Elektronische Bauelemente

SU1117A

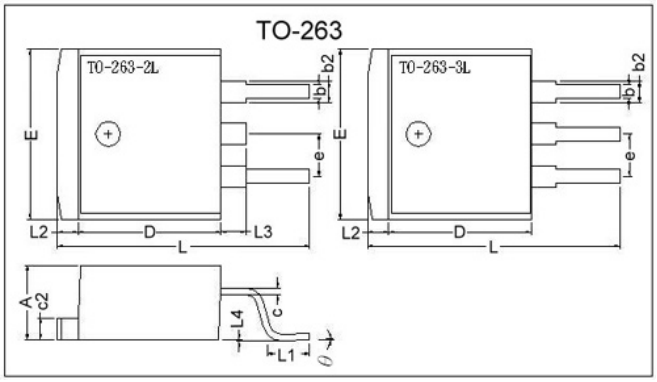
1A Low Dropout Positive

Adjustable or Fixed-Mode Regulator

RoHS Compliant Product

Description

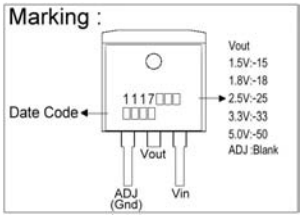
The SU1117A is a low dropout at positive adjustable or fixed-mode regulator with min. of 1A output current capability. The product is specifically designed to provide well-regulated supply for low voltage IC applications such as high-speed bus termination and low current 3.3V logic supply. SU1117A is also well suited for other applications such as VGA cards. SU1117A is guaranteed to have lower than 1.4V dropout at full load current making it ideal to provide well regulated outputs of 1.25 to 5 with 6.4V to 12V input supply.



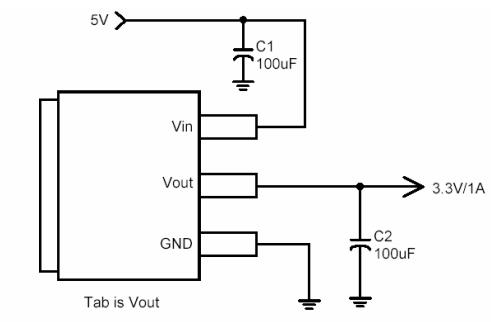
Features

* 1.4V Max. Dropout Full Load Current
* 3-Terminal Adjustable or Fixed 1.5V,1.8V,2.5V,3.3V,5.0V
* Output Current Limiting
* Good Noise Rejection
* Fast Transient Response
* Built-in Thermal Shutdown

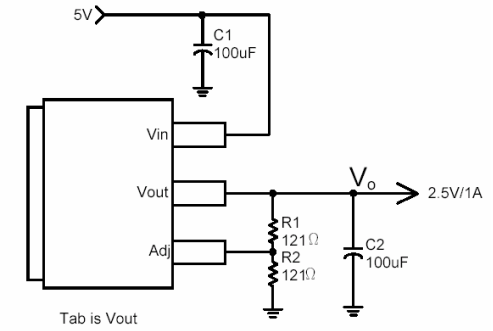
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c2	1.25	1.45
b	0.76	1.00	b2	1.17	1.47
L4	0.00	0.30	D	8.6	9.0
c	0.36	0.5	e	2.54 REF.	
L3	1.50 REF.		L	14.6	15.8
L1	2.29	2.79	θ	0°	8°
E	9.80	10.4	L2	1.27 REF.	



Typical Circuit



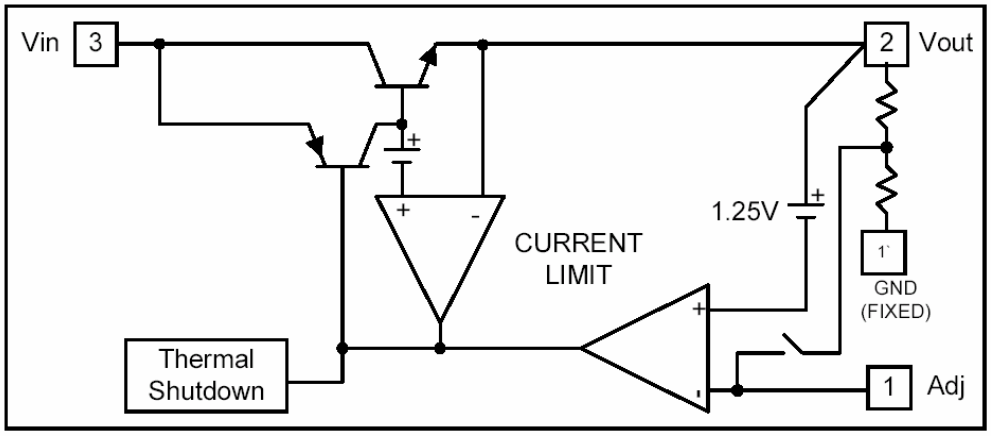
(5V/3.3V fixed output)



