

# 300mA Low Dropout Linear Regulator

## FEATURES

- Low dropout voltage of 470mV at an output current of 300mA (3.0V output version).
- Guaranteed 300mA output current.
- Low ground current of 55µA
- Output voltage accuracy of 2% at 1.8V/ 2.0V /2.5V /2.7V/ 3.0V/ 3.3V/ 3.5V/ 3.7V/ 3.8V/ 5.0V/5.2V
- Only needs 1µF output capacitor for stability.
- Current and thermal limiting.

 **Pb-free, RoHS compliant.**

## APPLICATIONS

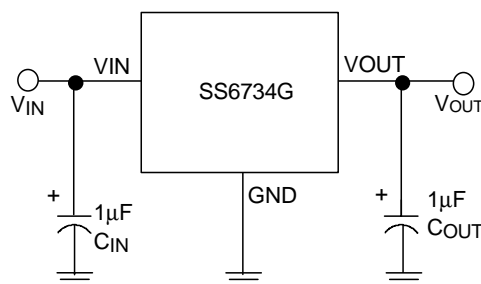
- CD-ROM Drivers.
- LAN Cards.
- Microprocessors.
- DRAM Modules.
- Wireless Communication Systems.
- Battery Powered Systems.

## DESCRIPTION

The SS6734G is a 3-pin low-dropout linear regulator with superior characteristics, which include zero base current loss, very low dropout voltage, and output voltage accuracy of 2%. Typical ground current remains approximately 55µA, for loads ranging from zero to maximum. Dropout voltage at an output current of 300mA is exceptionally low. Built-in output current limiting and thermal limiting provide maximum protection against fault conditions.

The SS6734G is available in RoHS-compliant SOT-23-3, SOT-89, and TO-92 packages.

## TYPICAL APPLICATION CIRCUIT



**Low Dropout Linear Regulator**  
**(C<sub>IN</sub> and C<sub>OUT</sub> should be electrolytic capacitors)**

**ORDERING INFORMATION**

SS6734-XXGXX XX

 Packing:  
 TR: Tape and reel

 Package type:  
 U: SOT-23-3  
 XA: SOT-89  
 XT: SOT-89  
 ZT: TO-92  
 ZL: TO-92

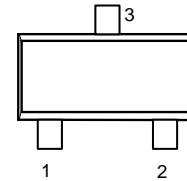
G: Pb-free, RoHS compliant.

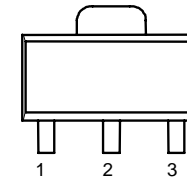
 Output voltage:  
 18: 1.8V  
 20: 2.0V  
 25: 2.5V  
 27: 2.7V  
 30: 3.0V  
 33: 3.3V  
 35: 3.5V  
 37: 3.7V  
 38: 3.8V  
 50: 5.0V  
 52: 5.2V

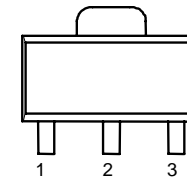
 Example: SS6734-18GXATR  
 → 1.8V version, in RoHS-compliant  
 SOT-89 package, shipped  
 on tape and reel.

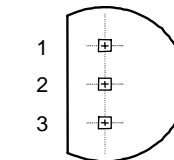
**PIN CONFIGURATION**

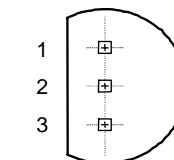
SOT-23 (GU)

 1: GND  
 2: VOUT  
 3: VIN

 SOT-89 (GXA)  
 TOP VIEW

 1: GND  
 2: VIN  
 3: VOUT

 SOT-89 (GXT)  
 TOP VIEW

 1: VOUT  
 2: GND  
 3: VIN

 TO-92 (GZT)  
 TOP VIEW

 1: GND  
 2: VIN  
 3: VOUT

 TO-92 (GZL)  
 TOP VIEW

 1: VIN  
 2: GND  
 3: VOUT

**SOT-23 MARKING**

Part No.	GU	Part No.	GU
SS6734-18GU	CD18P	SS6734-35GU	CD35P
SS6734-20GU	CD20P	SS6734-37GU	CD37P
SS6734-25GU	CD25P	SS6734-38GU	CD38P
SS6734-27GU	CD27P	SS6734-50GU	CD50P
SS6734-30GU	CD30P	SS6734-52GU	CD52P
SS6734-33GU	CD33P		

