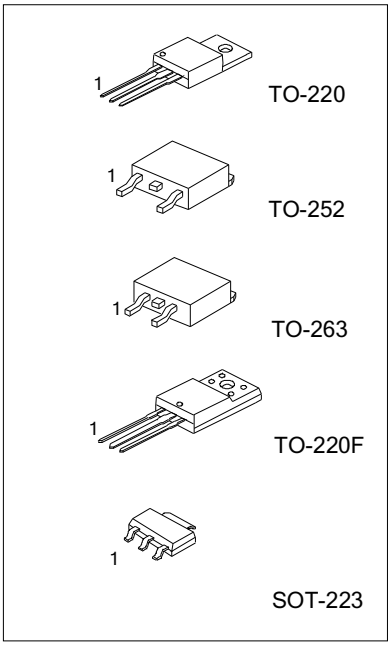
3-TERMINAL 1.5A POSITIVE ADJUSTABLE VOLTAGE REGULATOR



1:ADJ; 2: OUTPUT; 3: INPUT

DESCRIPTION

The UTC317/B/TB is an adjustable 3-terminal positive voltage regulator designed to supply more than 1.5A of output current with voltage adjustable from 1.3V to 37V。

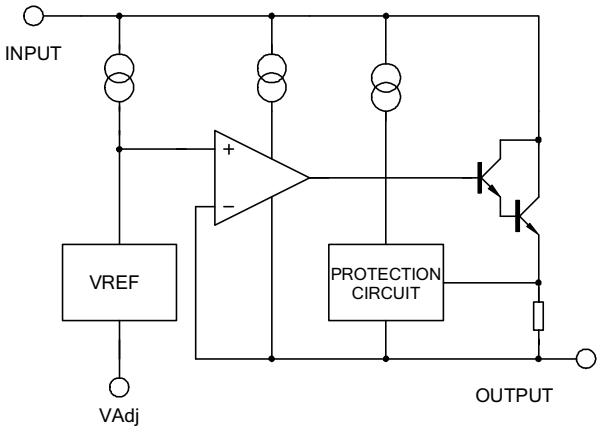
FEATURES

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

ORDERING INFORMATION

Device	Package
UTC317	TO-220/ TO-220F
UTC317B	TO-252
UTC317TB	TO-263-2L
UTC317Y	SOT-223

BLOCK DIAGRAM



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

PARAMETERS	SYMBOL	RATING	UNITS
Input - Output Voltage Difference	V_I-V_O	40	V
Lead Temperature	T_{LEAD}	260	°C
Power Dissipation	P_D	Internal limited	–
Operating Temperature Range	T_{OPR}	0~+125	°C
Storage Temperature Range	T_{STG}	-65~+150	°C

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	V_O≤6V		18	25	mV
		10mA≤I_O≤I_{MAX}	V_O≤5V		0.4	0.5	%/V_O
		10mA≤I_O≤I_{MAX}	V_O≤5V		40	70	mV
			V_O≤6V		0.8	1.5	%/V_O
Adjustable Pin current	I_{ADJ}				46	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	2.5V≤V_I-V_O≤40V, 10mA≤I_O≤I_{MAX},P_D≤P_{MAX}			2.0	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≤15V,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.

THERMAL DATA

Parameter		Symbol	RATING	UNITS
Junction-to-Ambient	TO-252	θ_{JA}	112	℃/W
	TO-220		54	
	TO-220F		44	
	TO-263		64	
	SOT-223		165	
Junction-to-Case	TO-252	θ_{JC}	12	℃/W
	TO-220		5	
	TO-220F		5	
	TO-263		5	
	SOT-223		23	

