LGE1117

1A Low Dropout Linear Regulator

GENERAL DESCRIPTION

The LGE1117 is a series of low dropout three-terminal regulators with a dropout of 1.15V at 1A output current.

The LGE1117 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 LGE1117 has an adjustable version, that can provide the output voltage from 1.25V to 12V with only 2 external resistors.

The LGE1117 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 ℃ to125℃

APPLICATIONS

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

SOT-223   SOT-89   TO-220

TO-252   TO-263   **TO-251**

Figure 1. Package Types of LGE1117

PIN CONFIGURATIONS

T Package
(SOT-223)

A Package
(SOT-89)

V_{OUT}

3	INPUT
2	OUTPUT
1	ADJ/GND

V_{OUT}

3	INPUT
2	OUTPUT
1	ADJ/GND
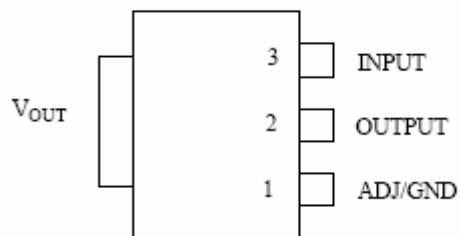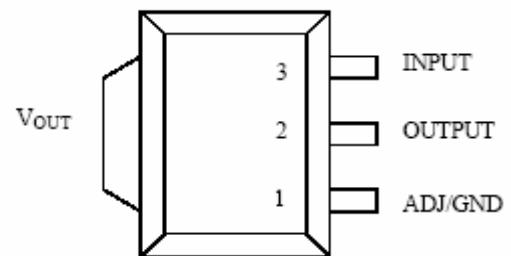
P Package
(TO-220)

U Package
(TO-252)

V_{OUT}

3	INPUT
2	OUTPUT
1	ADJ/GND

V_{OUT}

3	INPUT
2	OUTPUT
1	ADJ/GND
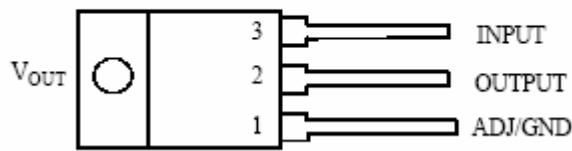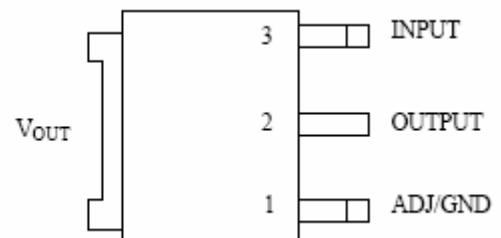
B Package
(TO-263)

D   Package
(TO-251)

V_{OUT}

3	INPUT
2	OUTPUT
1	ADJ/GND

ADJ/GND

OUTPUT

INPUT

V_{OUT}
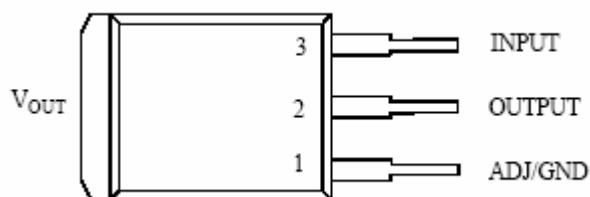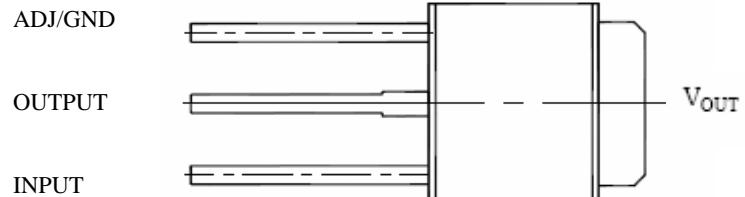
Figure 2. Pin Configurations of LGE1117

