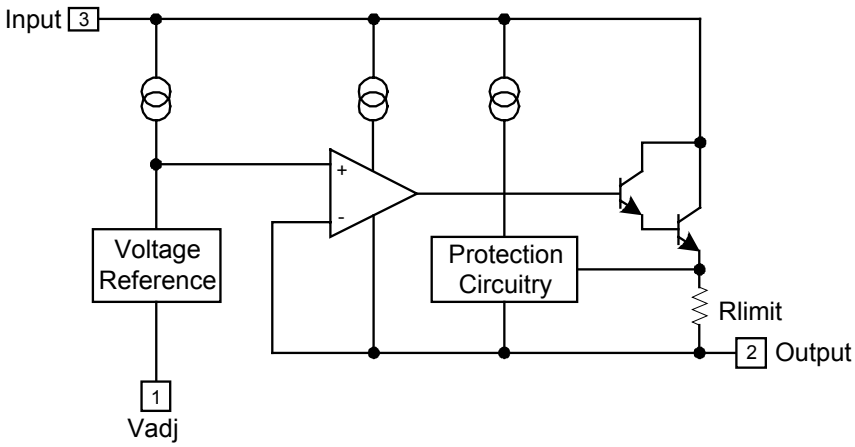
Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
LM317M-AA3-0-R	LM317ML-AA3-0-R	SOT-223	A	O	I	Tape Reel
LM317M-TA3-0-T	LM317ML-TA3-0-T	TO-220	A	O	I	Tube
LM317M-TN3-0-R	LM317ML-TN3-0-R	TO-252	A	O	I	Tape Reel
LM317M-TN3-0-T	LM317ML-TN3-0-T	TO-252	A	O	I	Tube

Note: Pin assignment: I:V_{IN} O:V_{OUT} A:ADJ

LM317ML-AA3-0-R

(1)Packing Type	(1) R: Tape Reel, T: Tube
(2)Pin Assignment	(2) refer to Pin Assignment
(3)Package Type	(3) AA3: SOT-223, TA3: TO-220, TN3: TO-252
(4)Lead Plating	(4) 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	P_D	Internally Limited	W
Junction Temperature	T_J	+125	℃
Operating Temperature	T_{OPR}	-20 ~ +85	℃
Storage Temperature	T_{STG}	-40 ~ +150	℃

Note 1. 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.

2. The device is guaranteed to meet performance specification within 0℃~+70℃ operating temperature range and assured by design from -20℃~+85℃.

■ ELECTRICAL CHARACTERISTICS

(V_{IN}-V_{OUT}=5V, I_{OUT}=0.1A, 0℃≤T_J≤+125℃, $P_{D(MAX)}$=7.5W, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Line Regulation	ΔV_{OUT}	Ta=+25℃, 3V≤V_{IN}-V_{OUT}≤40V		0.01	0.04	%/V
		3V≤V_{IN}-V_{OUT}≤40V		0.02	0.07	
Load Regulation	ΔV_{OUT}	Ta=+25°C, 10mA≤V_{IN}-V_{OUT}≤0.5A V_{OUT}≤5V V_{OUT}≥5V		 5 0.1	 25 0.5	 mV %/Vo
		10mA≤I_{OUT}≤0.5A V_{OUT}≤5V V_{OUT}≥5V		 20 0.3	 70 1.5	 mV %/Vo
Adjustment Pin Current	I_{ADJ}			50	100	μA
Adjustment Pin Current Change	$\triangle I_{ADJ}$	3V≤V_{IN}-V_{OUT}≤40V 10mA≤I_{OUT}≤0.5A, P_D<$P_{D(MAX)}$		0.2	5	μA
Reference Voltage	V_{REF}	3V≤V_{IN}-V_{OUT}≤40V 10mA≤I_{OUT}≤0.5A, P_D<$P_{D(MAX)}$	1.20	1.25	1.30	V
Temperature Stability	ST_T			0.7		%/Vo
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	V_{IN}-V_{OUT}=40V		3.5	10	mA
Maximum Output Current	$I_{O(MAX)}$	V_{IN}-V_{OUT}≤15V, P_D<$P_{D(MAX)}$	0.5	0.9		
		V_{IN}-V_{OUT}=40V P_D<$P_{D(MAX)}$, Ta=+25℃	0.15	0.25		A
RMS Noise, % of V_{OUT}	eN	Ta=+25℃, 10Hz<f<10KHz		0.003		%/Vo
Ripple Rejection	RR	V_{OUT}=10V, f=120Hz Without C_{ADJ} C_{ADJ}=10μF	66	 65 80		V/μs
Long-Term Stability	ST	T_J=+125℃, 1000Hours		0.3	1	%/1000Hrs

