

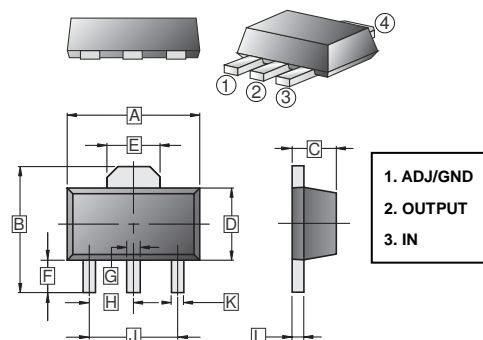
RoHS Compliant Product  
A suffix of "-C" specifies halogen free

## DESCRIPTION

The SJA1117B-XXX is a series of low dropout three-terminal regulators with a dropout of 1.15V(typ.) at 1A output current.

The SJA1117B-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 SJA1117B-XXX has an adjustable version, that can provide the output voltage from 1.25V to 5V with only 2 external resistors.

### SOT-89



## FEATURES

- Low Dropout Voltage: 1.15V(typ.) 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: 0 °C to 125°C

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.60	G	0.40	0.58
B	3.94	4.25	H	1.50	TYP
C	1.40	1.60	J	3.00	TYP
D	2.25	2.60	K	0.32	0.52
E	1.50	1.85	L	0.35	0.44
F	0.89	1.20			

## APPLICATIONS

- PC Motherboard
- NIC/Switch
- Telecom Modem
- ADSL Modem
- Printer and Other Peripheral Equipment

## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-89	1K	7' inch

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

Parameter	Symbol	Value	Unit
Input Voltage	V <sub>I</sub>	20	V
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	°C
Maximum Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C

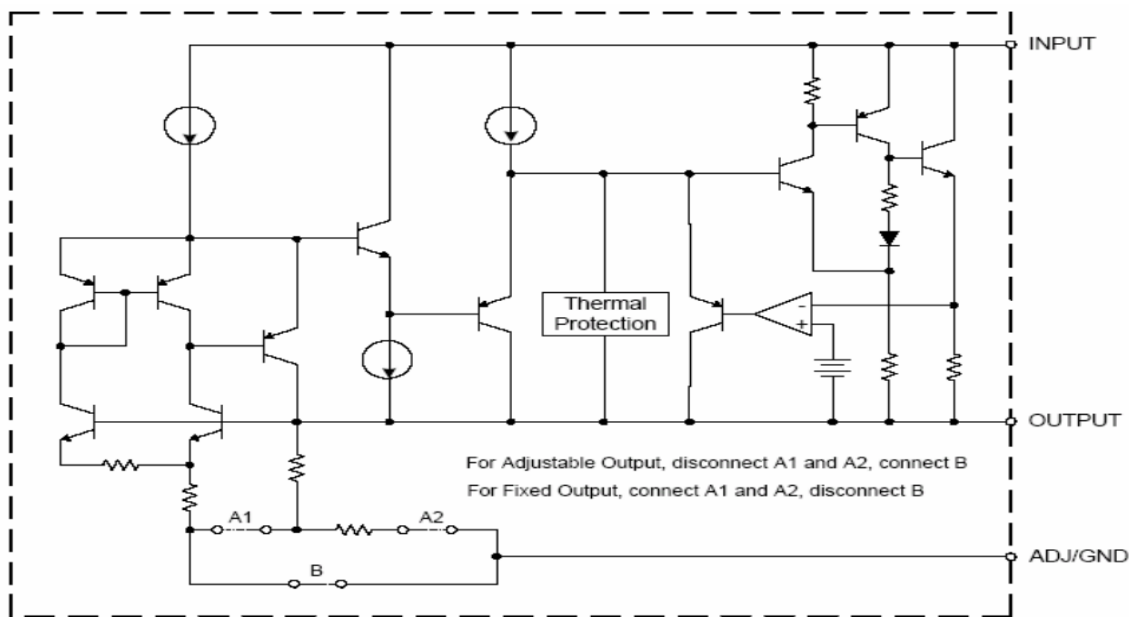
Note:

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.