FUNCTIONAL BLOCK DIAGRAM

Figure 3. Functional Block Diagram of LGE1117

ORDERING INFORMATION

Package	Temperature Range	Part Number
SOT-223	0 to 125℃	LGET1117-ADJ
		LGET1117-1.5
		LGET1117-1.8
		LGET1117-2.5
		LGET1117-3.3
		LGET1117-5.0
SOT-89	0 to 125℃	LGEA1117-ADJ
		LGEA1117-1.5
		LGEA1117-1.8
		LGEA1117-2.5
		LGEA1117-3.3
		LGEA1117-5.0
TO-220	0 to 125℃	LGEP1117-ADJ
		LGEP1117-1.5
		LGEP1117-1.8
		LGEP1117-2.5
		LGEP1117-3.3
		LGEP1117-5.0
TO-252	0 to 125℃	LGEU1117-ADJ
		LGEU1117-1.5
		LGEU1117-1.8
		LGEU1117-2.5
		LGEU1117-3.3
		LGEU1117-5.0
TO-263	0 to 125℃	LGEB1117-ADJ
		LGEB1117-1.5
		LGEB1117-1.8
		LGEB1117-2.5
		LGEB1117-3.3
		LGEB1117-5.0
TO-251	0 to 125℃	LGED1117-ADJ
		LGED1117-1.5
		LGED1117-1.8
		LGED1117-2.5
		LGED1117-3.3
		LGED1117-5.0

L G E X 1117- Z

Package

T: SOT-223   U: TO-252

A: SOT-89   B: TO-263

P: TO-220   D: TO-251

Circuit Type

ADJ: Adjustable Output

1.5: Fixed Output 1.5V

1.8: Fixed Output 1.8V

2.5: Fixed Output 2.5V

3.3: Fixed Output 3.3V

5.0: Fixed Output 5.0V

ABOSLUTE MAXIMUM RATINGS (NOTE 1)

Parameter	Value	Unit
V_{IN}	20	V
Maximum Junction Temperature	150	℃
Storage Temperature Range	-65 to 150	℃
Lead Temperature (Soldering, 10sec.)	300	℃
ESD (Machine Model)	600	V

Note 1: 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	Min	Max	Unit
V_{IN}		15	V
Operating Junction Temperature Range	0	125	℃

ELECTRICAL CHARACTERISTICS

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

Parameter	Conditions	Min	Typ	Max	Unit
Reference Voltage	LGE1117-ADJ I_{OUT}=10mA, V_{IN} -V_{OUT} =2V, 10mA≤I_{OUT}≤1A, 1.4V≤V_{IN} -V_{OUT} ≤8V, P≤ Maximum power Dissipation	1.238 1.225	1.250 1.250	1.262 1.270	V
Output Voltage	LGE1117-1.5,I_{OUT}=10mA, V_{IN}=3.5V 10mA≤I_{OUT}≤1A, 3.0V≤V_{IN} ≤10V	1.485 1.470	1.5 1.5	1.515 1.530	V
	LGE1117-1.8, I_{OUT}=10mA, V_{IN}=3.8V 10mA≤I_{OUT}≤1A, 3.2V≤V_{IN} ≤10V	1.782 1.746	1.8 1.8	1.818 1.854	V
	LGE1117-2.5, I_{OUT}=10mA, V_{IN}=4.5V 10mA≤I_{OUT}≤1A, 3.9V≤V_{IN} ≤10V	2.475 2.450	2.5 2.5	2.525 2.550	V
	LGE1117-3.3, I_{OUT}=10mA, V_{IN}=5.0V 10mA≤I_{OUT}≤1A, 4.75V≤V_{IN} ≤10V	3.267 3.235	3.3 3.3	3.333 3.365	V
	LGE1117-5.0, I_{OUT}=10mA, V_{IN}=7.0V 10mA≤I_{OUT}≤1A, 6.5V≤V_{IN} ≤12V	4.950 4.900	5.0 5.0	5.050 5.100	V
Line Regulation	LGE1117-ADJ IOUT=10mA, 1.5V≤V_{IN} -V_{OUT} ≤10V		0.035	0.2	%
	LGE1117-1.5 IOUT=10mA, 1.5V≤V_{IN} -V_{OUT} ≤10V		1	6	mV
	LGE1117-1.8 IOUT=10mA, 1.5V≤V_{IN} -V_{OUT} ≤10V		1	6	mV
	LGE1117-2.5 IOUT=10mA, 1.5V≤V_{IN} -V_{OUT} ≤10V		1	6	mV
	LGE1117-3.3 IOUT=10mA, 1.5V≤V_{IN} -V_{OUT} ≤10V		1	6	mV
	LGE1117-5.0 IOUT=10mA, 1.5V≤V_{IN} -V_{OUT} ≤10V		1	10	mV
Load Regulation	LGE1117-ADJ V_{IN}-V_{OUT}=2V, 10mA≤I_{OUT} ≤1A		0.2	0.4	%
	LGE1117-1.5 V_{IN}-V_{OUT}=2V, 10mA≤I_{OUT} ≤1A		1	10	mV
	LGE1117-1.8 V_{IN}-V_{OUT}=2V, 10mA≤I_{OUT} ≤1A		1	10	mV
	LGE1117-2.5 V_{IN}-V_{OUT}=2V, 10mA≤I_{OUT} ≤1A		1	10	mV
	LGE1117-3.3 V_{IN}-V_{OUT}=2V, 10mA≤I_{OUT} ≤1A		1	10	mV
	LGE1117-5.0 V_{IN}-V_{OUT}=2V, 10mA≤I_{OUT} ≤1A		1	15	mV

