ELM1117xG Bipolar 1A LDO Voltage regulator

■General description

ELM1117xG is bipolar LDO three terminal voltage regulator. This series includes thermal shutdown protection and short circuit current limiter. ELM1117 series is available in fixed version (ELM1117xG-xx Vout:1.8V, 2.5V, 3.3V, 5.0V) and adjustable version (ELM1117xG Vout:1.3V～4.0V).

■Features

- Output voltage range (fixed) : 1.8V, 2.5V, 3.3V, 5.0V
  (adj.) : 1.3V～4.0V
- Line regulation : Typ. 0.5%
- Load regulation : Typ. 0.5%
- LDO voltage : 1.2V typical at up to 1.0A
- Package : SOT-223, TO-252-3

■Application

- SCSI terminator
- Linear regulator
- Battery chargers
- Microcontrollers

■Maximum absolute ratings

Parameter	Symbol	Limit	Unit
Power supply voltage	Vcc	15	V
Power dissipation	Pd	Internally limited	W
Operating junction temperature	Top	0～+125	℃
Storage temperature	Tstg	-40～+150	℃
Thermal resistance junction to case	Rθjc	16	℃/W
Thermal resistance junction to ambient	Rθja	158 (SOT-223) 70 (TO-252-3)	℃/W
Lead temperature (soldering 10s.)	Tlead	260	℃

■Selection guide

ELM1117xG-xx-S, ELM1117xG-S

Symbol		
a	Package	L : SOT-223 D : TO-252-3
b	Product version	G
c,d	Output voltage	18: Vout=1.8V 25: Vout=2.5V 33: Vout=3.3V 50: Vout=5.0V
e	Taping direction	S : Refer to PKG file

- Fixed version

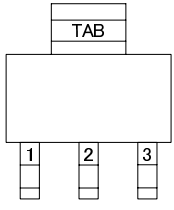
ELM1117 x G - x x - S
↑ ↑ ↑ ↑ ↑
a b c d e

- Adj. version

ELM1117 x G - S
↑ ↑ ↑
a b e

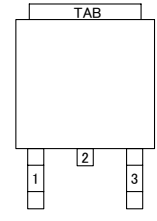
■Pin configuration

SOT-223 (TOP VIEW)



Pin No.	Pin name
1	ADJ/GND
2/TAB	VOUT
3	VIN

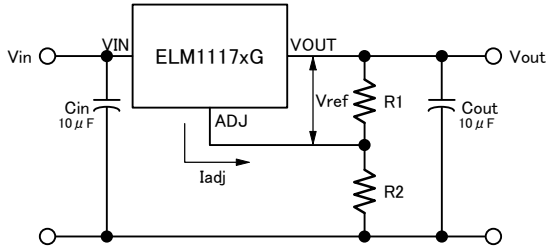
TO-252-3 (TOP VIEW)



Pin No.	Pin name
1	ADJ/GND
2/TAB	VOUT
3	VIN

■Typical application

・Adjustable type

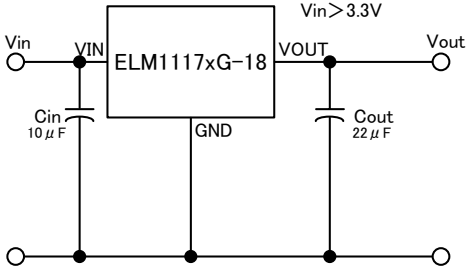


Vo=Vref(1＋R2/R1)＋Iadj×R2

＊We recommend to use Min. 10μF tantalum condenser.

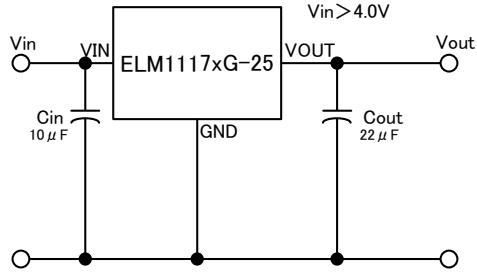
・Fixed type

Vout=1.8V



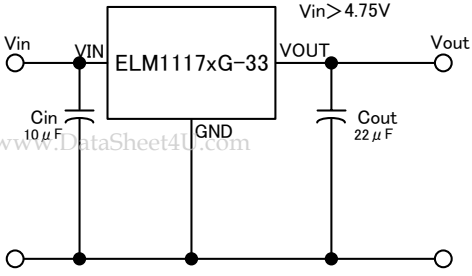
＊We recommend to use Min. 10μF tantalum condenser.