(5V/2.5V ADJ output)

Note: $V_o = V_{REF} * (1 + \frac{R_2}{R_1})$

Block Diagram



Pin Descriptions

Name	I/O	Pin#	Function
Adj (GND)	I	1	A resistor divider from this pin to the Vout pin and ground sets the output voltage (Ground only for fixed mode)
Vout	O	2	The output of the regulator. A minimum of 10uF capacitor must be connected from this pin to ground to insure stability.
Vin	I	3	The input pin of regulator .Typically a large storage capacitor is connected from this pin to ground to insure that the input voltage does not sag below the minimum dropout voltage during the load transient response .This pin must always be 1.3V higher than Vout in order for the device to regulate properly.

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
DC Supply Voltage	V_{IN}	-0.3 to 12	V
Power Dissipation	P_D	Internally Limited	
Storage Temperature Range	T_{ST}	-65~+150	°C
Operating Juction Temperature Range	T_{OP}	0~+150	°C

Electrical Characteristics

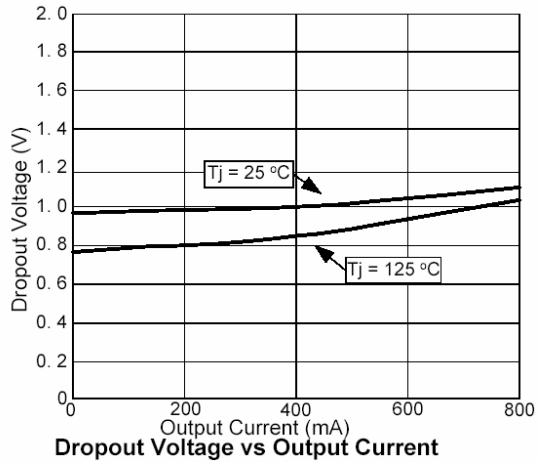
PARAMETER	CONDITIONS		MIN	TYP	MAX	UNIT
Reference Voltage	SU1117AADJ	Io=10mA,Tj=25℃,(Vin-Vout)=1.5V	1.225	1.25	1.275	V
Output Voltage	SU1117A-1.5	Io=10mA,Tj=25℃,3V≤ Vin≤12V	1.470	1.500	1.530	V
	SU1117A-1.8	Io=10mA,Tj=25℃,3.3V≤ Vin≤12V	1.764	1.800	1.836	V
	SU1117A-2.5	Io=10mA,Tj=25℃,4V≤ Vin≤12V	2.450	2.500	2.550	V
	SU1117A-3.3	Io=10mA,Tj=25℃,4.8V≤ Vin≤12V	3.235	3.300	3.365	V
	SU1117A-5.0	Io=10mA,Tj=25℃,6.5V≤ Vin≤12V	4.900	5.000	5.100	V
Line Regulation	SU1117A-XXX	Io=10mA,Vout+1.5V<Vin<12V,Tj=25℃	-	-	0.2	%
Load Regulation	SU1117AADJ	Vin=3.3V,Vadj=0,0mA<Io<1A,Tj=25℃(Note 1,2)	-	-	1	%
	SU1117A-1.5	Vin=3V,0mA<Io<1A,TJ=25℃ (Note 1,2)	-	12	15	mV
	SU1117A-1.8	Vin=3.3V,0mA<Io<1A,TJ=25℃ (Note 1,2)	-	15	18	mV
	SU1117A-2.5	Vin=4V,0mA<Io<1A,TJ=25℃ (Note 1,2)	-	20	25	mV
	SU1117A-3.3	Vin=5V,0mA<Io<1A,TJ=25℃ (Note 1,2)	-	26	33	mV
	SU1117A-5.0	Vin=8V,0mA<Io<1A,TJ=25℃ (Note 1,2)	-	40	50	mV
Dropout Voltage (V_{IN}-V_{OUT})	SU1117A-XXX	Io=1A,(ΔVout=0.1% Vout)	-	1.3	1.4	V
Current Limit	SU1117A-XXX	Vin-Vout=5V	1.1	-	-	A
Minimum Load Current	SU1117A-XXX	0℃≤Tj≤125℃	-	5	10	mA
Thermal Regulation	T_A=25℃,30ms pulse		-	0.008	0.04	%/W
Ripple Rejection	F=120HZ,C_{OUT}=25uF Tantalum, I_{OUT}=1A					
	SU1117A-XXX	V_{IN}=V_{OUT}+3V	-	60	70	dB
Temperature Stability	I_O=10mA		-	0.5	-	%
θ_{JA} Thermal Resistance Junction–to-Ambient(No heat sink ;No air flow)			-	91	-	℃/w
θ_{JC} Thermal Resistance Junction-to-Case	Control Circuitry/Power Transistor		-	10	-	℃/w

Note 1: See thermal regulation specifications for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction Temperature by low duty cycle pulse testing .Load regulation is measured at the output lead =1/18" from the package.