ELECTRICAL CHARACTERISTICS (CONTINUED)

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

| Parameter	Conditions	Min	Typ	Max	Unit
Dropout Voltage	$\Delta V_{REF}=1\%$, $I_{OUT}=0.1A$		1.00	1.1	V
	$\Delta V_{REF}=1\%$, $I_{OUT}=0.5A$		1.08	1.18	V
	$\Delta V_{REF}=1\%$, $I_{OUT}=1.0A$		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	$1.4V \leq V_{IN} -V_{OUT} \leq 10V$, $10mA \leq I_{OUT} \leq 1A$		0.2	5	µA
Minimum Load Current (ADJ)	$1.5V \leq V_{IN} -V_{OUT} \leq 10V$ (ADJ only)		1.7	5	mA
Quiescent Current	$V_{IN}= V_{OUT}+1.25V$		5	10	mA
Ripple Rejection	f=120Hz, C_{OUT}=22µF Tantalum, $V_{IN}-V_{OUT}$=3V, I_{OUT}=1A	60	75		dB
Temperature Stability			0.5		%
Long-Term Stability	TA=125°C, 1000hrs		0.3		%
RMS Output Noise (% of V_{OUT})	TA=25°C, 10Hz $\leq$ f $\leq$ 10KHz		0.003		%
Thermal Resistance, Junction to Case	SOT-89 SOT-223 TO-252/251 TO-220 TO-263		25 15 10 4.5 4		°C/W
Thermal Shutdown	Junction Temperature		150		°C
Thermal Shutdown Hysteresis			25		°C

## Typical Characteristics
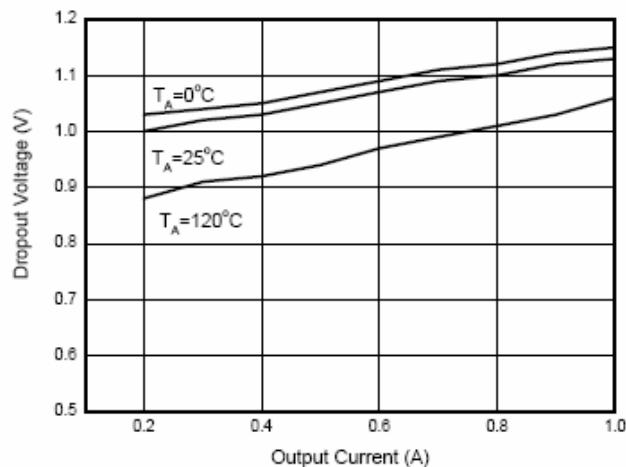
Figure 4. Dropout Voltage vs. Output Current
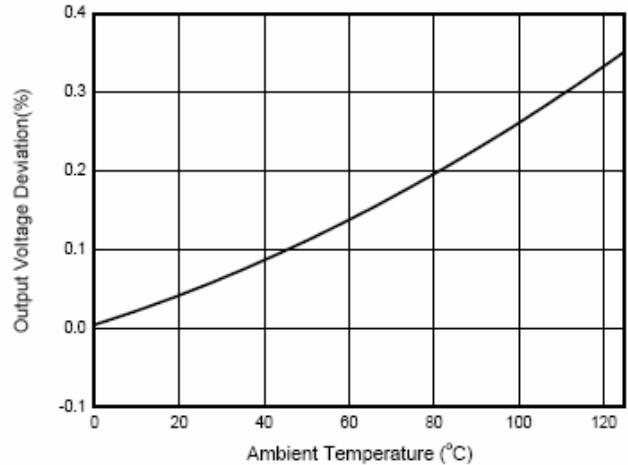

