GU1117A

1A Low Dropout Positive Adjustable or Fixed-Mode Regulator

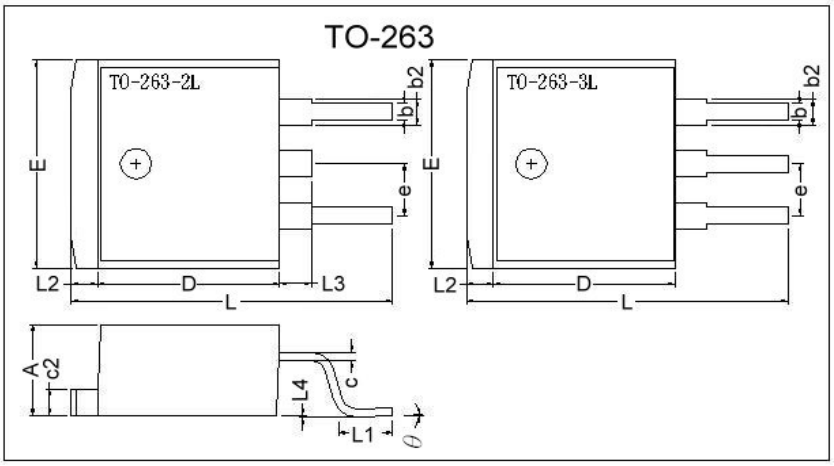
Description

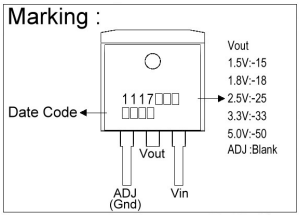
The GU1117A is a low dropout at positive adjustable or fixed-mode regulator with minimum of 1A output current capability. The product is specifically designed to provide well-regulated supply for low voltage IC applications such as high-speed bus termination and low current 3.3V logic supply. GU1117A is also well suited for other applications such as VGA cards. GU1117A 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 5.0 with 6.4V to 12V input supply.

Features

- 1.4Vmaximum dropout full load current
- Fast transient response
- Output current limiting
- Built-in thermal shutdown
- Good noise rejection
- 3-Terminal Adjustable or Fixed 1.5V,1.8V,2.5V,3.3V,5.0V

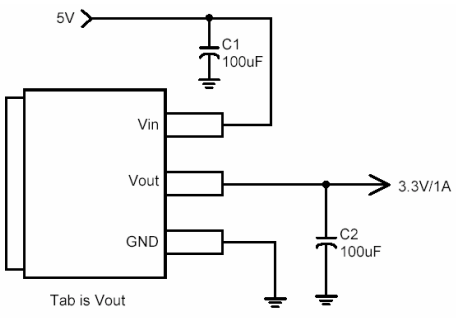
Package Dimensions



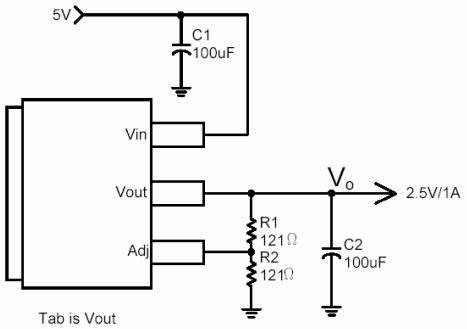


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c2	1.25	1.45
b	0.76	1.00	b2	1.17	1.47
L4	0.00	0.30	D	8.6	9.0
c	0.36	0.5	e	2.54 REF.	
L3	1.50 REF.		L	14.6	15.8
L1	2.29	2.79	θ	0°	8°
E	9.80	10.4	L2	1.27 REF.	

Typical Circuit



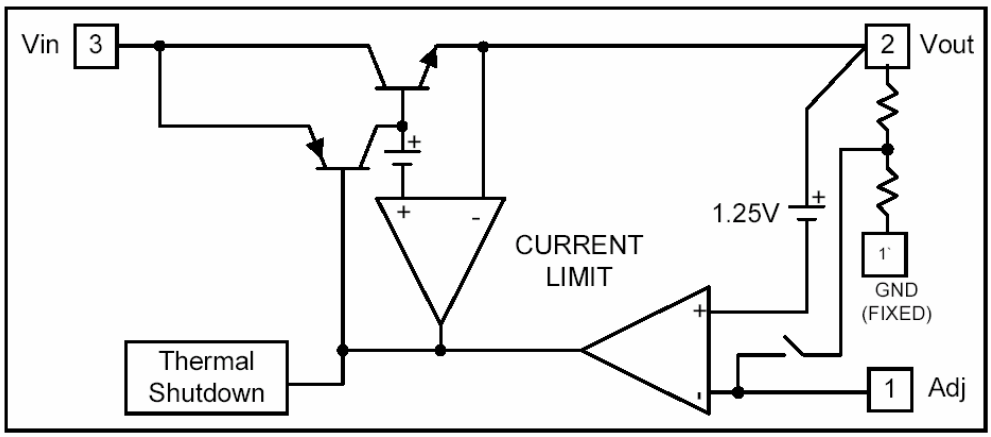
(5V/3.3V fixed output)