**SOT-89 MARKING**

Part No.	GXA	Part No.	GXT
SS6734-18GXA	CA18P	SS6734-18GXT	CB18P
SS6734-20GXA	CA20P	SS6734-20GXT	CB20P
SS6734-25GXA	CA25P	SS6734-25GXT	CB25P
SS6734-27GXA	CA27P	SS6734-27GXT	CB27P
SS6734-30GXA	CA30P	SS6734-30GXT	CB30P
SS6734-33GXA	CA33P	SS6734-33GXT	CB33P
SS6734-35GXA	CA35P	SS6734-35GXT	CB35P
SS6734-37GXA	CA37P	SS6734-37GXT	CB37P
SS6734-38GXA	CA38P	SS6734-38GXT	CB38P
SS6734-50GXA	CA50P	SS6734-50GXT	CB50P
SS6734-52GXA	CA52P	SS6734-52GXT	CB52P

**ABSOLUTE MAXIMUM RATINGS**

Input Supply Voltage.....	-0.3 ~12V
Operating Temperature Range .....	-40°C~ 85°C
Storage Temperature Range .....	-65°C~150°C
Maximum Junction Temperature.....	125°C
Lead Temperature (Soldering) 10 sec. ....	260°C
Thermal Resistance Junction to Ambient	SOT-89 Package..... 160°C/W
(Assumes no ambient airflow, no heatsink)	TO-92 Package..... 150°C/W
	SOT-23 Package..... 180°C/W

**Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.**

**TEST CIRCUIT**

Refer to the TYPICAL APPLICATION CIRCUIT

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$ ,  $C_{IN}=1\mu\text{F}$ ,  $C_{OUT}=1\mu\text{F}$ , unless otherwise specified.) (Note1 )

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Output Voltage	No Load					
	SS6734-52	$V_{IN}=5.5\sim 12\text{V}$	5.100	5.200	5.300	V
	SS6734-50	$V_{IN}=5.5\sim 12\text{V}$	4.900	5.000	5.100	
	SS6734-38	$V_{IN}=4.1\sim 12\text{V}$	3.725	3.800	3.875	
	SS6734-37	$V_{IN}=4.0\sim 12\text{V}$	3.625	3.700	3.775	
	SS6734-35	$V_{IN}=4.0\sim 12\text{V}$	3.430	3.500	3.570	
	SS6734-33	$V_{IN}=4.0\sim 12\text{V}$	3.235	3.300	3.365	
	SS6734-30	$V_{IN}=4.0\sim 12\text{V}$	2.940	3.000	3.060	
	SS6734-27	$V_{IN}=4.0\sim 12\text{V}$	2.646	2.700	2.754	
	SS6734-25	$V_{IN}=4.0\sim 12\text{V}$	2.450	2.500	2.550	
SS6734-20	$V_{IN}=4.0\sim 12\text{V}$	1.960	2.000	2.040		
SS6734-18	$V_{IN}=4.0\sim 12\text{V}$	1.764	1.800	1.836		
Output Voltage Temperature Coefficient	(Note 2)		50		PPM/ $^{\circ}\text{C}$	
Line Regulation	$I_L=1\text{mA}$ , $1.4\text{V}\leq V_{OUT}\leq 3.2\text{V}$	$V_{IN}=4\text{V}\sim 12\text{V}$		3	10	mV
	$3.3\text{V}\leq V_{OUT}\leq 5.2\text{V}$	$V_{IN}=5.5\text{V}\sim 12\text{V}$		3	10	
Load Regulation (Note 3)	$I_L=0.1\sim 300\text{mA}$ $1.4\text{V}\leq V_{OUT}\leq 3.9\text{V}$	$V_{IN}=5\text{V}$		7	20	mV
	$4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$	$V_{IN}=7\text{V}$		15	40	
Current Limit (Note 4)	$V_{IN}=7\text{V}$ , $V_{OUT}=0\text{V}$		300		mA	
Dropout Voltage (Note 5)	$I_L=300\text{mA}$	$4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$		400		mV
		$3.0\text{V}\leq V_{OUT}\leq 3.9\text{V}$		470		
		$2.5\text{V}\leq V_{OUT}\leq 2.9\text{V}$		570		
		$2.0\text{V}\leq V_{OUT}\leq 2.4\text{V}$		800		
		$1.4\text{V}\leq V_{OUT}\leq 1.9\text{V}$		1260		
Ground Current	$I_O=0.1\text{mA}\sim I_{MAX}$ $1.4\text{V}\leq V_{OUT}\leq 3.9\text{V}$	$V_{IN}=5\sim 12\text{V}$		55	80	$\mu\text{A}$
	$4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$	$V_{IN}=7\sim 12\text{V}$		55	80	