Figure 5. Load Regulation vs. Temperature
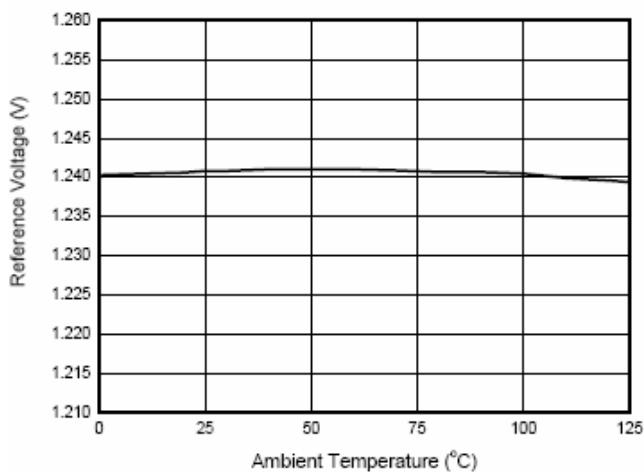

Figure 6. Reference Voltage vs. Temperature
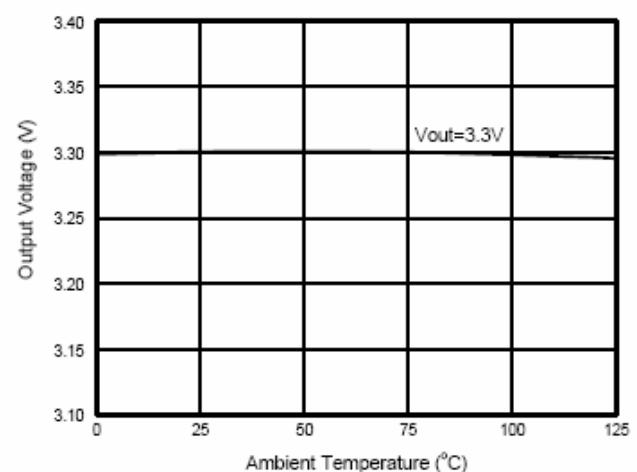
Figure 7. Output Voltage vs. Temperature

# Typical Characteristics
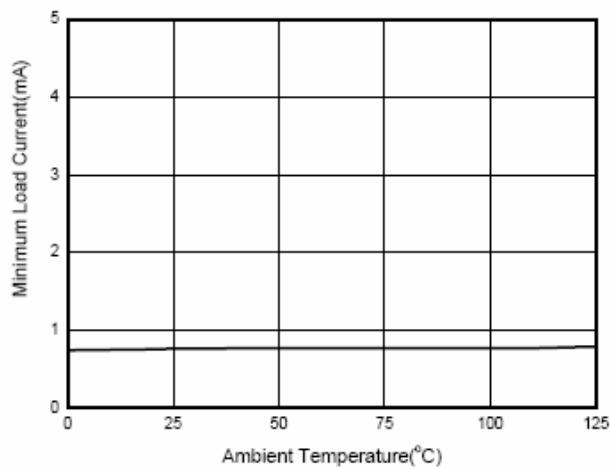
Figure 8. Minimum Load Current vs. Temperature
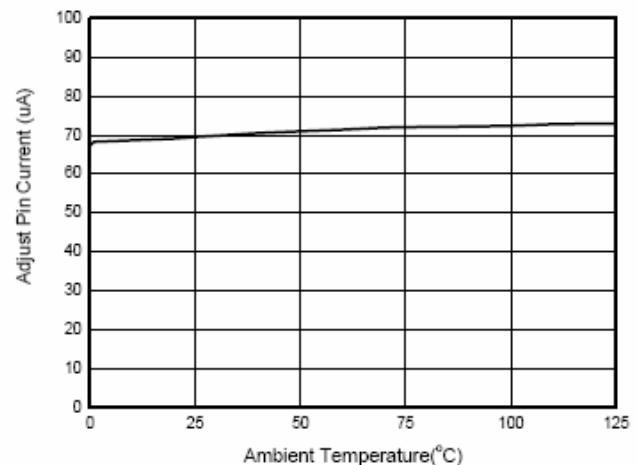
Figure 9. Adjust Pin Current vs. Temperature
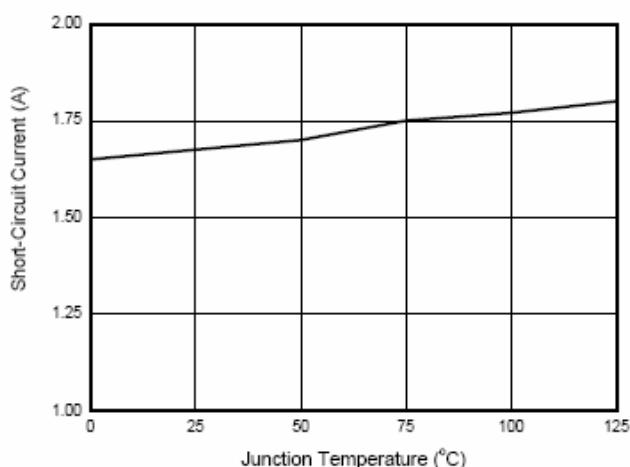
Figure 10. Short-Circuit Current vs. Temperature
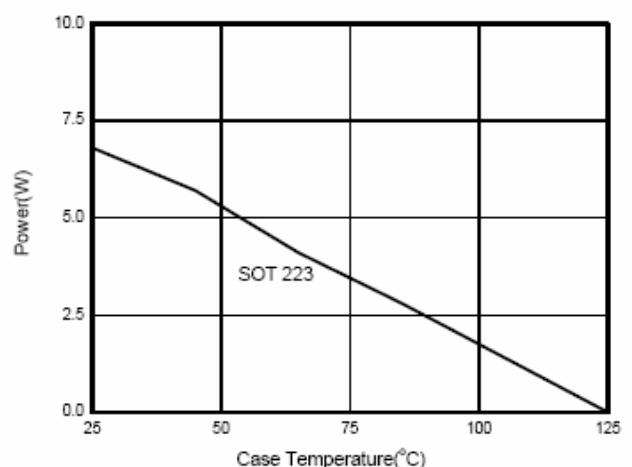
Figure 11. Maximum Power Dissipation

