

ELM1085xG Bipolar 3A LDO Voltage regulator

■General description

ELM1085xG is positive and bipolar LDO three terminal voltage regulator with 3A output current capability. This series includes thermal shutdown protection and short circuit current limiter. ELM1085 series is available in fixed version (ELM1085xG-3.3 VOUT:3.3V) and adjustable version (ELM1085xG: $V_{out}=V_{ref}3.3 (1+R2/R1)+I_{adj}\times R2$ Max.5.55V).

■Features

- Output voltage range
(fixed) : 3.3V
(adj.) : 1.27V to 5.55V
- Line regulation : Typ.0.5%
- Load regulation : Typ.0.5%
- LDO voltage : 1.3V typical at up to 3A
- Package : TO-252, TO-263-2, TO-263-3

■Application

- SCSI terminator
- Linear regulator
- Battery chargers
- Micro-controller

■Maximum absolute ratings

Parameter	Symbol	Limit	Unit
Power supply voltage	Vcc	7	V
Power dissipation	Pd	Internally limited	W
Thermal resistance junction to case	Rθjc	5	°C/W
Thermal resistance junction to ambient	Rθja	60 (TO-263-2)	°C/W
		60 (TO-263-3)	
		70 (TO-252)	
Operating junction temperature	Top	0 to +125	°C
Storage temperature	Tstg	-40 to +150	°C
Lead temperature(soldering 10s.)	Tlead	260	°C

■Selection guide

ELM1085xG-33-S, ELM1085xG-S

Symbol		
a	Package	D : TO-252 S : TO-263-2 S3: TO-263-3
b	Product version	G
c, d	Output voltage	33: Vout=3.3V
e	Taping direction	S : Ref. P401, P402, P403

- Fixed version

ELM1085 x G - 3 3 - S
↑ ↑ ↑ ↑ ↑
a b c d e

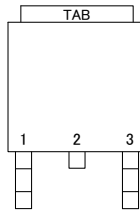
- Adj. version

ELM1085 x G - S
↑ ↑ ↑
a b e

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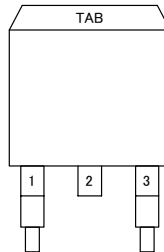
■ Pin configuration

TO-252 (TOP VIEW)



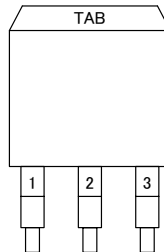
Pin No.	Pin name
1	ADJ/GND
2/TAB	VOUT
3	VIN

TO-263-2 (TOP VIEW)



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

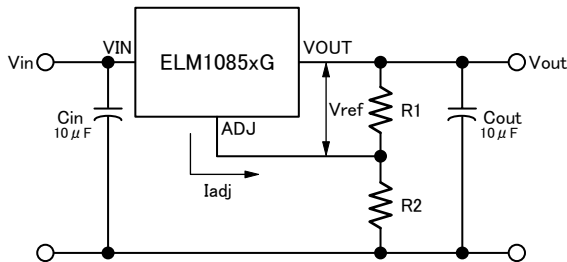
TO-263-3 (TOP VIEW)



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

■ Typical application

• Adjustable type

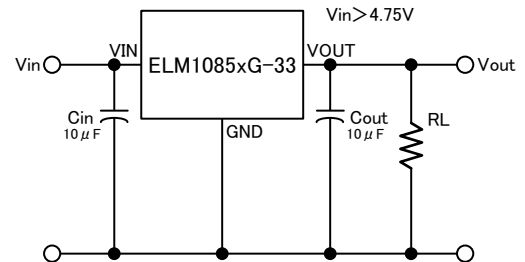


$$V_{out} = V_{ref} (1 + R2/R1) + I_{adj} \times R2$$

- * C_{in} needed if device is far from filter capacitors.
- * C_{out} required for stability.
- * We recommend to use Min. 10µF tantalum capacitor.

• Fixed type

$$V_{out} = 3.3V$$



- * We recommend to use Min. 10µF tantalum capacitor.