Note 1: Specifications are guaranteed by Statistical Quality Control (SQC), not by 100% production testing, over the operating temperature range from  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$ .

Note 2: Guaranteed by design.

Note 3: Regulation is measured at constant junction temperature, using pulse testing with a low ON time.

Note 4: Current limit is measured by pulsing a short time.

Note 5: Dropout voltage is defined as the input to output differential at which the output voltage drops 100mV below the value of the output voltage measured with a 1V differential.

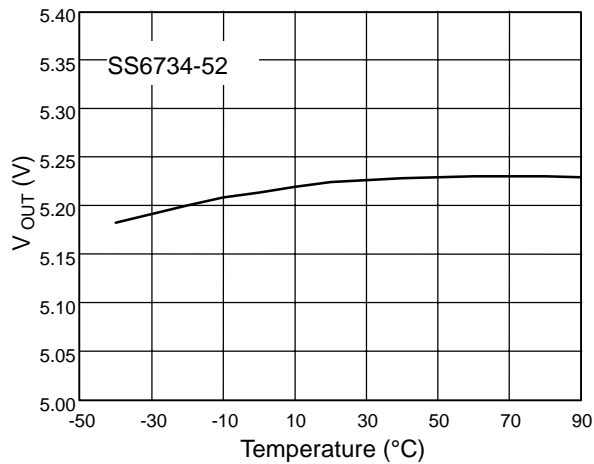
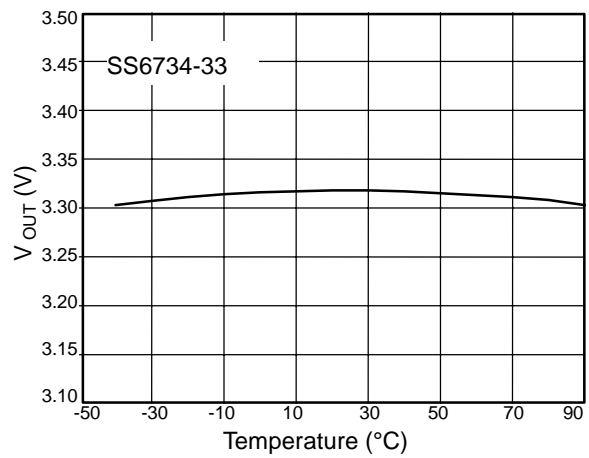
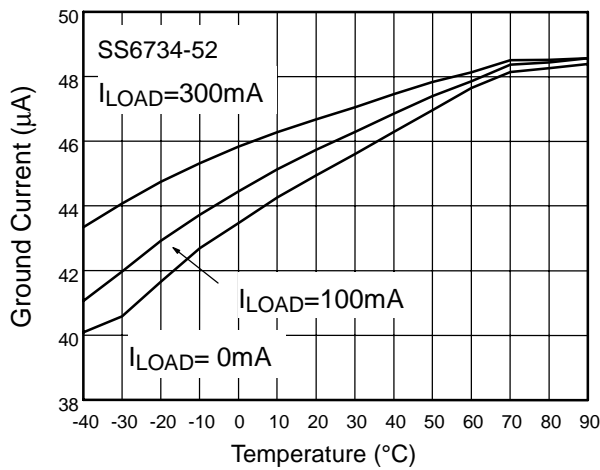
**TYPICAL PERFORMANCE CHARACTERISTICS**

