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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





1A LOW DROPOUT LINEAR REGULATOR

GENERAL DESCRIPTION

The CJ1117 is a series of low dropout three-terminal regulators with a dropout of 1.15V at 1A output current.

The CJ1117 series provides current limiting and thermal shutdown. Its circuit includes a trimmed bandgap reference to assure output voltage accuracy to be within 1%. 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 CJ1117 has an adjustable version, that can provide the output voltage from 1.25V to 12V with only 2 external resistors.

The CJ1117 series is available in the industry standard SOT-223,SOT-89,TO-220,TO-252 and TO-263 power packages.

FEATURES

- Low Dropout Voltage: 1.15V at 1A Output Current
- Trimmed Current Limit
- On-Chip Thermal Shutdown
- Three-Terminal Adjustable or Fixed 1.5V, 1.8V, 2.5V, 3.3V, 5V
- Operation junction Temperature: 0 to 125

APPLICATIONS

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

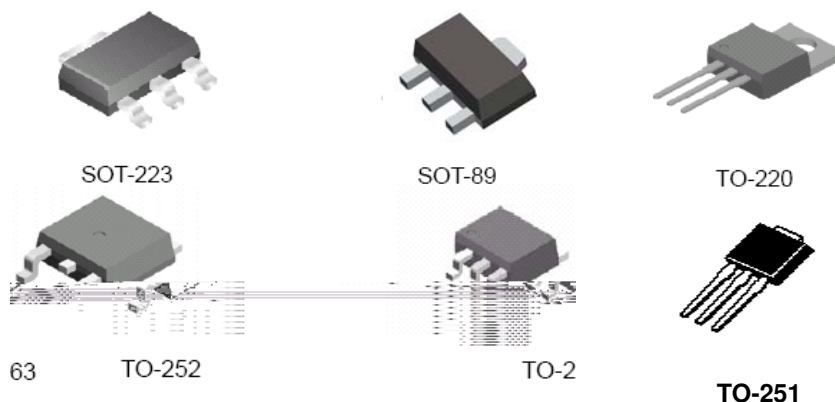


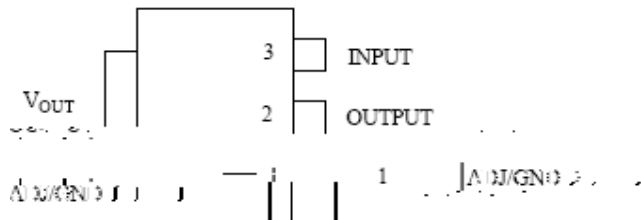
Figure 1. Package Types of CJ1117



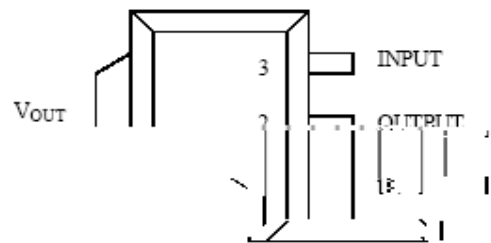
1A LOW DROPOUT LINEAR REGULATOR

PIN CONFIGURATIONS

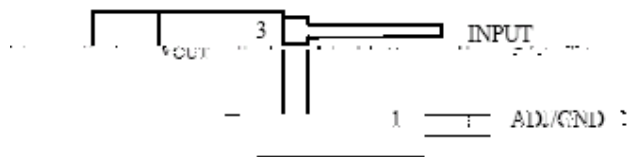
T Package
(SOT-223)



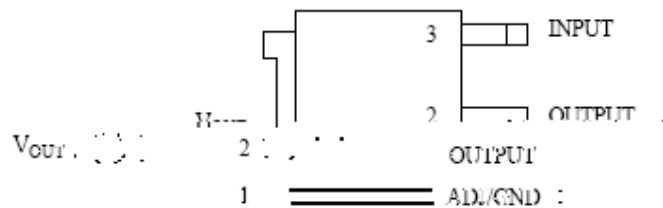
A Package
(SOT-89)