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■Electrical characteristics

Vout=Adjustable

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reference voltage	Vref	Iout=10mA, Vin=5V	1.23	1.25	1.27	V
Line regulation	$\Delta V_{out}/\Delta V_{in}$	Iout=10mA, Vin=(Vout+1.5V) to 7V		0.5	2.0	%
Load regulation	$\Delta V_{out}/\Delta I_{out}$	Iout=10mA to 3A, Vin-Vout=3V		0.5	2.5	%
Dropout voltage	Vdif	Iout=3A, $\Delta V_{ref}=1\%$		1.30	1.45	V
Current limit	Ilim	Vin-Vout=2V	4	5		A
Min.load current	Il (min)	$1.5V \leq (V_{in}-V_{out}) \leq 5.75V$		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=3A, Cout=22 μF	60	72		dB

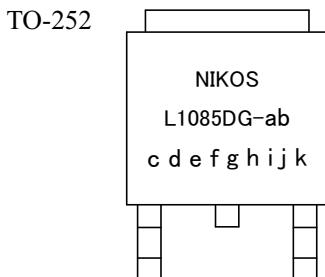
Vout=3.3V (ELM1085xG-33)

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Iout=10mA, Vin=5V	3.234	3.300	3.367	V
Line regulation	$\Delta V_{out}/\Delta V_{in}$	Iout=10mA, Vin=4.8V to 7V		0.5	2.0	%
Load regulation	$\Delta V_{out}/\Delta I_{out}$	Iout=10mA to 3A, Vin-Vout=3V		0.5	2.5	%
Dropout voltage	Vdif	Iout=3A, $\Delta V_{ref}=1\%$		1.3	1.5	V
Current limit	Ilim	Vin-Vout=2V	4	5		A
Min.load current	Il (min)	$1.5V \leq (V_{in}-V_{out}) \leq 5.75V$		10		mA
RMS output noise	Vn			Vout× 0.003%		mV
Ripple rejection ratio	RR	f=120Hz, Vin=5V, Iout=3A, Cout=22 μF	60	72		dB

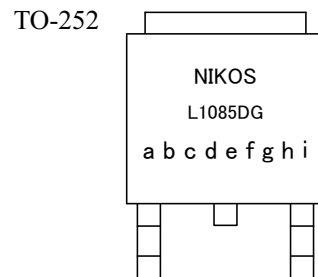
■Marking

- TO-252 package : ELM1085DG-33
(Fixed type)



L : LDO
 1085 : Product No.code
 D : PKG type (TO-252)
 G : Pb-Free package mark
 a, b : Output voltage (3,3=3.3V fixed)
 c to k : Production code

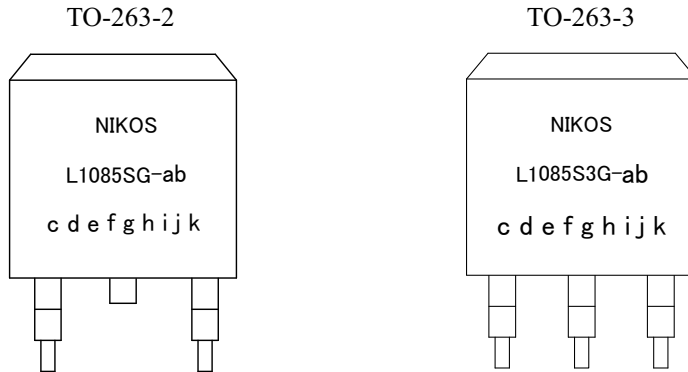
- TO-252 package : ELM1085DG
(Adjustable type)



L : LDO
 1085 : Product No.code
 D : PKG type (TO-252)
 G : Pb-Free package mark
 a to i : Production code

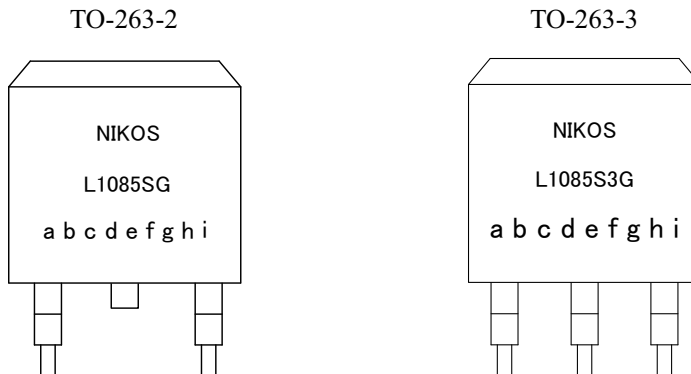
ELM1085xG Bipolar 3A LDO Voltage regulator

