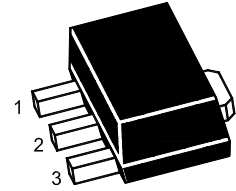


### LOW DROPOUT LINEAR REGULATOR

#### FEATURES

- Low Dropout Voltage: 1.15V at 1A Output Current
- Trimmed Current Limit
- On-Chip Thermal Shutdown
- Three-Terminal Adjustable or Fixed 1.8V, 2.5V, 3.3V, 5V
- Operation Junction Temperature: -25 °C to 125 °C



1. ADJ/GND 2. OUTPUT 3.IN

SOT-89 Plastic Package

#### GENERAL DESCRIPTION

The BC1117-XXX is a series of low dropout three-terminal regulators with a dropout of 1.15V at 1A output current.

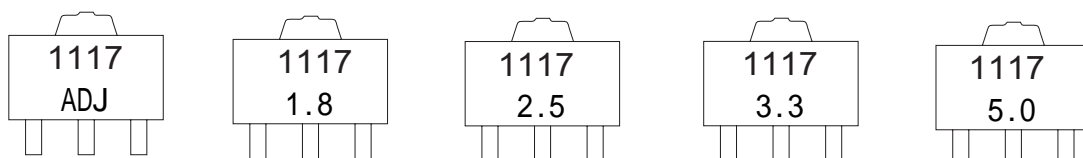
BC1117-XXX series provides current limiting and thermal shutdown. Its circuit includes a trimmed bandgap reference to assure output voltage accuracy to be within 1.5%. Current limit is trimmed to ensure specified output current and controlled short-circuit current. On-chip thermal shutdown provides protection against any combination of overload and ambient temperature that would create excessive junction temperature.

The BC1117-XXX has an adjustable version, that can provide the output voltage from 1.25V to 5V with only 2 external resistors.

#### APPLICATIONS

- PC Motherboard
- LCD Monitor
- Graphic Card
- DVD-Video Player
- NIC/Switch
- Telecom Modem
- ADSL Modem
- Printer and other peripheral Equipment

#### Marking:



### ORDERING INFORMATION

Package	Operating Junction Temperature Range	Part NO.
SOT-89	-25 to 125°C	BC1117-ADJ
		BC1117-1.8
		BC1117-2.5
		BC1117-3.3
		BC1117-5.0

### ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Input Voltage	V <sub>i</sub>	20	V
Maximum Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C
Thermal Resistance from Junction to Ambient	R <sub>θJA</sub>	250	°C/W
Lead Temperature (Soldering, 10sec.)	T <sub>L</sub>	260	°C
ESD Voltage (Machine Model)	V <sub>ESD</sub>	400	V

Note: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

### RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Value	Unit
Input Voltage	V <sub>i</sub>	15	V
Operating Junction Temperature	T <sub>j</sub>	-25~+125	°C

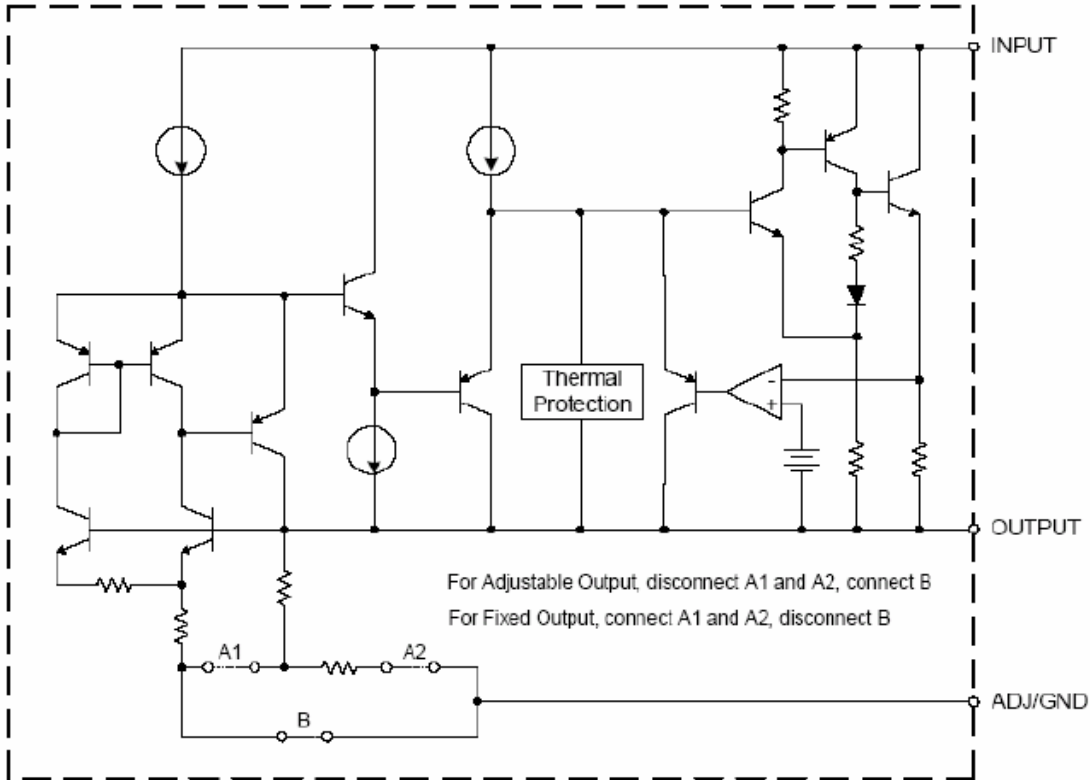
**ELECTRICAL CHARACTERISTICS ( $V_{IN} \leq 10V$ ,  $T_J = 25^\circ C$  unless otherwise specified.)**

