

UTC LM317L LINEAR INTEGRATED CIRCUIT

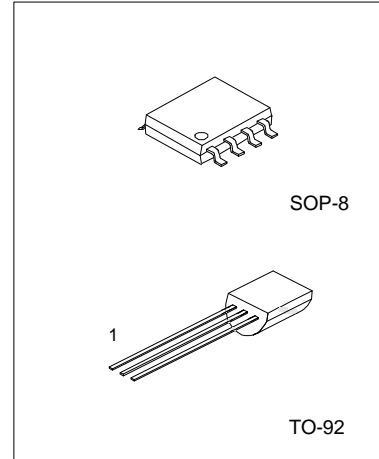
LOW CURRENT 1.25V TO 37V ADJUSTABLE VOLTAGE REGULATOR

DESCRIPTION

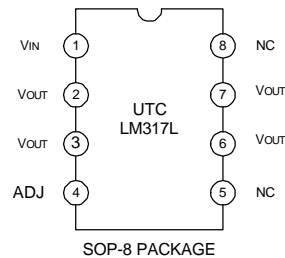
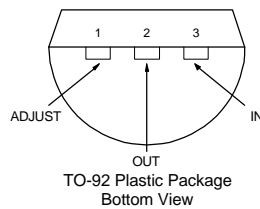
The UTC LM317L is a monolithic integrated circuit, designed for use as positive adjustable voltage regulator. It is designed to supply until 100mA of load current with an output voltage adjustable over a 1.25V to 37V range.

FEATURES

- *Output voltage range: 1.25V to 37V
- *Output current in excess of 100mA
- *Line regulation typ. 0.01%
- *Load regulation typ. 0.1%
- *Thermal overload protection
- *Short circuit protection
- *Output transistor safe area compensation
- *Floating operation for high voltage applications