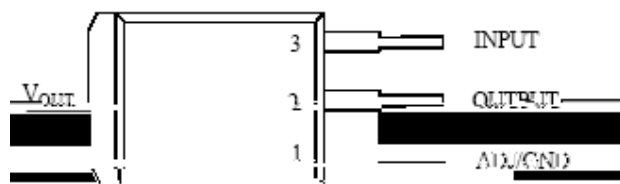
P Package
(TO-220)



U Package
(TO-252)



B Package
(TO-263)



D Package
(TO-251)

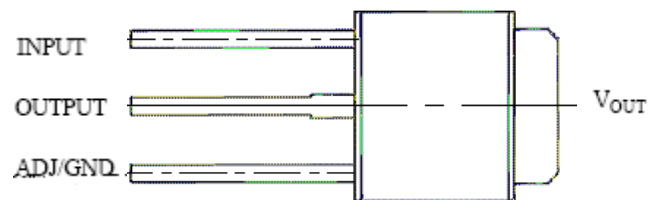


Figure 2. Pin Configurations of CJ1117



1A LOW DROPOUT LINEAR REGULATOR

FUNCTIONAL BLOCK DIAGRAM

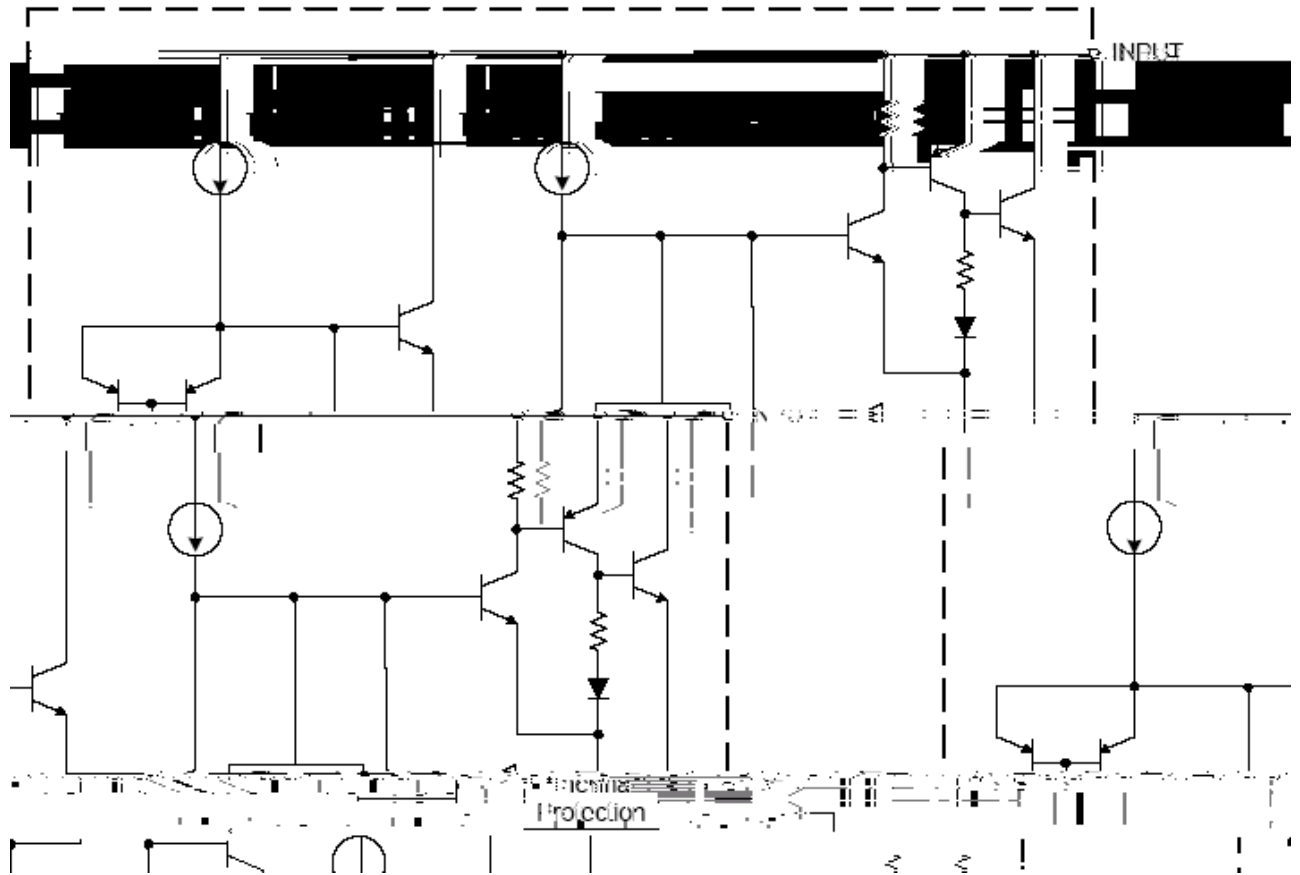


Figure 3. Functional Block Diagram of CJ1117

1A LOW DROPOUT LINEAR REGULATOR

ORDERING INFORMATION

Package	Temperature Range	Part Number
SOT-223	0 to 125	CJT1117-ADJ
		CJT1117-1.5
		CJT1117-1.8
		CJT1117-2.5
		CJT1117-3.3



1A LOW DROPOUT LINEAR REGULATOR

ELECTRICAL CHARACTERISTICS

Operating Conditions: $V_{IN} \neq 10V$, $T_J = 25$ unless otherwise specified.

Parameter	Conditions	Min	Typ	Max	Unit
Reference Voltage	CJ1117-ADJ $I_{OUT} = 10mA$, $V_{IN} = 2V$, $10mA \neq I_{OUT} \neq 1A$, $1.4V \neq V_{IN} - V_{OUT} \neq 8V$, PH Maximum power Dissipation	1.238 1.225	1.250 1.250	1.262 1.270	V
Output Voltage	CJ1117-1.5, $I_{OUT} = 10mA$, $V_{IN} = 3.5V$ $10mA \neq I_{OUT} \neq 1A$, $3.0V \neq V_{IN} \neq 10V$	1.485 1.470	1.5 1.5	1.515 1.530	V
	CJ1117-1.8, $I_{OUT} = 10mA$, $V_{IN} = 3.8V$ $10mA \neq I_{OUT} \neq 1A$, $3.2V \neq V_{IN} \neq 10V$	1.782 1.746	1.8 1.8	1.818 1.854	V
	CJ1117-2.5, $I_{OUT} = 10mA$, $V_{IN} = 4.5V$ $10mA \neq I_{OUT} \neq 1A$, $3.9V \neq V_{IN} \neq 10V$	2.475 2.450	2.5 2.5	2.525 2.550	V