Parameter	Symbol	Part NO.	Test conditions	Min	Typ	Max	Unit
Reference Voltage	$V_{IROC}$	BC1117-ADJ	$I_{OUT} = 10mA$ , $V_{IN} - V_{OUT} = 3.23$	1.231	1.250	1.269	V
			$10mA \leq I_{OUT} \leq 1A$ , $2.75V \leq V_{IN} - V_{OUT} \leq 13.25V$	1.225	1.250	1.275	
Output Voltage	$V_O$	BC1117-1.8	$I_{OUT} = 10mA$ , $V_{IN} = 3.8V$	1.773	1.8	1.827	V
			$10mA \leq I_{OUT} \leq 1A$ , $3.3V \leq V_{IN} \leq 12V$	1.764	1.8	1.836	
		BC1117-2.5	$I_{OUT} = 10mA$ , $V_{IN} = 4.5V$	2.463	2.5	2.538	V
			$10mA \leq I_{OUT} \leq 1A$ , $4V \leq V_{IN} \leq 12V$	2.450	2.5	2.550	
		BC1117-3.3	$I_{OUT} = 10mA$ , $V_{IN} = 5.3V$	3.251	3.3	3.350	V
			$10mA \leq I_{OUT} \leq 1A$ , $4.8V \leq V_{IN} \leq 12V$	3.234	3.3	3.366	
		BC1117-5.0	$I_{OUT} = 10mA$ , $V_{IN} = 7.0V$	4.925	5.0	5.075	V
			$10mA \leq I_{OUT} \leq 1A$ , $6.5V \leq V_{IN} \leq 12V$	4.9	5.0	5.1	
Line Regulation	LNR	BC1117-ADJ	$I_{OUT} = 10mA$ , $1.5V \leq V_{IN} - V_{OUT} \leq 12V$		0.035	0.2	%
		BC1117-1.8	$I_{OUT} = 10mA$ , $1.5V \leq V_{IN} - V_{OUT} \leq 10.2V$		1	7	
		BC1117-2.5	$I_{OUT} = 10mA$ , $1.5V \leq V_{IN} - V_{OUT} \leq 9.5V$		1	7	
		BC1117-3.3	$I_{OUT} = 10mA$ , $1.5V \leq V_{IN} - V_{OUT} \leq 8.7V$		1	7	
		BC1117-5.0	$I_{OUT} = 10mA$ , $1.5V \leq V_{IN} - V_{OUT} \leq 7V$		1	10	
Load Regulation	LDR	BC1117-ADJ	$V_{IN} - V_{OUT} = 1.5V$ , $10mA \leq I_{OUT} \leq 1A$		0.2	0.4	%
		BC1117-1.8				7.2	
		BC1117-2.5				10	
		BC1117-3.3				13.2	
		BC1117-5.0				20	
Dropout Voltage	$V_D$		$\Delta V_{REF} = 1\%$ , $I_{OUT} = 1.0A$			1.3	V
Current Limit	$I_{limit}$		$V_{IN} - V_{OUT} = 2V$	1			A
Adjust Pin Current					60	120	$\mu A$
Minimum Load Current	$I_L$		$1.5V \leq V_{IN} - V_{OUT} \leq 12V$ (ADJ only)		1.7	5	$\mu A$
Quiescent Current	$I_q$		$V_{IN} = V_{OUT} + 1.25V$ (ADJ except)		5	10	mA
Ripple Rejection	RR		$f = 120Hz$ , $C_{OUT} = 22\mu F$ Tantalum, $V_{IN} - V_{OUT} = 3V$ , $I_{OUT} = 1A$	60	75		dB
Temperature Stability					0.5		%
Long-Term Stability			$T_A = 125^\circ C$ , 1000hrs		0.3		%
RMS Output Noise (% of VOUT)			$T_A = 25^\circ C$ , $10Hz \leq f \leq 10kHz$		0.003		%
Thermal Shutdown Hysteresis					25		$^\circ C$