Vout=2.5V



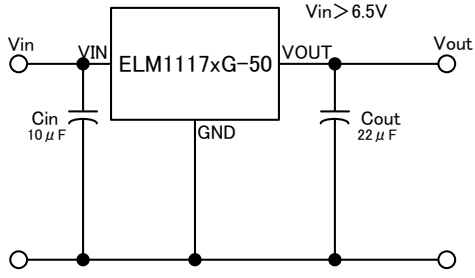
＊We recommend to use Min. 10μF tantalum condenser.

Vout=3.3V



＊We recommend to use Min. 10μF tantalum condenser.

Vout=5.0V



＊We recommend to use Min. 10μF tantalum condenser.

■Electrical characteristics

Vout=Adjustable (ELM1117 x G－S) Top=25℃

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Iout=10mA, Vin=5.0V	0.98Vout	Vout	1.02Vout	V
Reference voltage	Vref	Iout=10mA, Vin=5V	1.23	1.25	1.27	V
Line regulation	ΔVout/ΔVin	Iout=10mA, Vin=(Vout+1.5V)～15V		0.5	2.0	%
Load regulation	ΔVout/ΔIout	Iout=10mA～1A, Vin-Vout=2V		0.5	2.5	%
Dropout voltage	Vdif	Iout=1A, ΔVref=1%		1.20	1.45	V
Current limit	Ilim	Vin-Vout=2V	1.1	1.2		A
Min.load current	Il (min)	1.5V≦Vin-Vout≦5.75V		10		mA
Adjust Pin current	Iadj			55	100	μA
RMS output noise	Vn			Vout×0.003%		mV
Ripple rejection ratio	RR	f=120Hz, Vin=5V, Iout=1A, Co=22μF	60	72		dB

Vout=1.8V (ELM1117 x G－18－S) Top=25℃

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Iout=10mA, Vin=5.0V	1.760	1.800	1.836	V
Line regulation	ΔVout/ΔVin	Iout=10mA, Vin=3.3V～15V		0.5	2.0	%
Load regulation	ΔVout/ΔIout	Iout=10mA～1A, Vin-Vout=2V		0.5	2.0	%
Dropout voltage	Vdif	Iout=1A, ΔVref=1%		1.20	1.45	V
Current limit	Ilim	Vin-Vout=2V	1.1	1.2		A
Quiescent current	Iq			5	10	mA
RMS output noise	Vn			Vout×0.003%		mV
Ripple rejection ratio	RR	f=120Hz, Vin=5V, Iout=1A, Co=22μF	60	72		dB

Vout=2.5V (ELM1117 x G－25－S) Top=25℃

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Iout=10mA, Vin=5.0V	2.450	2.500	2.550	V
Line regulation	ΔVout/ΔVin	Iout=10mA, Vin=4.0V～15V		0.5	2.0	%
Load regulation	ΔVout/ΔIout	Iout=10mA～1A, Vin-Vout=2V		0.5	2.0	%
Dropout voltage	Vdif	Iout=1A, ΔVref=1%		1.20	1.45	V
Current limit	Ilim	Vin-Vout=2V	1.1	1.2		A
Quiescent current	Iq			5	10	mA
RMS output noise	Vn			Vout×0.003%		mV
Ripple rejection ratio	RR	f=120Hz, Vin=5V, Iout=1A, Co=22μF	60	72		dB

Vout=3.3V (ELM1117 x G - 33 - S) Top=25℃

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Iout=10mA, Vin=5.0V	3.234	3.300	3.367	V
Line regulation	ΔVout/ΔVin	Iout=10mA, Vin=4.8V～15V		0.5	2.0	%
Load regulation	ΔVout/ΔIout	Iout=10mA～1A, Vin-Vout=2V		0.5	2.0	%
Dropout voltage	Vdif	Iout=1A, ΔVref=1%		1.20	1.45	V
Current limit	Ilim	Vin-Vout=2V	1.1	1.2		A
Quiescent current	Iq			5	10	mA
RMS output noise	Vn			Vout× 0.003%		mV
Ripple rejection ratio	RR	f=120Hz, Vin=5V, Iout=1A, Co=22μF	60	72		dB

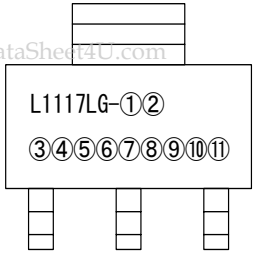
Vout=5.0V (ELM1117 x G - 50 -S) Top=25℃

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Iout=10mA, Vin=8.0V	4.900	5.000	5.100	V
Line regulation	ΔVout/ΔVin	Iout=10mA, Vin=6.5V～15V		0.5	1.0	%
Load regulation	ΔVout/ΔIout	Iout=10mA～1A, Vin-Vout=2V		0.5	1.0	%
Dropout voltage	Vdif	Iout=1A, ΔVref=1%		1.20	1.45	V
Current limit	Ilim	Vin-Vout=2V	1.1	1.2		A
Quiescent current	Iq			5	10	mA
RMS output noise	Vn			Vout× 0.003%		mV
Ripple rejection ratio	RR	f=120Hz, Vin=5V, Iout=1A, Co=22μF	60	72		dB