Typical Characteristics
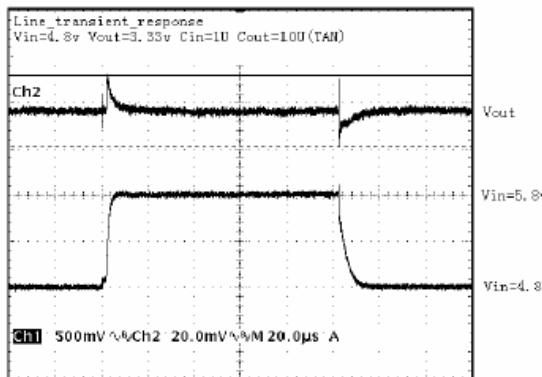
Figure 12.Line Transient Response
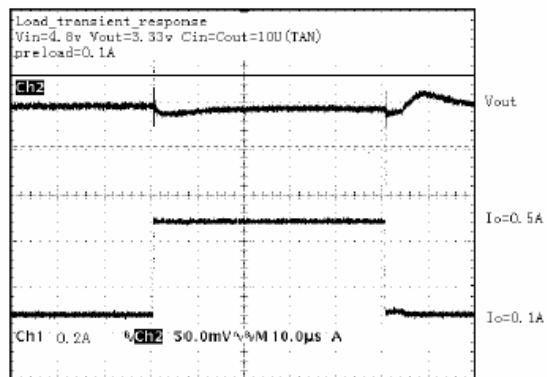
Figure 13. Load Transient Response
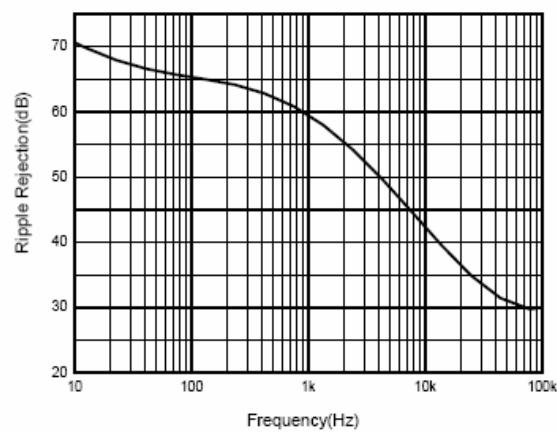
Figure 14. Ripple Rejection vs. Frequency

