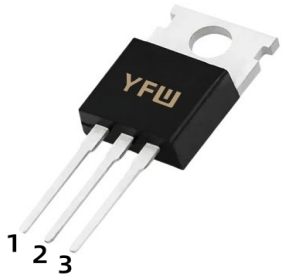
3-Terminal 1.5A Positive Adjustable Regulator



1. Adj
2. Output
3. Input

TO-220C

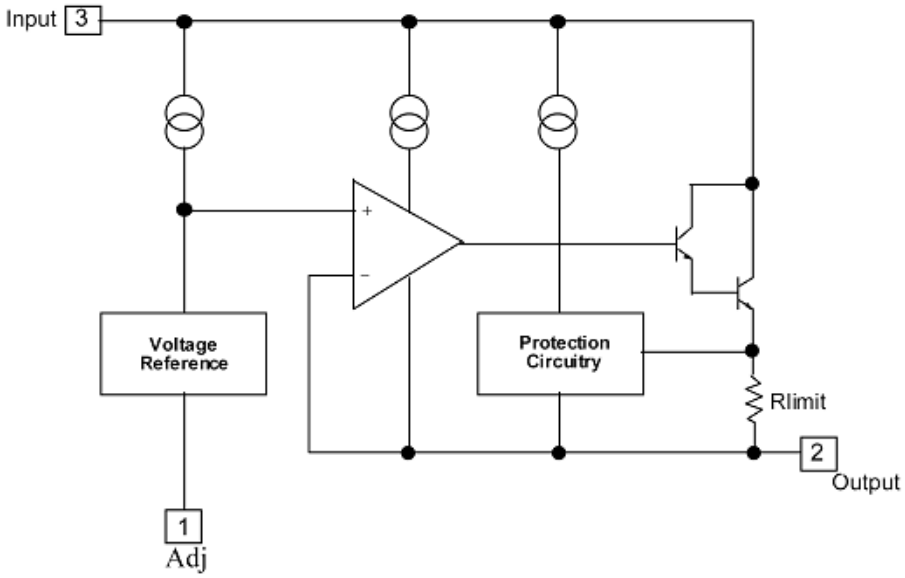
Description

The LM317AT are monolithic integrated circuit in TO-220C package sintended for use as positive adjustable voltage regulators.They are designed to supply more than 1.5A of load current with an output voltage adjustable over a 1.2 to 37V range. The nominal output voltage is selected by means of only a resistive divider, making the device exceptionally easy to use and eliminatingthestocking of many fixed regulators

Features

- Output Voltage Range : 1.2 to 37V
- Output Current in excess of 1.5A
- 0.1% Line and Load Regulation Voltages
- Floating Operation For High
- Complete Series of Protections:
  Current Limiting, Thermal Shudown and SOA Control

Internal Block Digram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input-output Differential Voltage	V_i -V_O	40	V
Power Dissipation	P_D	Intenrally Limited	W
Operating Junction Temperature	T_j	-40～+125	℃
Storage Temperature	T_{stg}	-60～+150	℃
Temperature Coefficient of Output Voltage	ΔV_O / ΔT	±0.02	% / ℃

Note 1: Absolute Maximum Ratings: are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The “Recommended Operating Conditions” table will define the conditions for actual device operation.

Electrical Characteristics

(Vi - Vo = 5 V, Io =0.5A, T_A=25℃, unless otherwise specified)