(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)		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

Symbol	Parameter	Ratings	Unit
Vin	DC Supply Voltage	-0.3 to 12	V
PD	Power Dissipation	Internally Limited	
TST	Storage Temperature	-65 ~ + 150	℃
TOP	Operating Junction Temperature Range	0 ~ + 150	℃

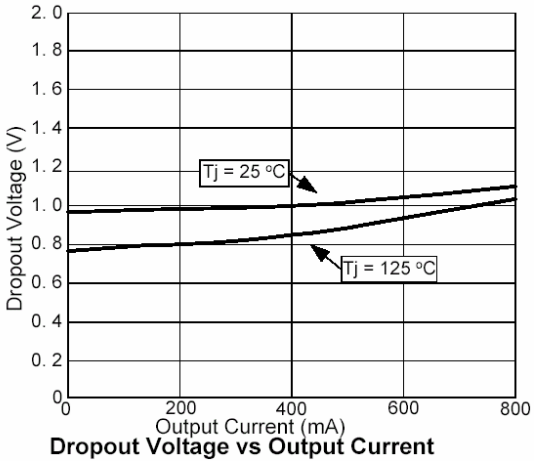
Electrical Characteristics

Parameter	Conditions		MIN	TYP	MAX	UNIT
Reference Voltage	GU1117AADJ	Io=10mA, Tj=25℃, (Vin-Vout)=1.5V	1.225	1.250	1.275	V
Output Voltage	GU1117A-1.5	Io=10mA, Tj=25℃, 3.0V≤Vin≤12V	1.470	1.500	1.530	V
	GU1117A-1.8	Io=10mA, Tj=25℃, 3.3V≤Vin≤12V	1.764	1.800	1.836	V
	GU1117A-2.5	Io=10mA, Tj=25℃, 4.0V≤Vin≤12V	2.450	2.500	2.550	V
	GU1117A-3.3	Io=10mA, Tj=25℃, 4.8V≤Vin≤12V	3.235	3.300	3.365	V
	GU1117A-5.0	Io=10mA, Tj=25℃, 6.5V≤Vin≤12V	4.900	5.000	5.100	V
Line Regulation	GU1117A-XXX	Io=10mA, Vout+1.5V<Vin<12V, Tj=25℃	-	-	0.2	%
Load Regulation	GU1117AADJ	Vin=3.3V, Vadj=0, 0mA<Io<1A, Tj=25℃(Note 1,2)	-	-	1	%
	GU1117A-1.5	Vin=3.0V, 0mA<Io<1A, TJ=25℃ (Note 1,2)	-	12	15	mV
	GU1117A-1.8	Vin=3.3V, 0mA<Io<1A, TJ=25℃ (Note 1,2)	-	15	18	mV
	GU1117A-2.5	Vin=4.0V, 0mA<Io<1A, TJ=25℃ (Note 1,2)	-	20	25	mV
	GU1117A-3.3	Vin=5.0V, 0mA<Io<1A, TJ=25℃ (Note 1,2)	-	26	33	mV
	GU1117A-5.0	Vin=8.0V, 0mA<Io<1A, TJ=25℃ (Note 1,2)	-	40	50	mV
Dropout Voltage (V_{IN}-V_{OUT})	GU1117A-XXX	Io=1A, (ΔVout=0.1% Vout)	-	1.3	1.4	V
Current Limit	GU1117A-XXX	Vin-Vout=5V	1.1	-	-	A
Minimum Load Current	Adjustable model	Vin=5V	-	5	10	mA
Adjust Pin Current	Adjustable model	Vin=12V, Io=10mA	-	50	100	uA
Quiescent Current	fixed model	Vin=12V, Io=0mA	-	-	12	mA
Thermal Regulation	T_A=25℃,30ms pulse		-	0.008	0.04	%/W
Ripple Rejection	F=120HZ,C_{OUT}=25uF Tantalum, I_{OUT}=1A					
	GU1117A-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