PIN CONFIGURATIONS

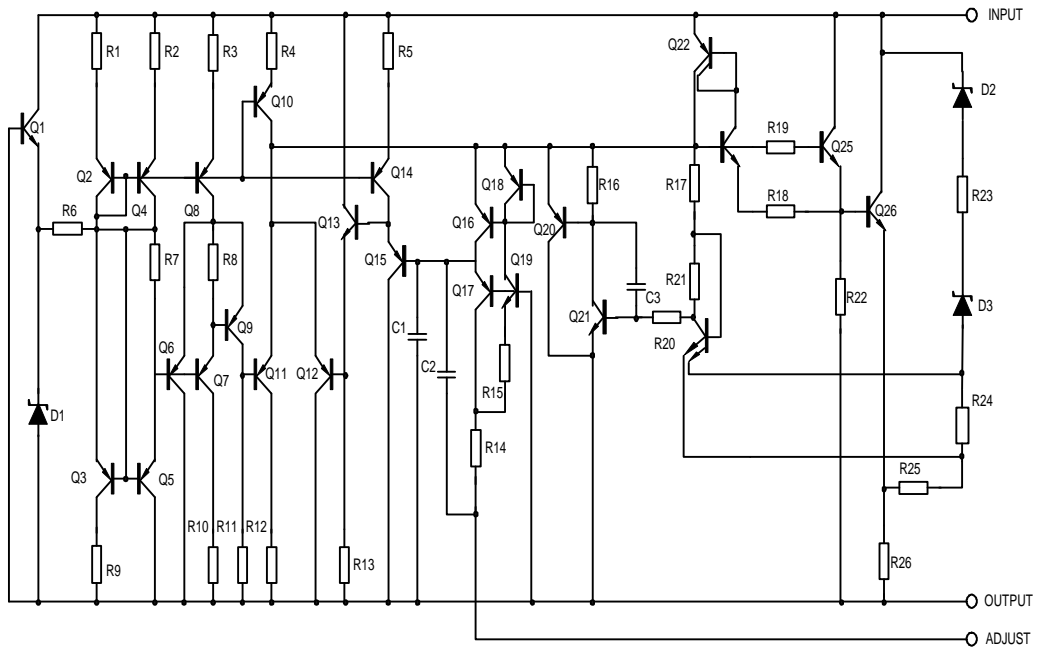


ABSOLUTE MAXIMUM RATING

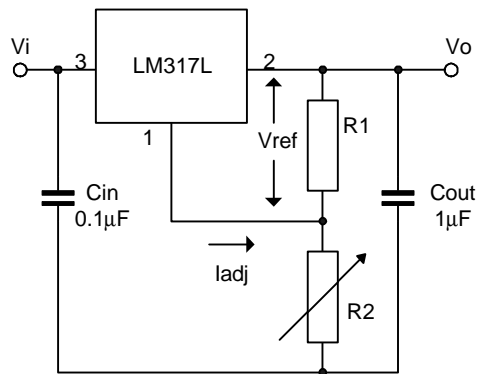
PARAMETER	SYMBOL	VALUE	UNIT
Input-Output Differential Voltage	$V_i - V_o$	40	V
Power Dissipation	P_d	Internally Limited	
Operating Junction Temperature Range	T_{opr}	0~125	°C
Storage Temperature Range	T_{str}	-55 ~ 150	°C

UTC LM317L LINEAR INTEGRATED CIRCUIT

SCHEMATIC DIAGRAM



TEST CIRCUIT

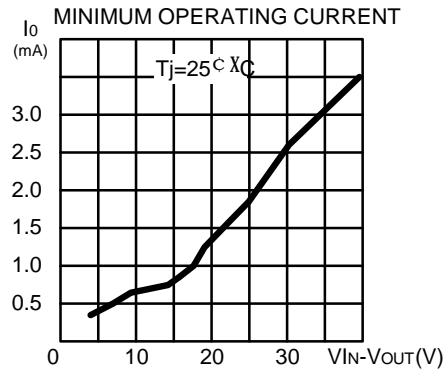
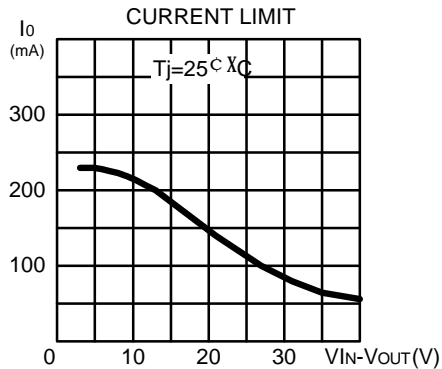


UTC LM317L LINEAR INTEGRATED CIRCUIT

ELECTRICAL CHARACTERISTICS ($V_i - V_o = 5V$, $I_o = 40mA$, $0 \leq T_j \leq 125^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Line Regulation	ΔV_o	$V_i - V_o = 3 \sim 40V$ $I_L < 20mA$	$T_j = 25^\circ C$	0.01	0.04	%/V
				0.02	0.07	%/V
Load Regulation	ΔV_o	$V_o \leq 5V$ $I_o = 5 \sim 100mA$	$T_j = 25^\circ C$	5	25	mV
				20	70	mV
		$V_o > 5V$ $I_o = 5 \sim 100mA$	$T_j = 25^\circ C$	0.1	0.5	%
Adjustment Pin Current	I_{ADJ}			0.3	1.5	%
Adjustment Pin Current	ΔI_{ADJ}			50	100	μA
Adjustment Pin Current	ΔI_{ADJ}	$V_i - V_o = 3 \sim 40V$ $I_o = 5 \sim 100mA$, $P_d < 625 mW$		0.2	5	μA
Reference Voltage	V_{REF}	$V_i - V_o = 3 \sim 40V$ $I_o = 5 \sim 100 mA$, $P_d < 625 mW$	1.2	1.25	1.3	V
Output Voltage Temperature Stability	$\Delta V_o / V_o$			0.7		%
Minimum Load Current	$I_o(\min)$	$V_i - V_o = 40V$		3.5	5	mA
Maximum Output Current	$I_o(\max)$	$V_i - V_o = 3 \sim 13V$	100	200		mA
		$V_i - V_o = 40V$		50		
Output Noise Voltage (Percentage of V_o)	eN	$B = 10Hz \sim 10KHz$ $T_j = 25^\circ C$		0.003		%
Supply Voltage Rejection(*)	SVR	$T_j = 25^\circ C$ $f = 120Hz$	$C_{ADJ} = 0$	65		dB
			$C_{ADJ} = 10\mu F$	66	80	dB

(*) C_{ADJ} is connected between Adjust pin and Ground.