■ TYPICAL APPLICATION

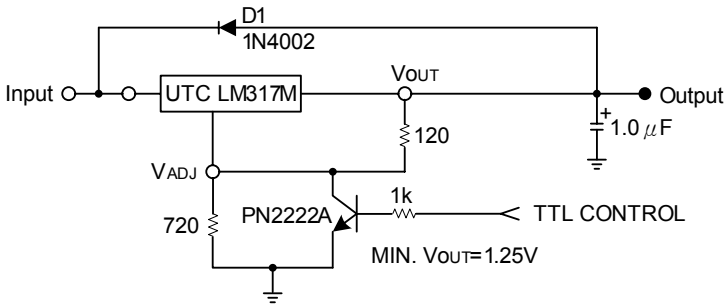


Figure 1. 1.5V Electronic Shutdown Regulator
D1 protects the device during an input short circuit

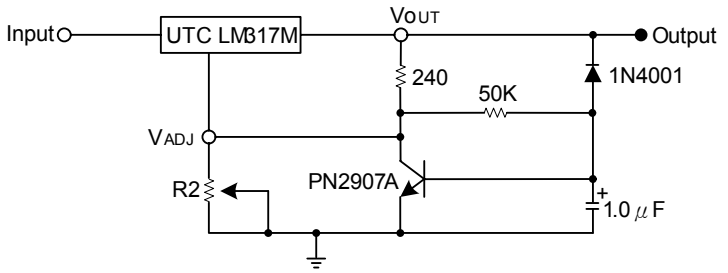


Figure 2. Slow Turn-On Regulator

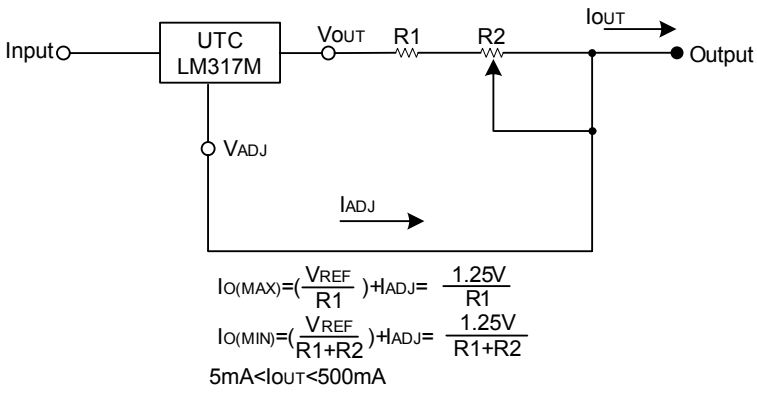
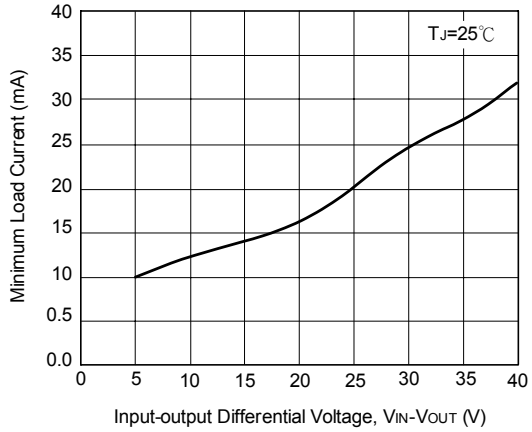


