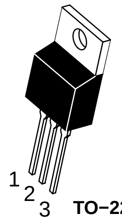
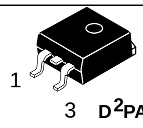
3-TERMINAL 1.5A POSITIVE ADJUSTABLE VOLTAGE REGULATOR



TO-220-3 LM317BT



D^2PAK-3

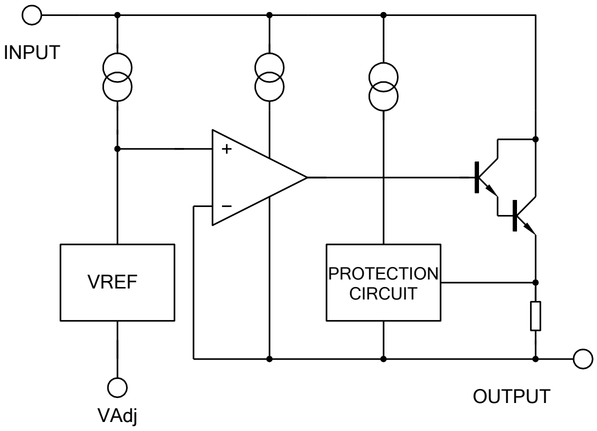
Pin 1. Input
2. Ground
3. Output

LM317KT
LM317D2TR

FEATURES

*Output current up to 1.5A
*Internal short circuit protection
*Internal over temperature protection
* Safe-Area compensation for output transistor
*Output voltage adjustable from 1.3V to 37V

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta=25℃, UNLESS OTHERWISE SPECIFIED)

PARAMETERS	SYMBOL	RATING	UNITS
Input – Output Voltage Difference	V_I-V_O	40	V
Lead Temperature	T_{LEAD}	260	℃
Power Dissipation	P_D	Internal limited	—
Operating Temperature Range	T_{OPR}	-40 ~+125	℃
Storage Temperature Range	T_{STG}	-65~+150	℃

ELECTRICAL CHARACTERISTICS

(V_I-V_O=5V,0°C <Tj<125°C,I_O=500mA,I_{MAX}=1.5A,P_{MAX}=20W , unless otherwise specified)

Parameter	Symbol	Test conditions		Min	Typ	Max	Unit
Line Regulation	ΔV_O	Ta=25°C,3V≤V_I-V_O≤40V			0.01	0.04	%/V
		Ta=0—125°C,3V≤V_I-V_O≤40V			0.02	0.07	
Load Regulation	ΔV_O	Ta=25°C 10mA≤I_O≤I_{MAX}	V_O≤5V		18	25	mV
			V_O≥5V		0.4	0.5	%/V_O
		10mA≤I_O≤I_{MAX} Ta=0—125°C	V_O≤5V		40	70	mV
			V_O≥5V		0.8	1.5	%/V_O
Adjustable Pin current	I_{ADJ}				46	100	μA
Adjustable Pin Current Change	ΔIADJ	2.5V≤V_I-V_O≤40V, 10mA≤I_O≤I_{MAX},P_D≤P_{MAX}			0.3	5	μA
Reference Voltage	V_{REF}	3V≤V_I-V_O≤40V, 10mA≤I_O≤I_{MAX},P_D≤P_{MAX}		1.20	1.25	1.30	V
Temperature Stability	STT				0.7		%/V_O
Minimum Load Current for regulation	$I_{L(MIN)}$	V_I-V_O=40V			3.5	10	mA
Maximum output Current	$I_{O(MAX)}$	V_I-V_O≤15V,P_D≤P_{MAX}		1.5	2.2		A
		V_I-V_O=40V,P_D≤P_{MAX},Ta=25°C		0.15	0.4		
RMS Noise v.s. %of Vout	eN	T_A=25°C,10Hz≤f≤10KHz			0.003	0.01	%/V_O
Ripple Rejection	RR	V_O=10V,f=120HZ,C_{ADJ}=0			60		dB
		V_O=10V,f=120HZ,C_{ADJ}=10μF		66	75		
Long-term Stability, T_J=T_{HIGH}	ST	T_A=25°C,1000 hr			0.3	1	%

Note: Testing with low duty pulse should be used to avoid heating effect.

TYPICAL CHARACTERISTICS PERFORMANCE

Fig.1. Load Regulation vs temperature

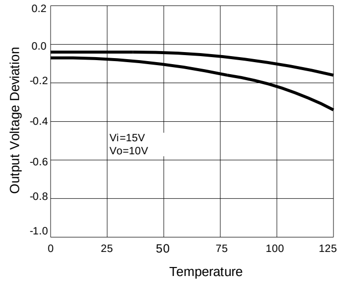


Fig.2 Adjustment Current vs Temperature

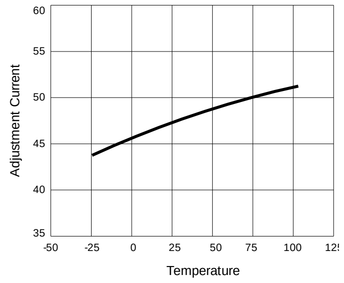


Fig.3. Dropout Voltage vs Input-Output Voltage Difference

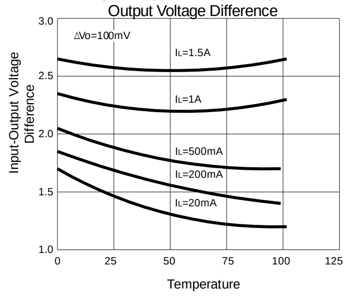
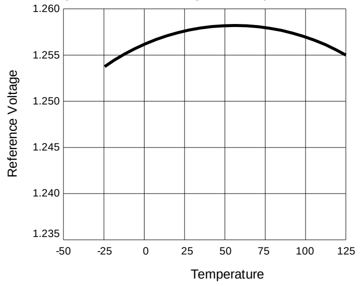


Fig.4 Reference Voltage vs Temperature



TYPICAL APPLICATION CIRCUITS

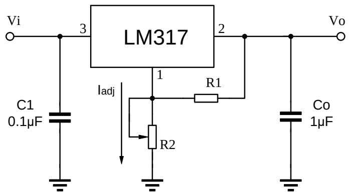


Fig.5 Programmable voltage regulator

Vo=1.25V*(1+R2/R1)+Iadj*R2

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

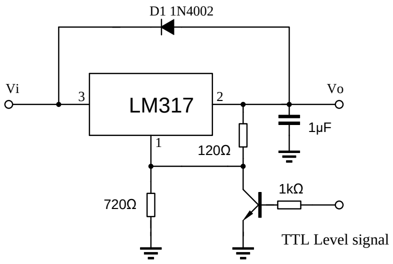


Fig.6 Regulator with On-off control

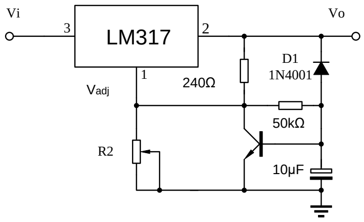
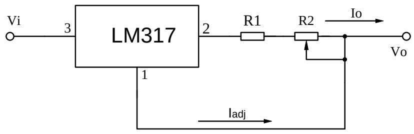


Fig.7 Soft start application



$$Iomax=\left(\frac{Vref}{R1}\right)+Iadj=\frac{1.25V}{R1}$$

$$Iomin=\left(\frac{Vref}{R1+R2}\right)+Iadj=\frac{1.25V}{R1+R2}$$

$5mA<Io<100mA$

Fig.8 Constant current application

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