■Marking

・SOT-223 package : ELM1117LG-xx (Fixed type)

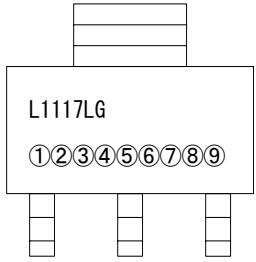
SOT-223



L	: LDO
1117	: Product No.code
L	: PKG type (SOT-223)
G	: Pb-Free package mark
①, ②	: Output voltage (e.g. : 3,3=3.3V)
③～⑪	: Production code

• SOT-223 package : ELM1117LG (Adjustable type)

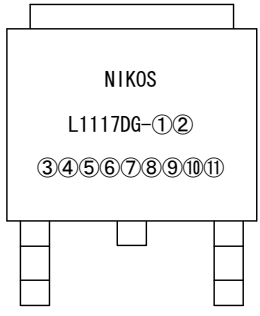
SOT-223



L	: LDO
1117	: Product No.code
L	: PKG type (SOT-223)
G	: Pb-Free package mark
①～⑨	: Production code

• TO-252-3 package : ELM1117DG-xx (Fixed type)

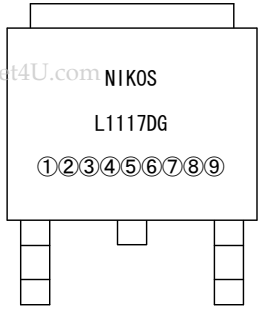
TO-252-3



L	: LDO
1117	: Product No.code
D	: PKG type (TO-252-3)
G	: Pb-Free package mark
① , ②	: Output voltage (e.g. : 3,3=3.3V)
③～⑪	: Production code

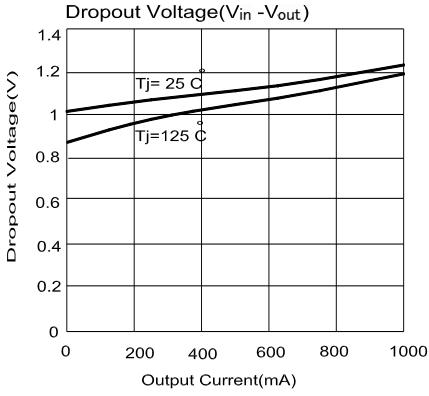
• TO-252-3 package : ELM1117DG (Adjustable type)

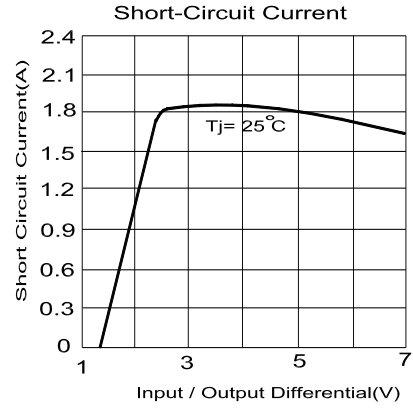
TO-252-3

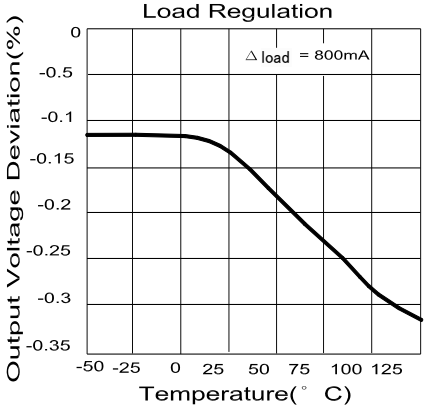


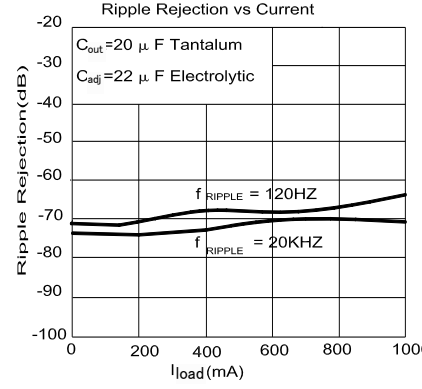
L	: LDO
1117	: Product No.code
D	: PKG type (TO-252-3)
G	: Pb-Free package mark
①～⑨	: Production code