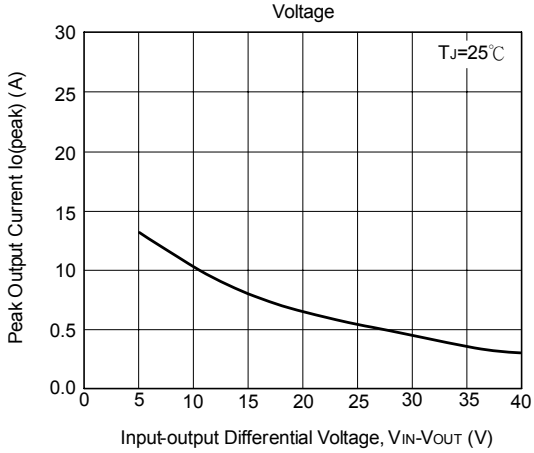
Figure 3. Current Regulator

■ TYPICAL CHARACTERISTICS

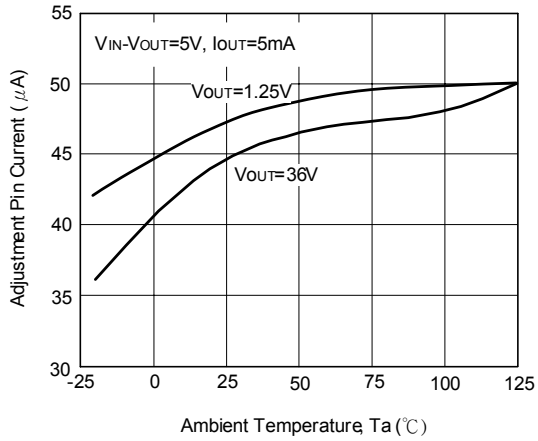
Minimum Load Current



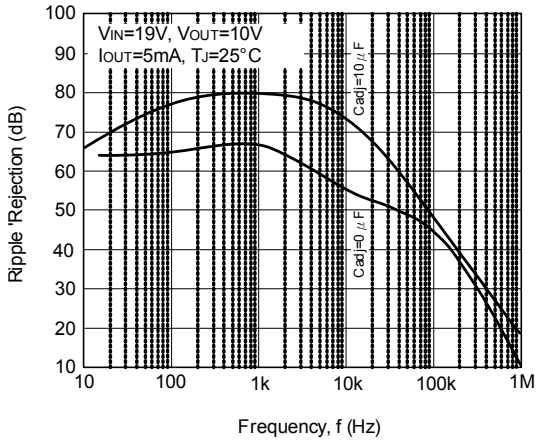
Peak Output Current vs. Input-Output Differential Voltage



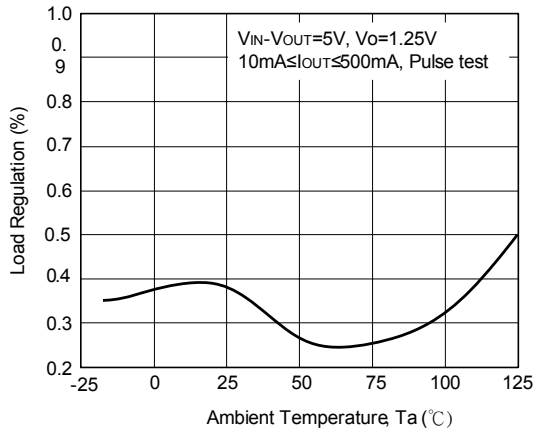
Adjustment Pin Current vs.Temperature



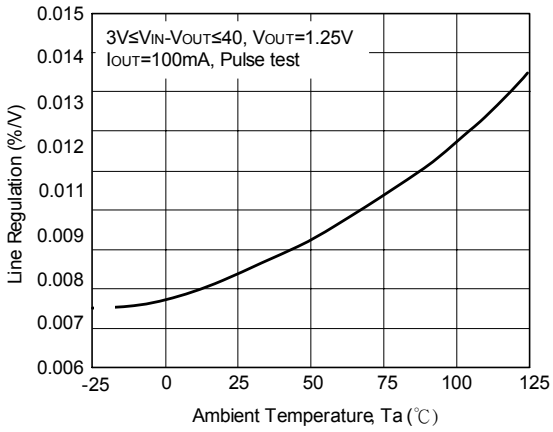
Ripple Rejection vs. Frequency



Load Regulation vs. Temperature

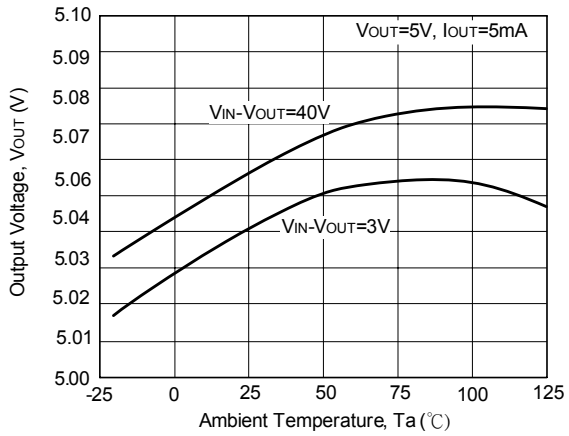


Line Regulation vs. Temperature



■ TYPICAL CHARACTERISTICS(Cont.)

Outputvoltage vs.Temperature



Thermal Shutdown