TYPICAL CHARACTERISTICS PERFORMANCE

Fig.1. Load Regulation vs temperature

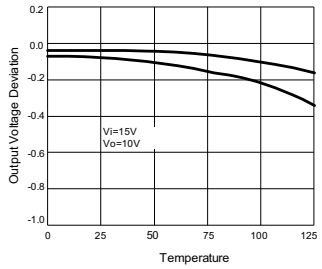


Fig.2 Adjustment Current vs Temperature

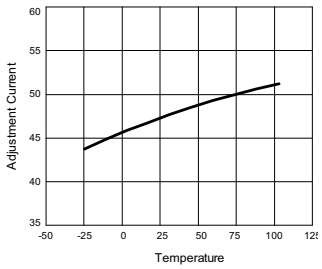


Fig.3. Dropout Voltage vs Input-Output Voltage Difference

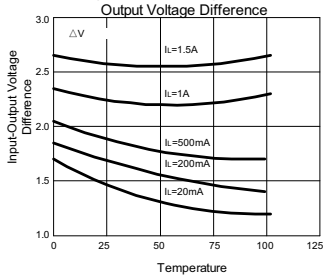
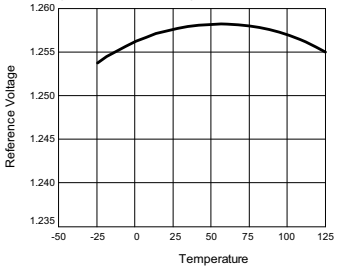


Fig.4 Reference Voltage vs Temperature



TYPICAL APPLICATION CIRCUITS

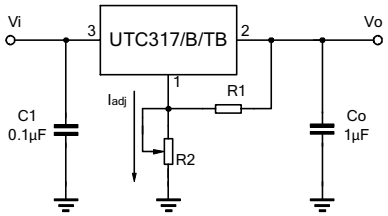


Fig.5 Programmable voltage regulator

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.

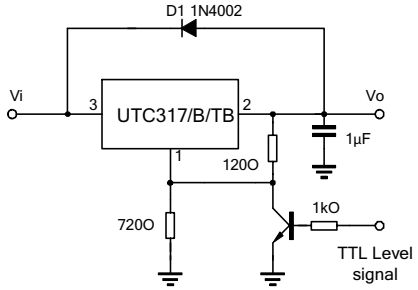


Fig.6 Regulator with On-off control

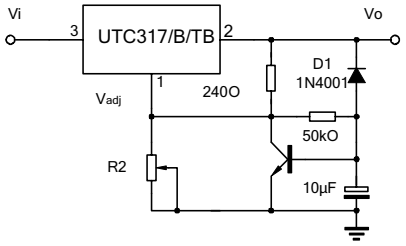


Fig.7 Soft start application

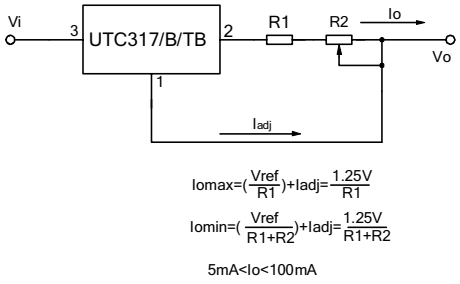
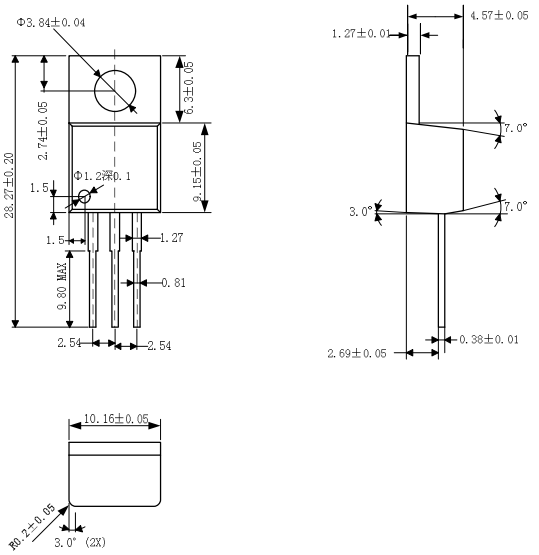