	CJ1117-3.3, $I_{OUT} = 10mA$, $V_{IN} = 5.0V$ $10mA \neq I_{OUT} \neq 1A$, $4.75V \neq V_{IN} \neq 10V$	3.267 3.235	3.3 3.3	3.333 3.365	V
	CJ1117-5.0, $I_{OUT} = 10mA$, $V_{IN} = 7.0V$ $10mA \neq I_{OUT} \neq 1A$, $6.5V \neq V_{IN} \neq 12V$	4.950 4.900	5.0 5.0	5.050 5.100	V
Line Regulation	CJ1117-ADJ $I_{OUT} = 10mA$, $1.5V \neq V_{IN} - V_{OUT} \neq 10V$		0.035	0.2	%
	CJ1117-1.5 $I_{OUT} = 10mA$, $1.5V \neq V_{IN} - V_{OUT} \neq 10V$		1	6	mV
	CJ1117-1.8 $I_{OUT} = 10mA$, $1.5V \neq V_{IN} - V_{OUT} \neq 10V$		1	6	mV
	CJ1117-2.5 $I_{OUT} = 10mA$, $1.5V \neq V_{IN} - V_{OUT} \neq 10V$		1	6	mV
	CJ1117-3.3 $I_{OUT} = 10mA$, $1.5V \neq V_{IN} - V_{OUT} \neq 10V$		1	6	mV
	CJ1117-5.0 $I_{OUT} = 10mA$, $1.5V \neq V_{IN} - V_{OUT} \neq 10V$		1	6	mV
Load Regulation	CJ1117-ADJ $V_{IN} - V_{OUT} = 2V$, $10mA \neq I_{OUT} \neq 1A$		0.2	0.4	%
	CJ1117-1.5 $V_{IN} - V_{OUT} = 2V$, $10mA \neq I_{OUT} \neq 1A$		1	10	mV
	CJ1117-1.8 $V_{IN} - V_{OUT} = 2V$, $10mA \neq I_{OUT} \neq 1A$		1	10	mV
	CJ1117-2.5 $V_{IN} - V_{OUT} = 2V$, $10mA \neq I_{OUT} \neq 1A$		1	10	mV
	CJ1117-3.3 $V_{IN} - V_{OUT} = 2V$, $10mA \neq I_{OUT} \neq 1A$		1	10	mV
	CJ1117-5.0 $V_{IN} - V_{OUT} = 2V$, $10mA \neq I_{OUT} \neq 1A$		1	15	mV