 Fig. 1  $V_{OUT}$  vs. Temperature

 Fig. 2  $V_{OUT}$  vs. Temperature


Fig. 3 Ground Current vs. Temperature

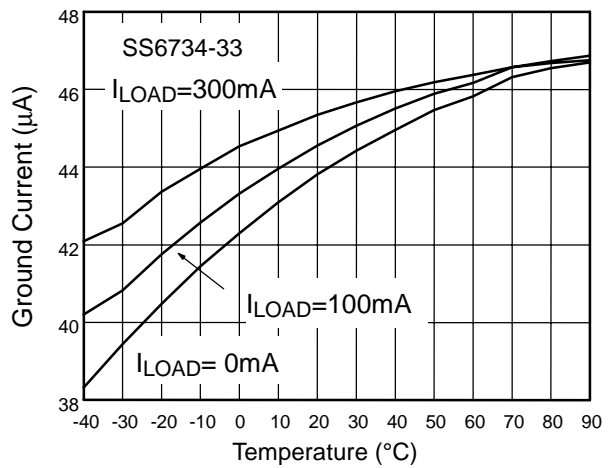
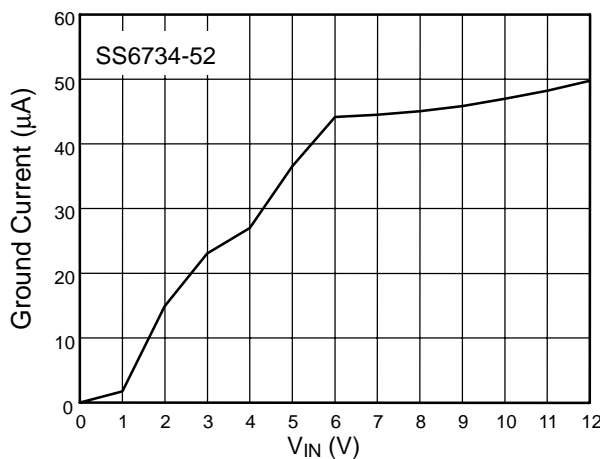
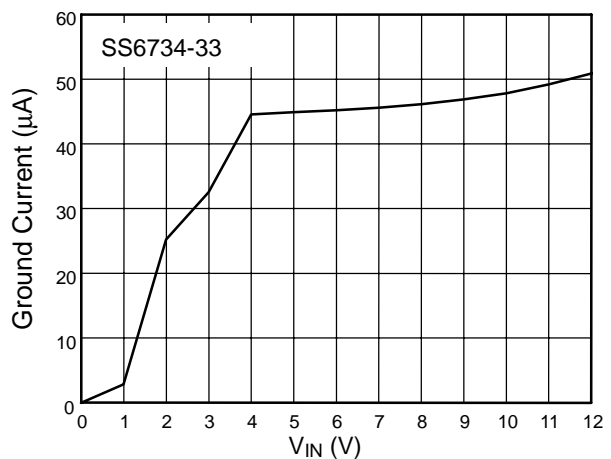