- TO-263-2 package : ELM1085SG-33 (Fixed type)
- TO-263-3 package : ELM1085SG-33 (Fixed type)



L : LDO
1085 : Product No.code
S(S3) : PKG type (S : TO-263-2, S3 : TO-263-3)
G : Pb-Free package mark
a, b : Output voltage (3,3=3.3V fixed)
c to k : Production code

- TO-263-2 package : ELM1085SG (Adjustable type)
- TO-263-3 package : ELM1085SG (Adjustable type)

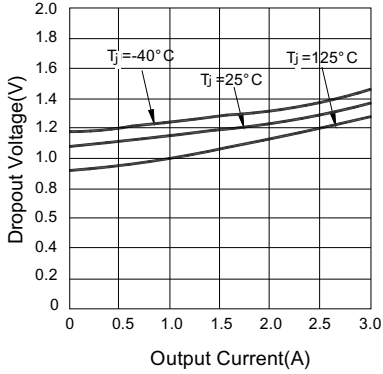


L : LDO
1085 : Product No.code
S(S3) : PKG type (S : TO-263-2, S3 : TO-263-3)
G : Pb-Free package mark
a to i : Production code

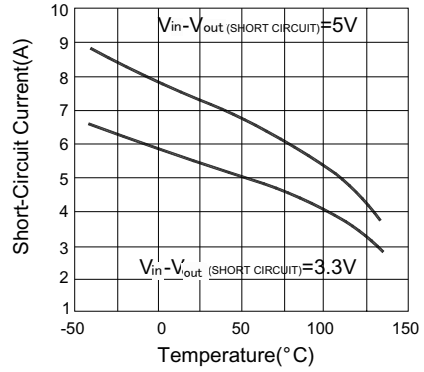
ELM1085xG Bipolar 3A LDO Voltage regulator

■ Typical characteristics

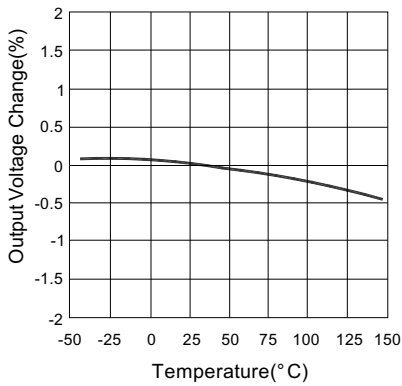
Dropout Voltage vs. Output Current



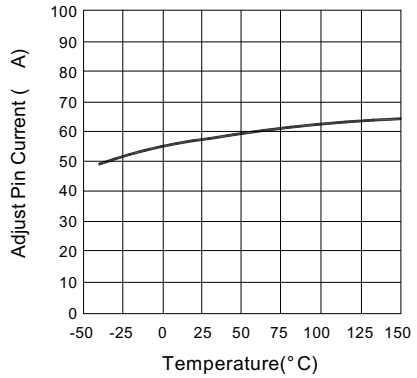
Short-Circuit Current vs. Temperature



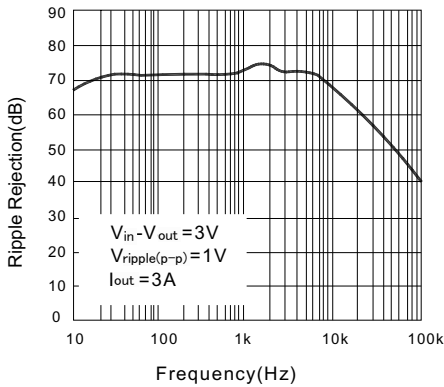
Percent Change in Output Voltage vs. Temperature



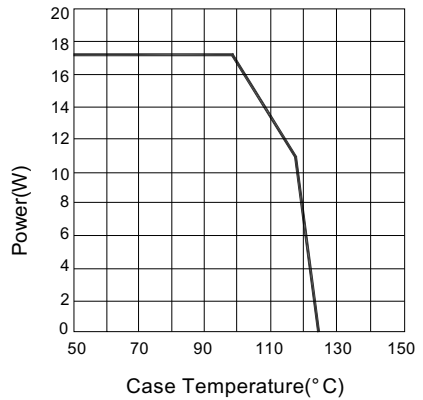
Adjust Pin Current vs. Temperature



Ripple Rejection vs. Frequency



Maximum Power Dissipation*



*as Limited by Maximum Junction Temperature