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Line Regulation (Note2)	$\Delta V_{OUT}/V_{OUT}$	3V≤V_I-V_O≤40V, T_A=25℃			0.01	0.04	%V
		3V≤V_I-V_O≤ 40V			0.002	0.07	
Load Regulation(Note2)	ΔV_{OUT}	10mA≤I_O≤1.5A	V_o<5V		18	25	mV%/V o
			V_o≥5V		0.4	0.5	
		10mA≤I_O≤1.5A	V_o<5V		40	70	mV%/V o
			V_o≥5V		0.8	1.5	
Adjustment Pin Current	I_{ADJ}	T_j=25℃			50	100	μA
Adjustment Pin Current	ΔI_{ADJ}	3V≤V_I-V_O≤40V 10mA≤I_O≤ 1.5A P_D ≤20W			2.0	5.0	μA
Reference Voltage	V_{REF}	3V≤V_I-V_O≤40V 10mA≤I_O≤1.5A, P_D ≤ 20W		1.20	1.25	1.30	V
Minimum Load Current	$I_{L(Min)}$	Vi-Vo = 40V			3.5	10	mA
Maximum Output Current	$I_{O(Max)}$	V_I-V_O=40, P_D ≤ 20W		0.2	0.3		A
Maximum Load Current	eN	10Hz≤ f ≤10kHz			0.003	0.01	% / V_O
RMS Noise,% of V_{OUT}	RR	V_O=10V,f=120Hz (Note3)	C_{ADJ}		65		dB
			C_{ADJ}=10μF	66	80		

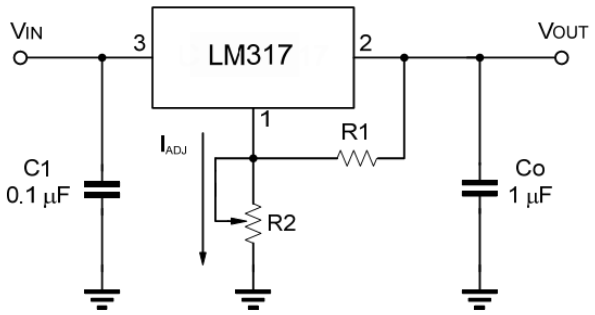
Note 2: Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used. (P_{MAX}= 20S)

Note 3: C_{ADJ}, when used, is connected between the adjustment pin and ground.

Thermal resistances

Parameter	Symbol	Conditions	Value	Unit
Junction to ambient	$R\theta_{JA}$		54	°C/W
Junction to case	$R\theta_{JC}$		5	°C/W