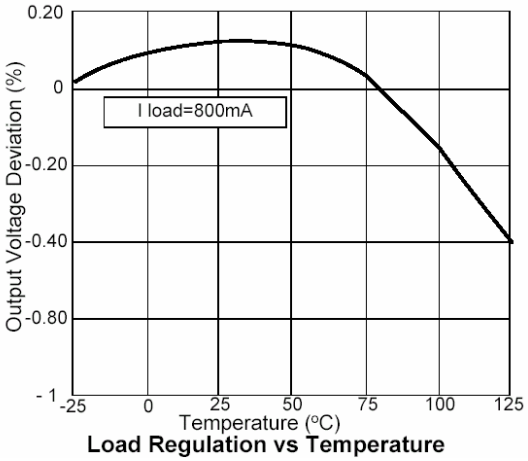
Note 1: See thermal regulation specifications for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction Temperature by low duty cycle pulse testing. Load regulation is measured at the output lead =1/18" from the package.

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

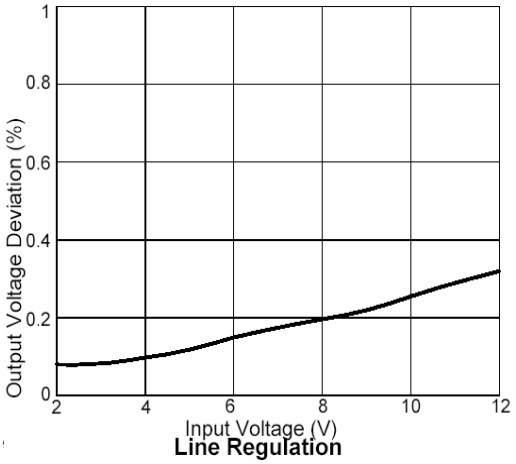
Characteristics Curve



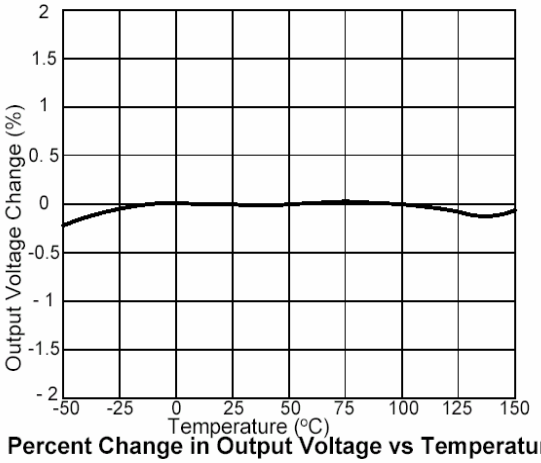
Dropout Voltage vs Output Current



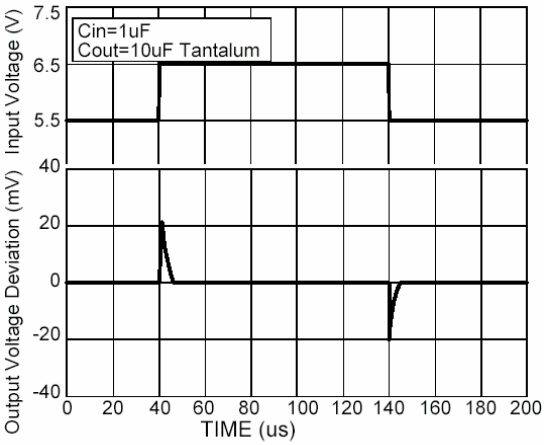
Load Regulation vs Temperature



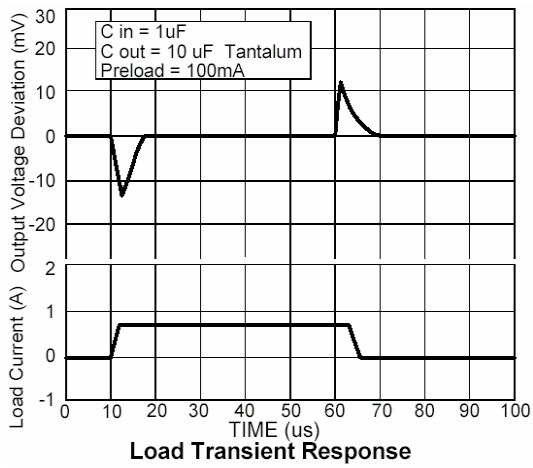
Line Regulation



Percent Change in Output Voltage vs Temperature



Line Transient Response



Load Transient Response

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