Fig. 4 Ground Current vs. Temperature


 Fig. 5 Ground Current vs.  $V_{IN}$ 

 Fig. 6 Ground Current vs.  $V_{IN}$

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

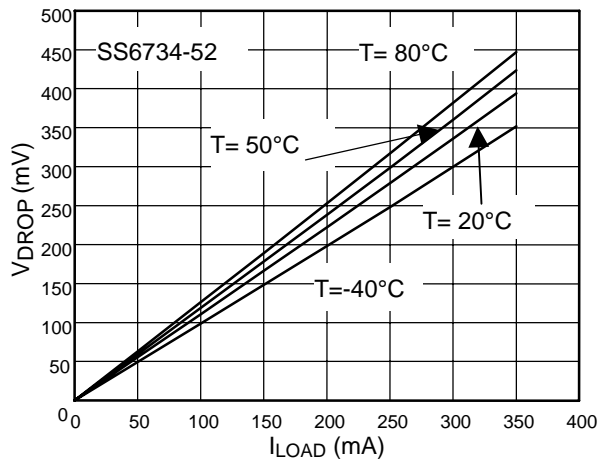


Fig. 7  $V_{DROP}$  vs.  $I_{LOAD}$

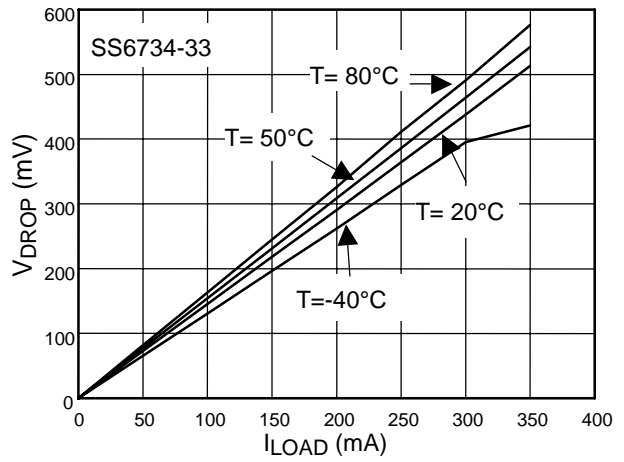


Fig. 8  $V_{DROP}$  vs.  $I_{LOAD}$

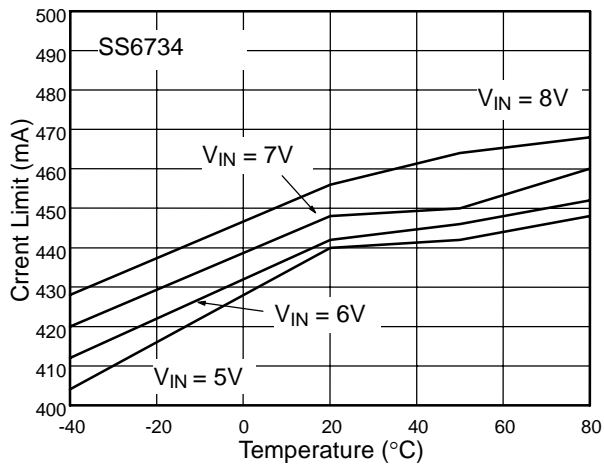
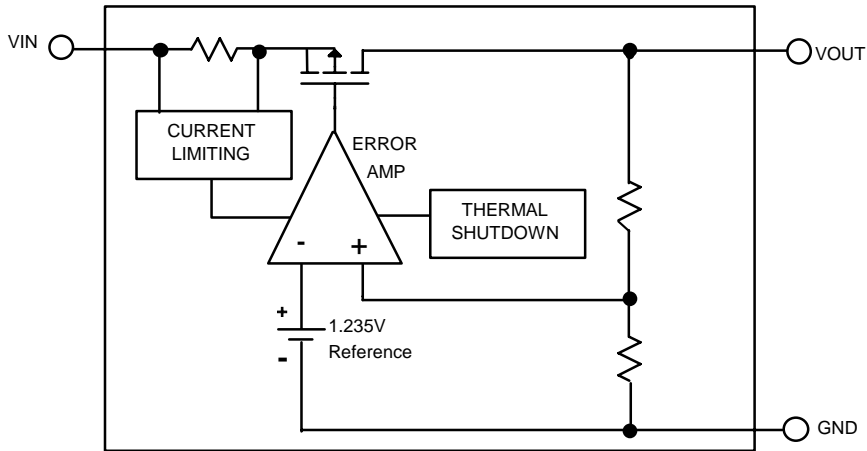