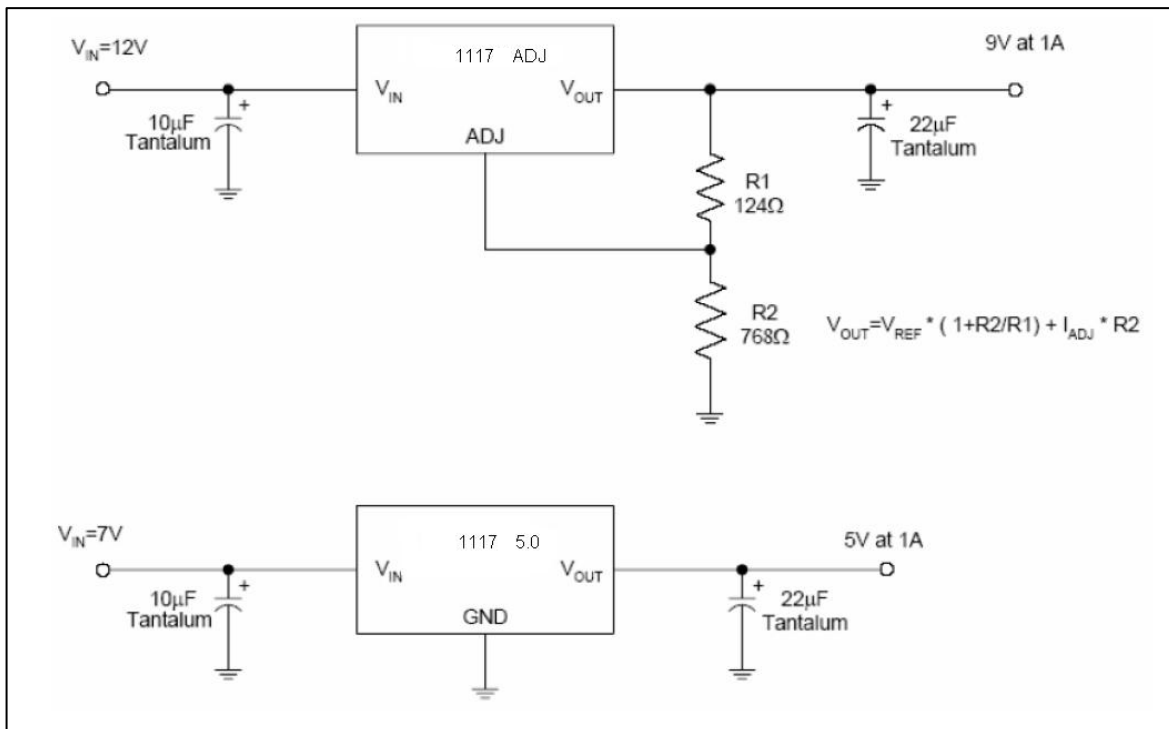
\* With package soldering to copper area over backside ground plane or internal power plane  $R_{\theta JA}$  can vary from  $46^\circ C/W$  to  $>90^\circ C/W$  depending on mounting technique and the size of the copper area



### FUNCTIONAL BLOCK DIAGRAM

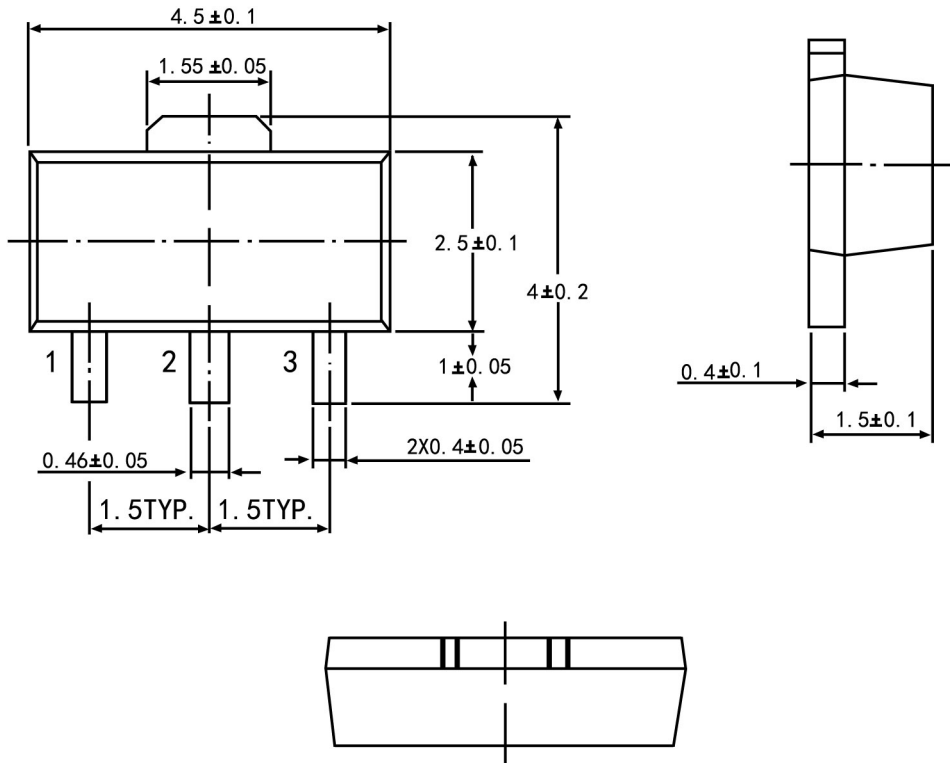


### TYPICAL APPLICATION CIRCUIT





### SOT-89 PACKAGE OUTLINE



Symbol	Dimension in Millimeters	
	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
L	0.89	1.20
All Dimensions In mm		