Application Circuits



$V_{out} = 1.25*(1+R2/R1)+I_{ADJ}*R2$

Fig.1 Prgrammable Voltage Regulator

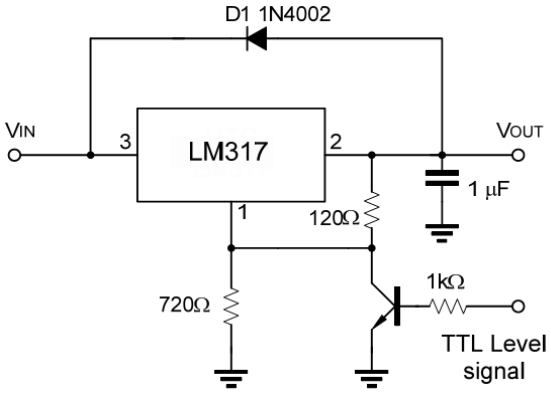


Fig.2 Regulator with ON-off controll

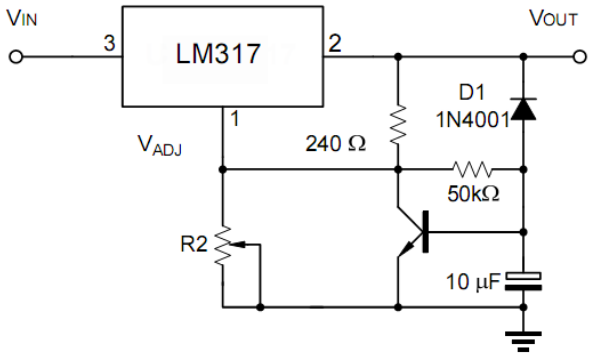


Fig.3 Soft Start Application

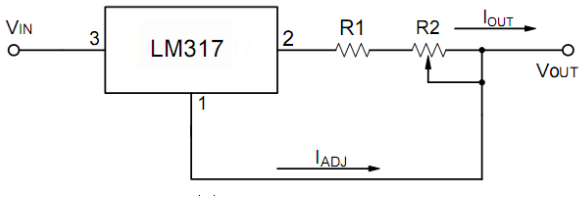


Fig.4. Constant Current Application

Typical Characteristics

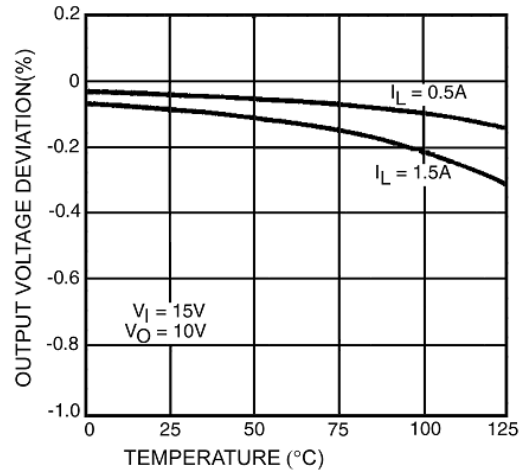


Fig.5. Load Regulation vs. temperature

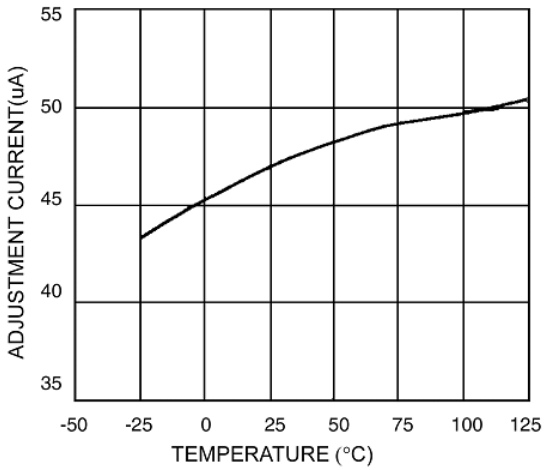


Fig.6. Adjustment Current vs. Temperature

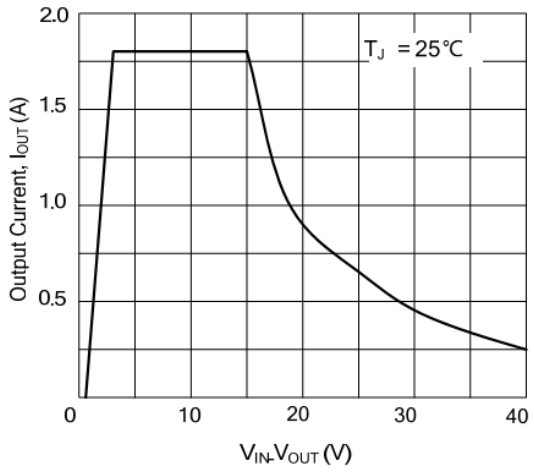


Fig.7. Current limit

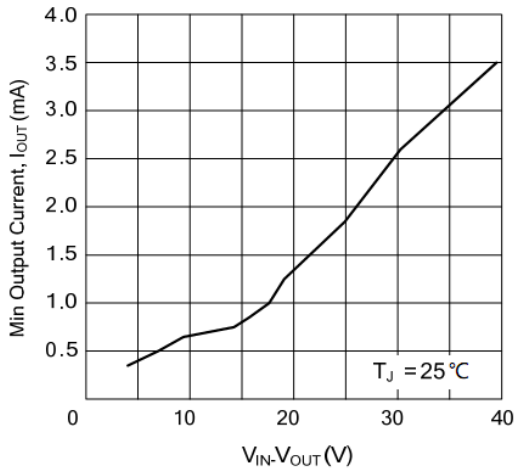
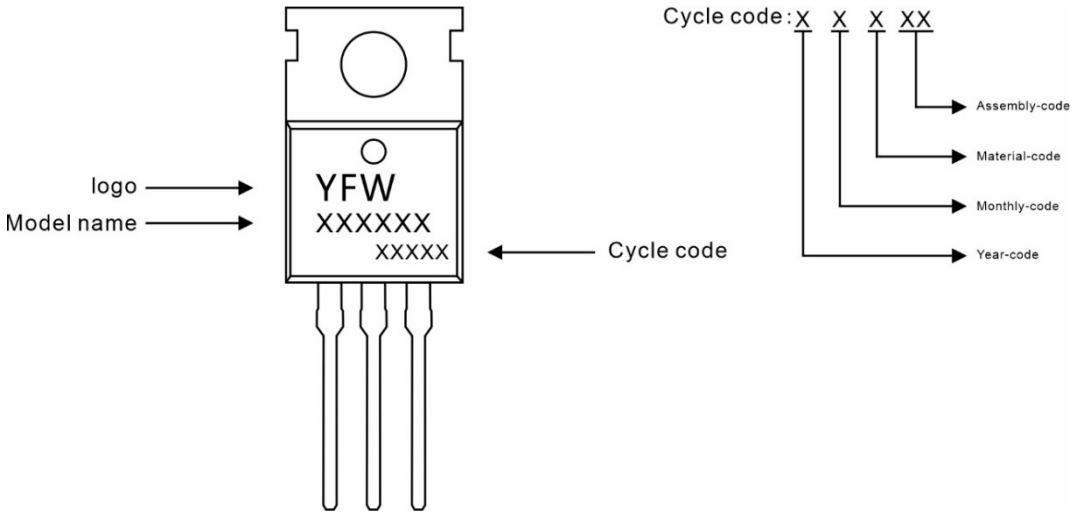


Fig.8. Minimun Operating Current