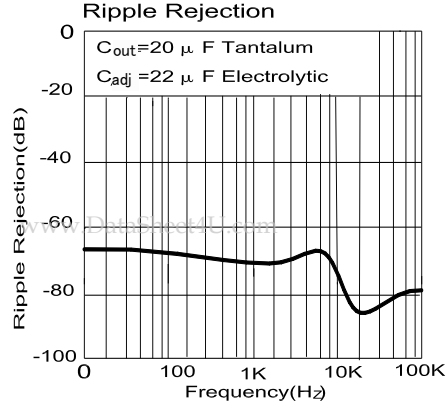
■Typical characteristics

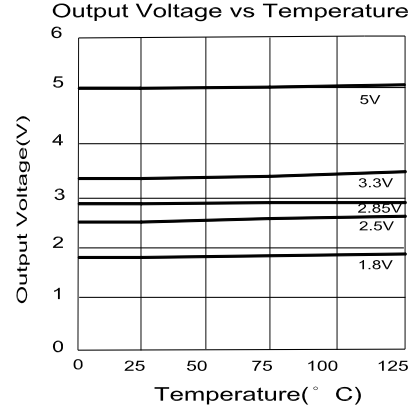


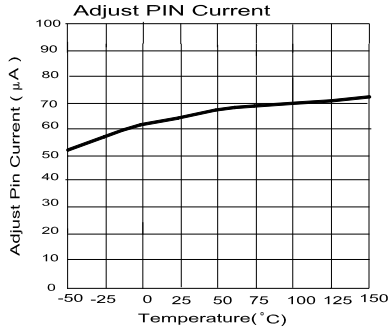




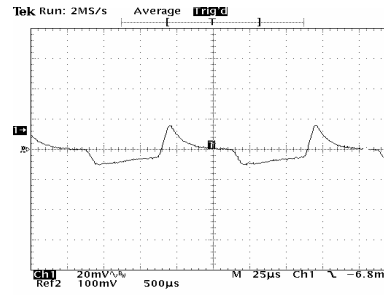








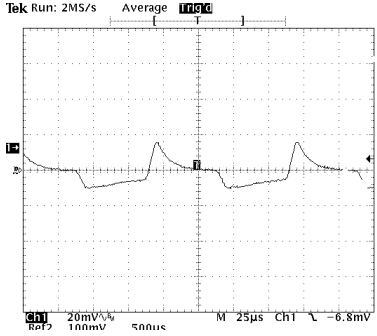
Load Transient



Vout=1.8V,Vin=3.3V,Iout=105mA/800mA

Cin=10μF,Cout=10μF

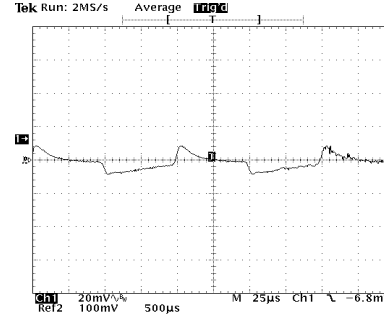
Load Transient



Vout=2.5V,Vin=4V,Iout=105mA/800mA

Cin=10μF,Cout=10μF

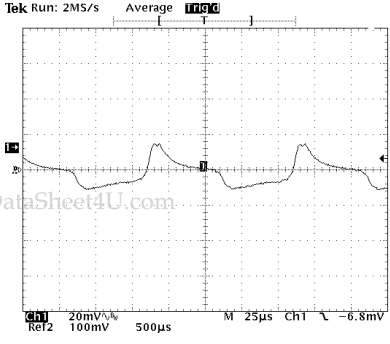
Load Transient



Vout=2.85V,Vin=4.35V,Iout=105mA/800mA

Cin=10μF,Cout=10μF

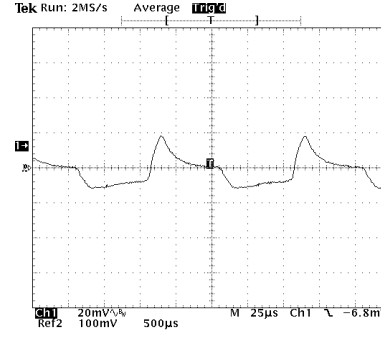
Load Transient



Vout=3.3V,Vin=4.8V,Iout=105mA/800mA

Cin=10μF,Cout=10μF

Load Transient



Vout=5V,Vin=6.5V,Iout=105mA/800mA

Cin=10μF,Cout=10μF