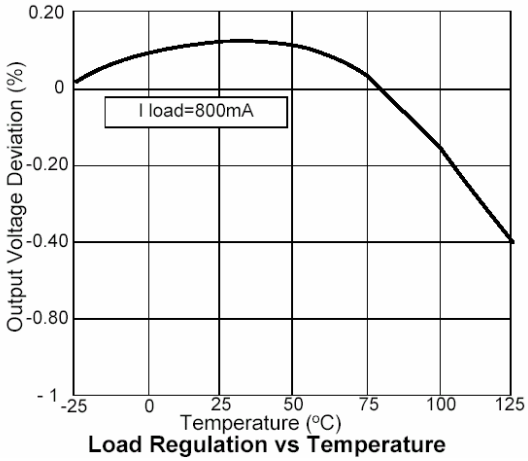
Note 2: Line and load regulation are guaranteed up to the maximum power dissipation of 15W.Power dissipation is determined by the difference between input and output and the output current .Guaranteed maximum power dissipation will not be available over the full input/output range.

Note 3: Quiescent current is defined as the minimum output current required in maintaining regulation .At 12V input/output differential the device is guaranteed to regulate if the output current is greater than 10mA.

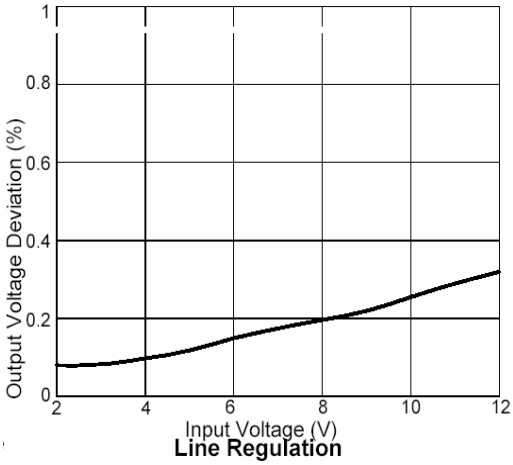
Characteristics Curve



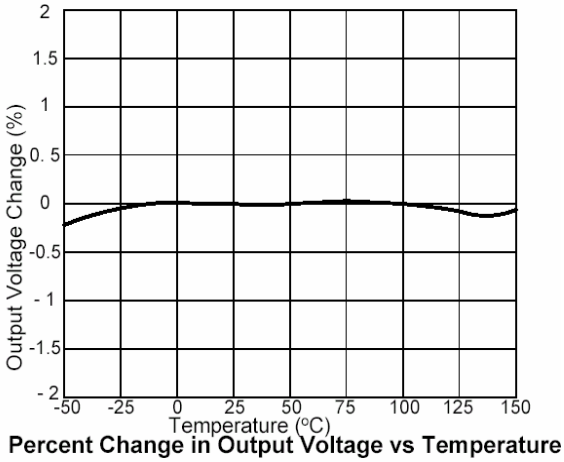
Dropout Voltage vs Output Current



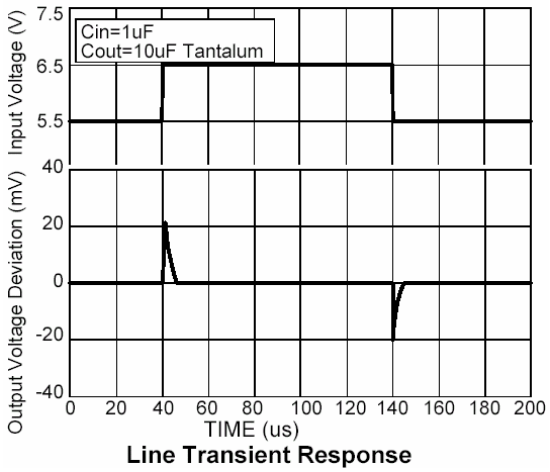
Load Regulation vs Temperature



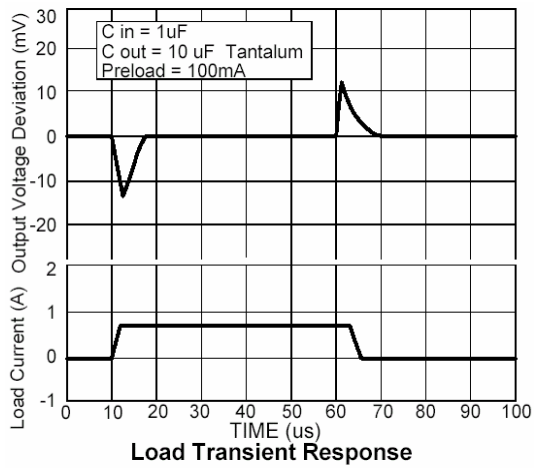
Line Regulation



Percent Change in Output Voltage vs Temperature



Line Transient Response



Load Transient Response