Fig. 9 Current Limit vs. Temperature

## BLOCK DIAGRAM



## PIN DESCRIPTIONS

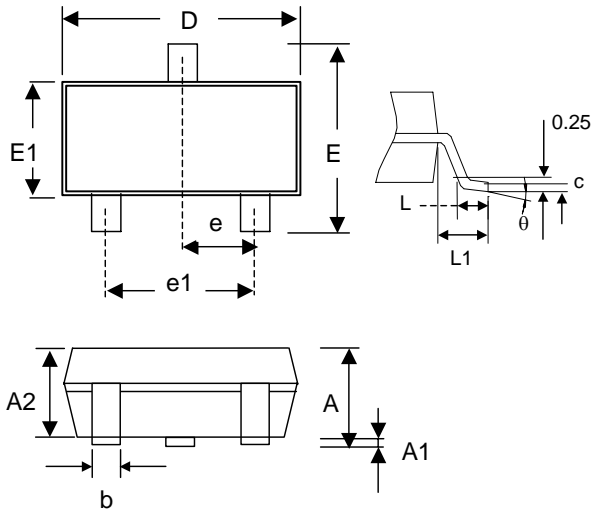
VOUT PIN - Output pin.

GND PIN - Power GND.

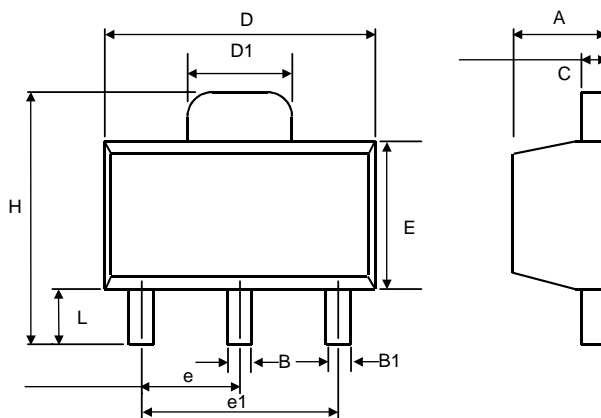
VIN PIN - Power Supply Input.

**PHYSICAL DIMENSIONS** (unit: mm)

 All package options are Pb-free, RoHS compliant.

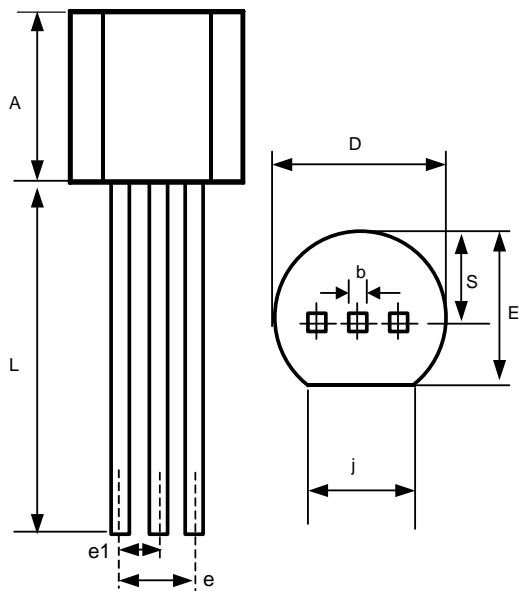
**SOT-23 (GU)**


SYMBOL	MIN	MAX
A	0.95	1.45
A1	0.05	0.15
A2	0.90	1.30
b	0.30	0.50
c	0.08	0.22
D	2.80	3.00
E	2.60	3.00
E1	1.50	1.70
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60
L1	0.60 REF	
θ	0°	8°

**SOT-89 (GXX)**


SYMBOL	MIN	MAX
A	1.40	1.60
B	0.44	0.56
B1	0.36	0.48
C	0.35	0.44
D	4.40	4.60
D1	1.50	1.83
E	2.29	2.60
e	1.50 BSC	
e1	3.00 BSC	
H	3.94	4.25
L	0.89	1.20



**TO-92 (GZX)**


SYMBOL	MIN	MAX
A	4.32	5.33
b	0.36	0.47
D	4.45	5.20
E	3.18	4.19
e	2.42	2.66
e1	1.15	1.39
j	3.43	-
L	12.70	-
S	2.03	2.66

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