Marking Diagram

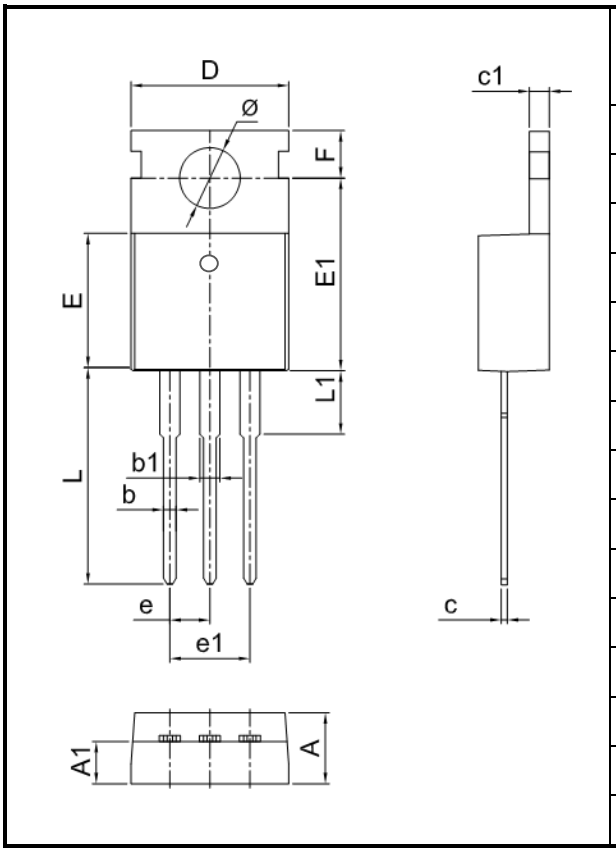


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
LM317AT	TO-220C	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

Package Dimensions

TO-220C



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.34	4.67	0.171	0.184
A1	2.52	2.82	0.099	0.111
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
c	0.30	0.50	0.012	0.020
c1	1.17	1.37	0.046	0.054
D	9.90	10.20	0.390	0.402
E	8.50	8.90	0.335	0.350
E1	12.00	12.50	0.472	0.492
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	2.60	2.80	0.102	0.110
L	13.20	13.80	0.520	0.543
L1	3.80	4.20	0.150	0.165
Φ	3.60	3.96	0.142	0.156

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