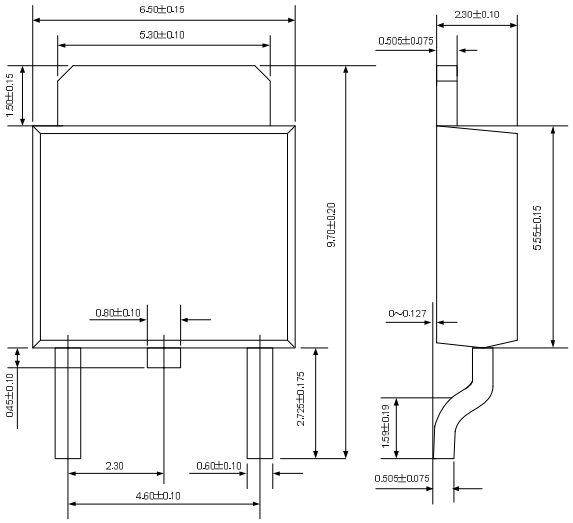
Fig.8 Constant current application

PACKAGE DIMENSIONS

TO-220 Unit: mm

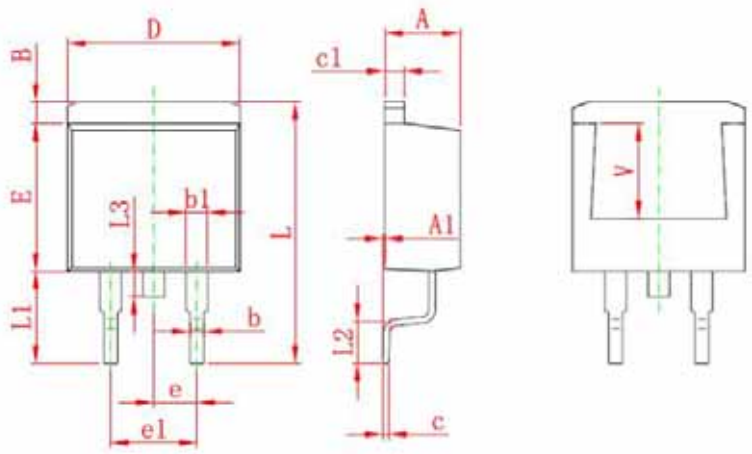


TO-252 Unit: mm



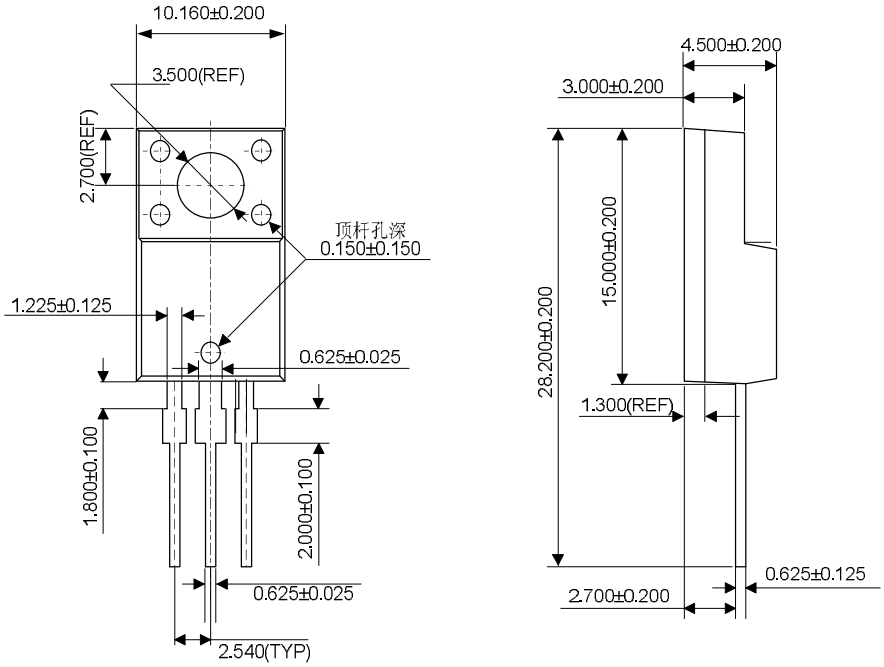
PACKAGE DIMENSIONS

TO-263 Unit: mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.170	1.370	0.046	0.054
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
L	15.050	15.450	0.593	0.608
L1	5.080	5.480	0.200	0.216
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
V	5.600 REF		0.220 REF	

TO-220F Unit: mm



SOT-223 Unit: mm