Typical Applications


$$V_{OUT} = V_{REF} * (1 + R2/R1) + I_{ADJ} * R2$$
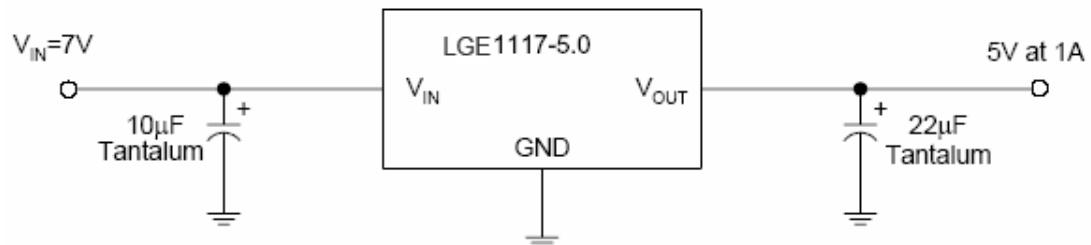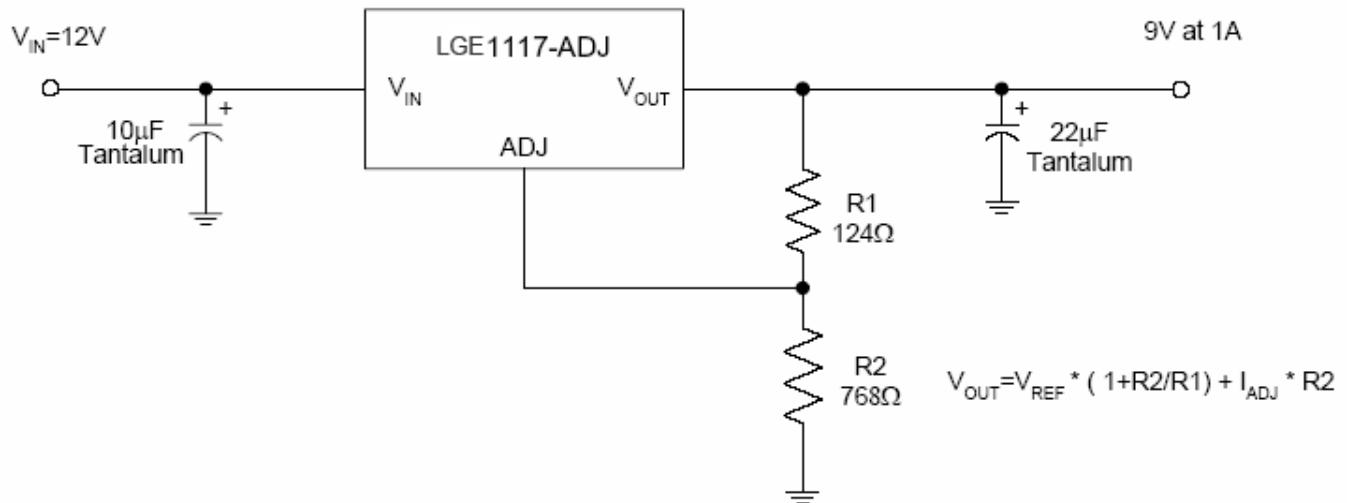
Figure 15. Typical Applications of LGE1117

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for LDO Voltage Regulators *category:*

Click to view products by Luguang *manufacturer:*

Other Similar products are found below :

AP7363-SP-13 L79M05TL-E AP7362-HA-7 PT7M8202B12TA5EX TCR2EF28,LM TCR3DF185,LM(CT TCR3DF45,LM(CT TLE4274 V50 TLE4473G V52 NCP4687DH15T1G NCV8703MX30TCG 701326R AP7315-25W5-7 AP2111H-1.2TRG1 ZLDO1117QK50TC AZ1117ID-ADJTRG1 TCR3DG12,LF SCD7912BTG NCP154MX180270TAG SCD33269T-5.0G NCP706ABMX300TAG NCP160BFCT280T2G NCP114BMX075TCG MC33269T-3.5G CAT6243-ADJCMT5T TCR3DG33,LF TLE4471GXT TCR4DG35,LF TAR5S15U(TE85L,F) TAR5S18U(TE85L,F) TCR3UG19A,LF TCR4DG105,LF MPQ2013AGG-5-P AP7315-33SA-7 TLE4268GSXUMA2 NCP715SQ15T2G NCV563SQ18T1G NCP715MX30TBG NCV8702MX25TCG AP2213D-3.3TRG1 NCV8170BMX280TCG AP2202K-2.6TRE1 NCV8170BMX300TCG NCV8152MX300180TCG NCP700CMT45TBG AP7315-33W5-7 NCP154MX180300TAG TCR2DG13,LF AP2113AMTR-G1 TCR15AG12,LF