1A LOW DROPOUT LINEAR REGULATOR**ELECTRICAL CHARACTERISTICS (CONTINUED)**Operating Conditions: $V_{IN} \neq 10V$, $T_J = 25$ unless otherwise specified.

Parameter	Conditions	Min	Typ	Max	Unit
Dropout Voltage	$V_{REF} = 1\%$, $I_{OUT} = 0.1A$		1.00	1.1	V
	$V_{REF} = 1\%$, $I_{OUT} = 0.5A$		1.08	1.18	V
	$V_{REF} = 1\%$, $I_{OUT} = 1.0A$		1.15	1.25	V
Current Limit	$V_{IN} - V_{OUT} = 2V$	1.25	1.35		A
Adjust Pin Current			60	120	μA
Adjust Pin Current Change	$1.4V \neq V_{IN} - V_{OUT} \neq 10V$, $10mA \neq I_{OUT} \neq 1A$		0.2	5	μA
Minimum Load Current (ADJ)	$1.5V \neq V_{IN} - V_{OUT} \neq 10V$ (ADJ only)		1.7	5	mA
Quiescent Current	$V_{IN} = V_{OUT} + 1.25V$		5	10	mA
Ripple Rejection	$f = 120Hz$, $C_{OUT} = 22\mu F$ Tantalum, $V_{IN} - V_{OUT} = 3V$, $I_{OUT} = 1A$	60	75		dB
Temperature Stability			0.5		%
Long-Term Stability	$T_A = 125$, 1000hrs		0.3		%
RMS Output Noise (% of V_{OUT})	$T_A = 25$, $10Hz \neq f \neq 10KHz$		0.003		%