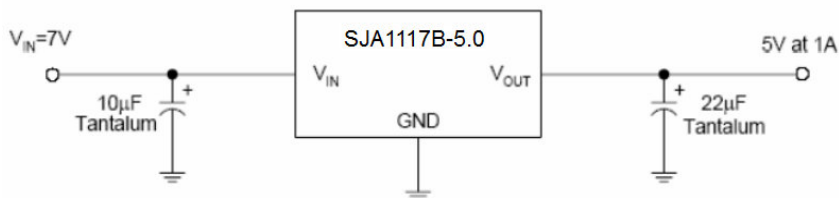
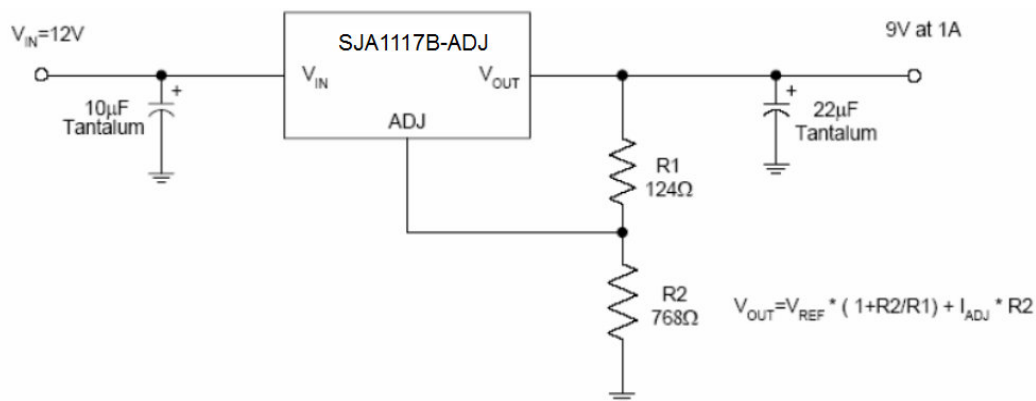
**RECOMMENDED OPERATING CONDITIONS**

Parameter	Symbol	Value	Unit
Input Voltage	$V_I$	15	V
Operating Junction Temperature	$T_J$	0~+125	°C

**FUNCTIONAL BLOCK DIAGRAM**



**TYPICAL APPLICATION CIRCUIT**



**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	$V_{IROC}$	SJA1117B -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	$V_O$	SJA1117B -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	
		SJA1117B -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	
		SJA1117B -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	
		SJA1117B -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	SJA1117B -ADJ	$I_{OUT} = 10mA$ , $1.5V \leq V_{IN} - V_{OUT} \leq 12V$	-	0.035	0.2	%
		SJA1117B -1.8	$I_{OUT} = 10mA$ , $1.5V \leq V_{IN} - V_{OUT} \leq 10.2V$	-	1	7	
		SJA1117B -2.5	$I_{OUT} = 10mA$ , $1.5V \leq V_{IN} - V_{OUT} \leq 9.5V$	-	1	7	
		SJA1117B -3.3	$I_{OUT} = 10mA$ , $1.5V \leq V_{IN} - V_{OUT} \leq 8.7V$	-	1	7	
		SJA1117B -5.0	$I_{OUT} = 10mA$ , $1.5V \leq V_{IN} - V_{OUT} \leq 7V$	-	1	10	
Load Regulation	LDR	SJA1117B -ADJ	$V_{IN} - V_{OUT} = 1.5V$ , $10mA \leq I_{OUT} \leq 1A$	-	0.2	0.4	%
		SJA1117B -1.8		-	-	7.2	
		SJA1117B -2.5		-	-	10	
		SJA1117B -3.3		-	-	13.2	
		SJA1117B -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			$T_A = 125$ , 1000hrs $^\circ C$	-	0.3	-	%
RMS Output Noise (% of $V_{OUT}$ )			$T_A = 25^\circ C$ , $10Hz \leq f \leq 10kHz$	-	0.003	-	%
Thermal Shutdown Hysteresis				-	25	-	$^\circ C$

Note:

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