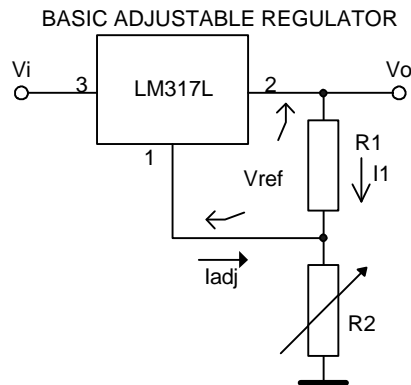
UTC LM317L LINEAR INTEGRATED CIRCUIT

APPLICATION INFORMATION

The UTC LM317L provides an internal reference voltage of 1.25V between the output and adjustments terminals. This is used to set a constant current flow across an external resistor divider, giving an output voltage V_O of:

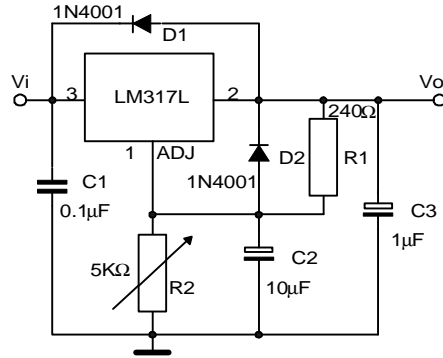
$$V_O = V_{REF} (1 + R_2/R_1) + I_{ADJ} R_2$$

The device is designed to minimize the term I_{ADJ} (100 μ A max) and to maintain it very constant with line and load changes. Usually, the error term $I_{ADJ} R_2$ can be neglected. To obtain the previous requirement, all the regulator quiescent current is returned to the output terminal, imposing a minimum load current condition. If the load is insufficient, the output voltage will rise. The UTC LM317L is a floating regulator, input-output differential voltage, supplies of very high voltage with respect to ground can be regulated as long as the maximum input-output differential is not exceeded. Furthermore, programmable regulators are easily obtainable and, by connecting a fixed resistor between the adjustment and output, the device can be used as a precision current regulator.

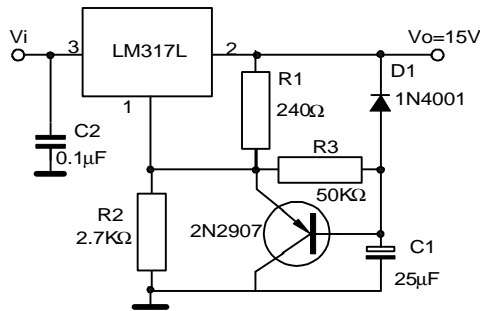


UTC LM317L LINEAR INTEGRATED CIRCUIT

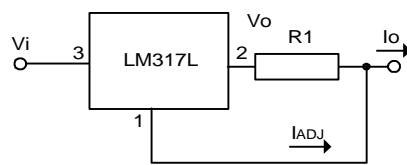
VOLTAGE REGULATOR WITH PROTECTION DIODES



SLOW TURN-ON 15V REGULATOR

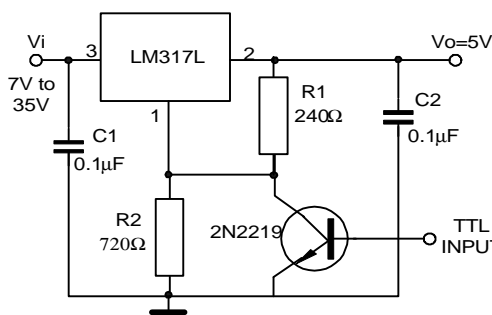


CURRENT REGULATOR

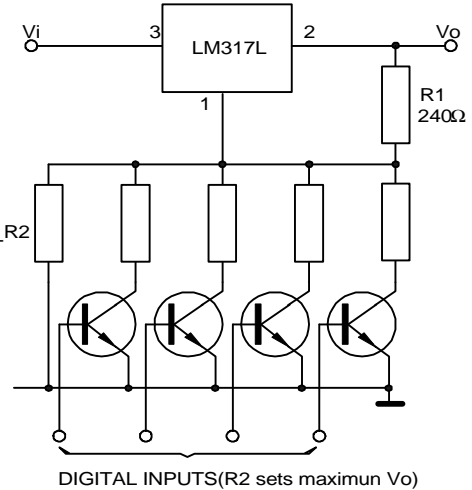


$$I_o = \frac{V_{ref}}{R_1} + I_{ADJ} \approx \frac{1.25V}{R_1}$$

5V ELECTRONIC SHUT-DOWN REGULATOR



DIGITALLY SELECTED OUTPUTS



DIGITAL INPUTS (R2 sets maximum Vo)