OUT



1A LOW DROPOUT LINEAR REGULATOR

Typical Characteristics

CJ1117

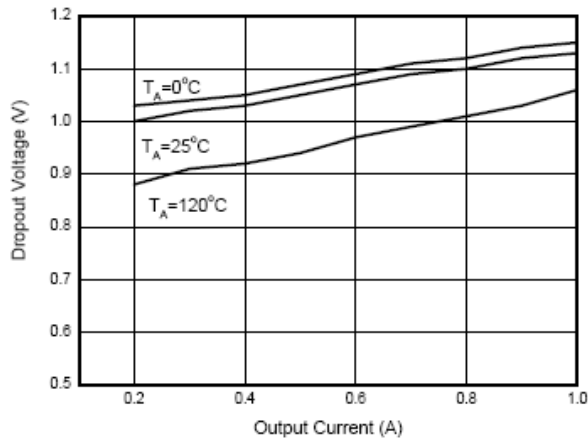


Figure 4. Dropout Voltage vs. Output Current

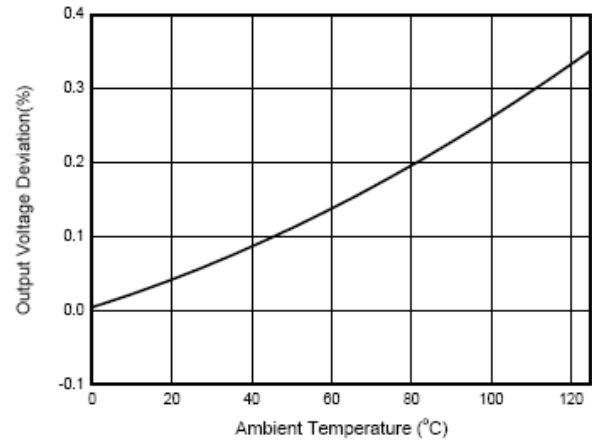


Figure 5. Load Regulation vs. Temperature

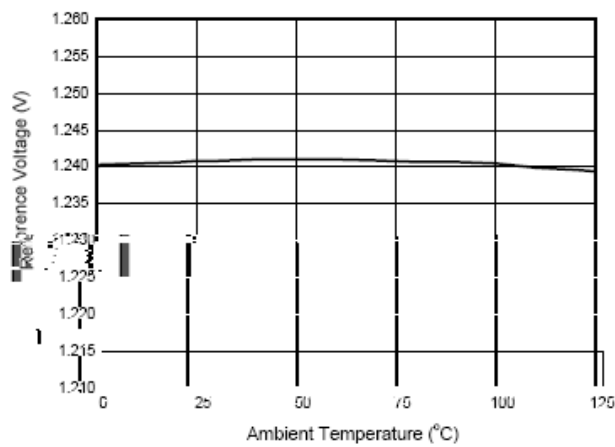


Figure 6. Reference Voltage vs. Temperature

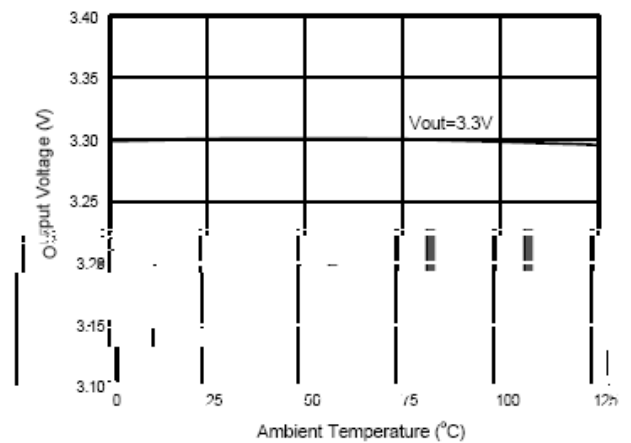


Figure 7. Output Voltage vs. Temperature



1A LOW DROPOUT LINEAR REGULATOR

