



LM317Q

LINEAR INTEGRATED CIRCUIT

HIGH CURRENT 1.3V TO 37V ADJUSTABLE VOLTAGE REGULATOR

DESCRIPTION

The UTC **LM317Q** is an adjustable 3-terminal positive voltage regulator, designed to supply 1A of output current with voltage adjustable from 1.3V ~ 37V.

FEATURES

- *Output voltage adjustable from 1.3V ~ 37V
- *Output current in excess of 1A
- *Internal short circuit protection
- *Internal over temperature protection
- *Output transistor safe area compensation

ORDERING INFORMATION

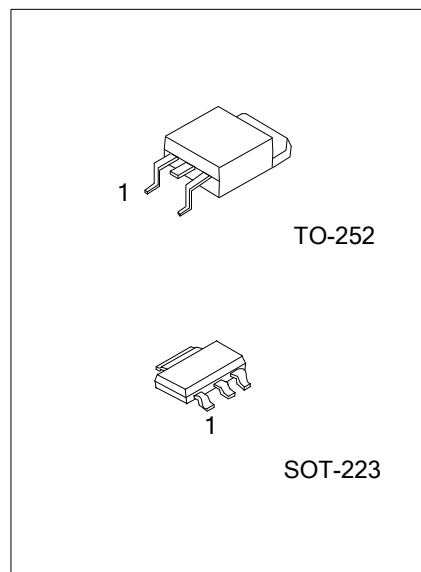
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
LM317QL-AA3-R	LM317QG-AA3-R	SOT-223	ADJ	O	I	Tape Reel
LM317QL-TN3-R	LM317QG-TN3-R	TO-252	ADJ	O	I	Tape Reel

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

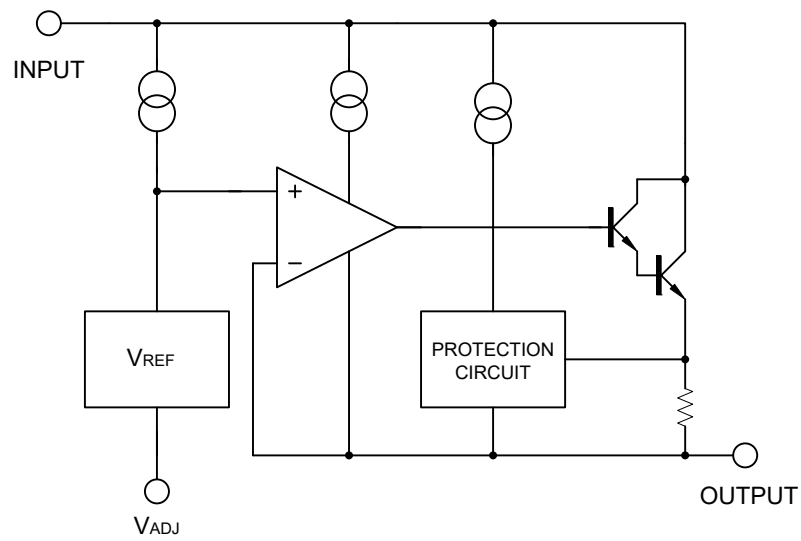
LM317QG-AA3-R (1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) AA3: SOT-223, TN3: TO-252 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

SOT-223	TO-252
LM317Q □ □ □ □ □ 1 L: Lead Free G: Halogen Free Date Code	UTC LM317Q □ □ □ □ □ □ □ 1 Lot Code ← L: Lead Free G: Halogen Free Date Code



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Input - Output Voltage Difference		V _{IN} -V _{OUT}	40	V
Power Dissipation	SOT-223	P _{D max}	0.606	W
	TO-252		0.89	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 stress ratings only and functional device operation is not implied. The device could be damaged beyond Absolute maximum ratings.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-223	θ _{JA}	165	°C/W
	TO-252		112	°C/W
Junction to Case	SOT-223	θ _{JC}	23	°C/W
	TO-252		13	°C/W

■ ELECTRICAL CHARACTERISTICS

(V_{IN}-V_{OUT}=5V, I_{OUT}=10mA, T_A=25°C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Line Regulation	ΔV _{OUT} /V _{OUT}	3V ≦ V _{IN} -V _{OUT} ≦ 40V		0.01	0.04	%/V
Load Regulation	ΔV _{OUT}	10mA ≦ I _{OUT} ≦ 1A		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} ≦ 1A, P _D ≦ P _{D max}		0.2	5	μA
Reference Voltage	V _{REF}	3V ≦ V _{IN} -V _{OUT} ≦ 40V, 10mA ≦ I _{OUT} ≦ 1A, P _D ≦ P _{D max}	1.20	1.25	1.30	V
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 ≦ P _{D max}	0.2	0.3		A
Ripple Rejection	RR	V _{OUT} =10V, f=120Hz		55		dB
		C _{ADJ} =0		64		

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

■ APPLICATION CIRCUITS

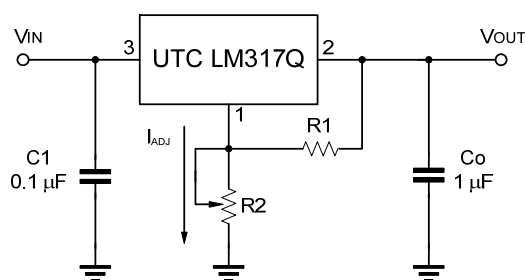


Fig.1 Programmable voltage regulator

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

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

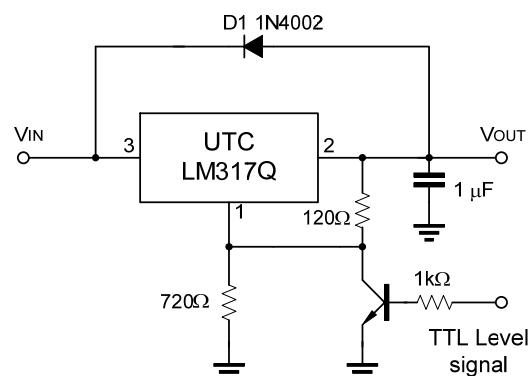


Fig.2 Regulator with On-off control

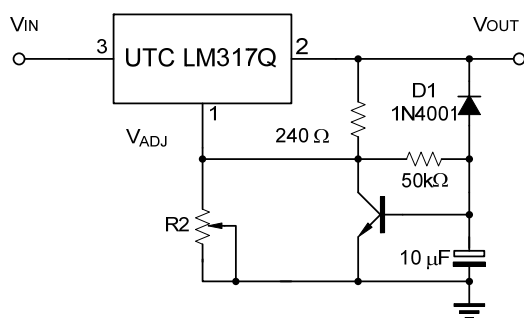
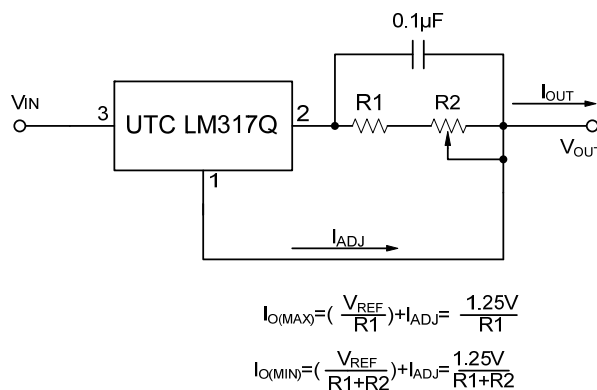


Fig.3 Soft Start Application



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

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

Fig.4 Constant Current Application

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