Typical Characteristics

CJ1117

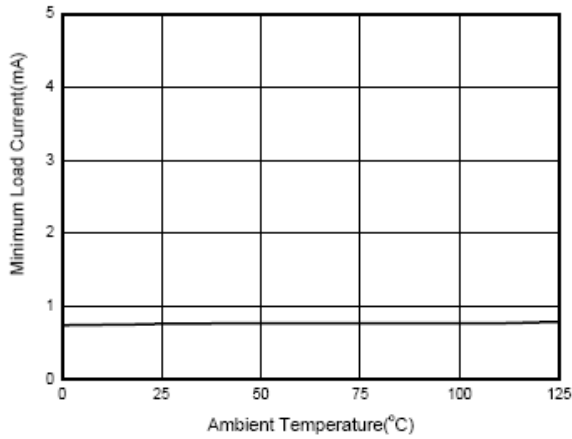


Figure 8. Minimum Load Current vs. Temperature

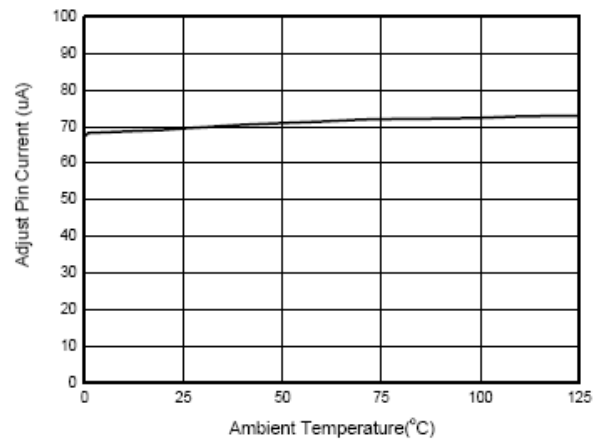


Figure 9. Adjust Pin Current vs. Temperature

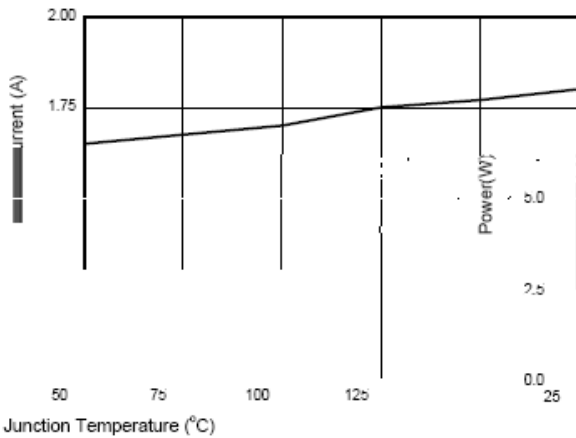


Figure 10. Short-Circuit Current vs. Temperature

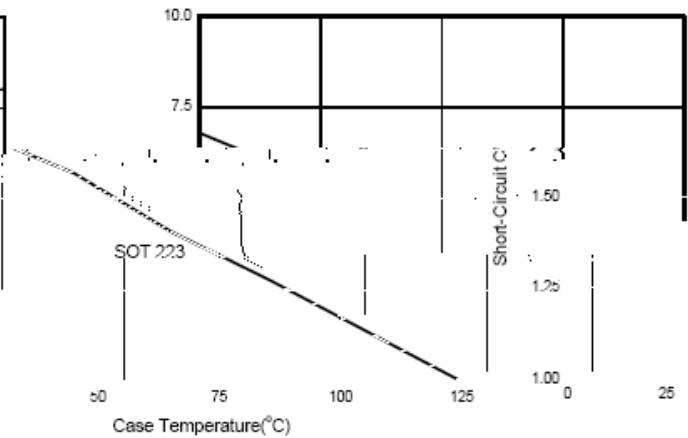


Figure 11. Maximum Power Dissipation

Figure 10. Short-Circuit Current vs. Temperature



1A LOW DROPOUT LINEAR REGULATOR

Typical Characteristics

CJ1117

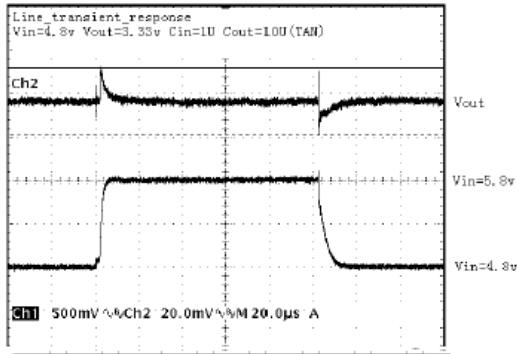


Figure 12. Line Transient Response

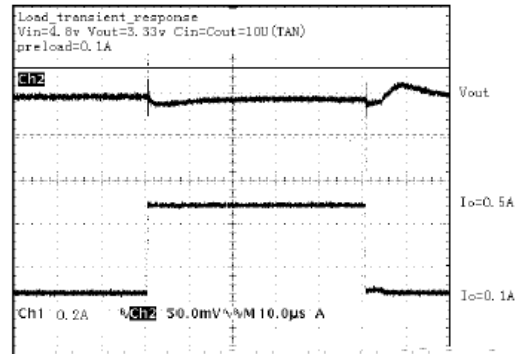


Figure 13. Load Transient Response

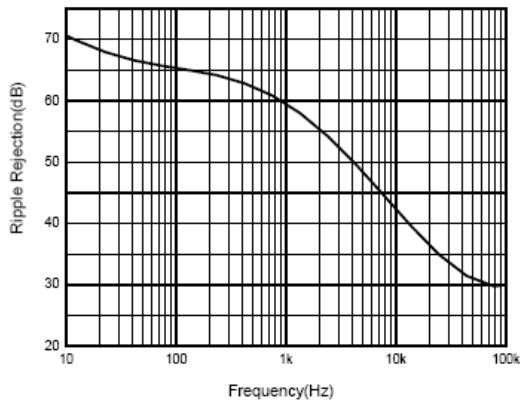


Figure 14. Ripple Rejection vs. Frequency



1A LOW DROPOUT LINEAR REGULATOR

Typical Applications

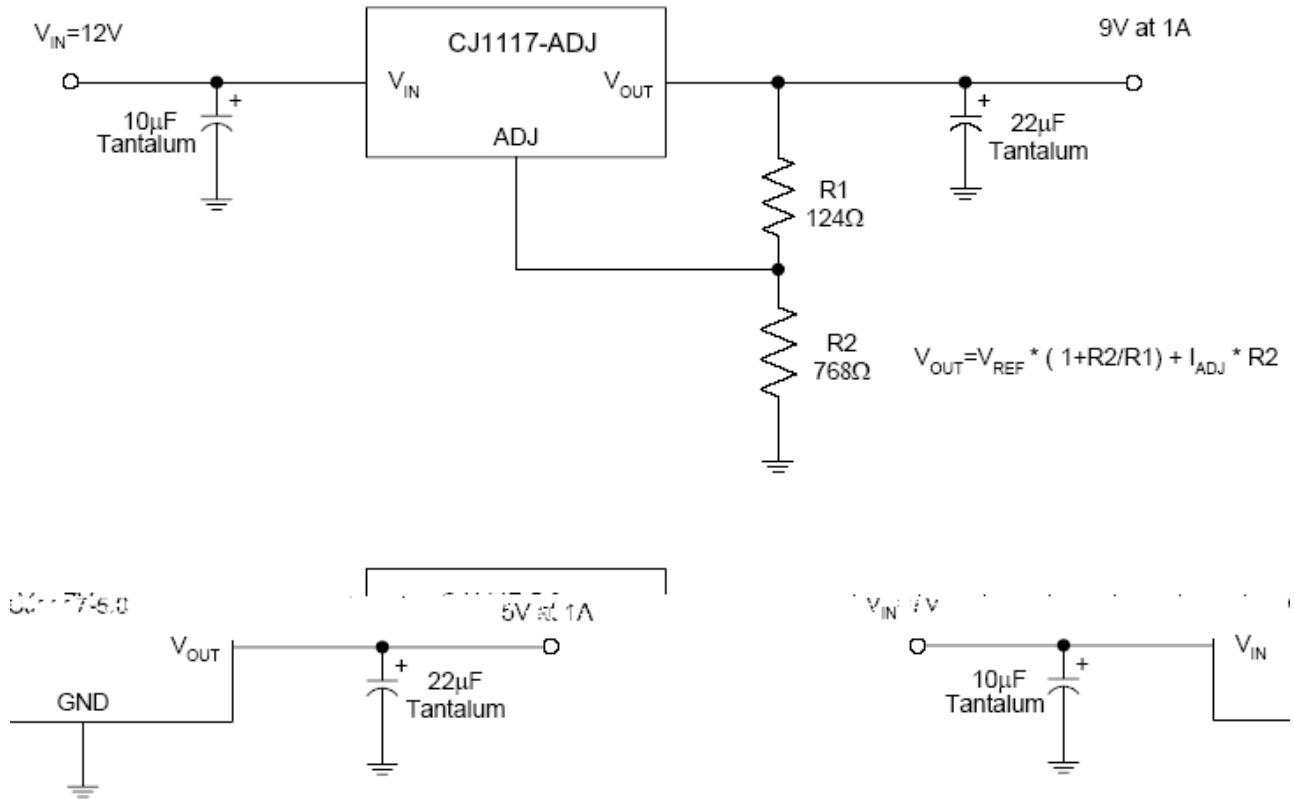


Figure 15. Typical Applications of CJ1117

Figure