150mA/300mA Low Dropout Linear Regulator with 1% Output Accuracy

FEATURES

- Low dropout voltage of 130mV at 100mA output current (5V output version).
- Guaranteed 150mA/300mA output current.
- Internal 1.3Ω P-MOSFET draws no base-current.
- Low ground current of 55µA.
- Output voltage accuracy of 1% at 3.3V/5V.
- Input voltage range up to 12V (5V output version)
- Extremely tight load and line regulation.
- Fast transient response.
- Current limiting and thermal protection.
- **RoHS compliant.**

APPLICATIONS

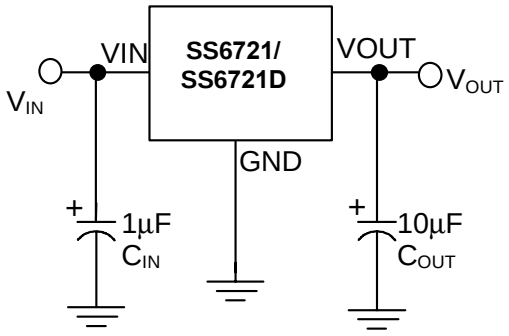
- LAN Cards.
- Wireless Communication Systems.
- Battery Powered Systems.

DESCRIPTION

The SS6721/6721D are 150/300mA low dropout linear regulators. The superior characteristics of the SS6721 and SS6721D include zero base-current loss, very low dropout voltage, and 1% accuracy of output voltage. Typical ground current is approximately 55µA, across the load range from zero to maximum. With an output current of 100mA, the dropout voltage of the SS6721 and SS6721D is substantially lower (130mV for SS6721-50 and SS6721D-50, and 180mV for the SS6721-33 and SS6721D-33) when compared with a bipolar device. Built-in output current and thermal limiting provide maximum protection of the SS6721 and SS6721D against fault conditions.

The SS6721 and SS6721D are available in the popular SOT-89 and TO-92 packages.

TYPICAL APPLICATION CIRCUIT



Low Dropout Linear Regulator

ORDERING INFORMATION

SS6721X-XXXXXX

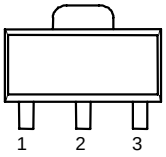
- Packing
  TR: Tape and reel
- PACKAGE TYPE
  X: SOT-89
  Z: TO-92
- G: RoHS compliant
- Output voltage
  Default: 3.3V
  50: 5.0V
- Output current:
  Default: 150mA
  D: 300mA

Example: SS6721GXTR
150mA, 3.3V version, in RoHS-compliant SOT-89, shipped on tape and reel

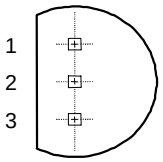
SS6721D-50GZTR
300mA, 5.0V version, in RoHS-compliant TO-92, shipped on tape and reel

PIN CONFIGURATION

SOT-89
Front view
1. VOUT
2. GND
3. VIN



TO-92
Front view
1. VOUT
2. GND
3. VIN



SOT89 Marking

Part No.	Marking	Part No.	Marking
SS6721GX	AF33P	SS6721DGX	AG33P
SS6721-50GX	AF50P	SS6721D-50GX	AG50P

ABSOLUTE MAXIMUM RATINGS

Input Supply Voltage		-0.3~12V
Operating Junction Temperature Range		-40°C~ 85°C
Maximum Junction Temperature		125°C
Storage Temperature Range		-65°C~150°C
Power Dissipation	SOT-89 Package	0. 80W
	TO-92 Package	0.78W
Lead Temperature (Soldering) 10 sec.		260°C

Exceeding the Absolute Maximum Ratings may impair the life of a device.

TEST CIRCUIT

Refer to the TYPICAL APPLICATION CIRCUIT

ELECTRICAL CHARACTERISTICS

(T_j = 25°C, C_{IN} = 1µF, C_{OUT} = 10µF, unless otherwise specified.)

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	SS6721/6721D-50 V_{IN}=5.5 to12V, I_{OUT}=0mA	4.950	5.0	5.050	V
	SS6721/6721D V_{IN}=3.6 to12V, I_{OUT}=0mA	3.267	3.3	3.333	
Output Voltage Temperature Coefficient	(Note 1)		50	150	PPM/°C
Line Regulation	I_{OUT}=1mA				mV
	SS6721/6721D-50 V_{IN}=5.5 to12V		3	10	
	SS6721/6721D V_{IN}=3.6 to12V		3	10	
Load Regulation (Note 2)	SS6721-50 V_{IN}=7V, I_{OUT}=0.1 to 150mA		7	15	mV
	SS6721D-50 V_{IN}=7V, I_{OUT}=0.1 to 300mA		7	25	
	SS6721 V_{IN}=5V, I_{OUT}=0.1 to 150mA		7	15	
	SS6721D V_{IN}=5V, I_{OUT}=0.1 to 300mA		7	25	
Current Limit (Note 3)	SS6721-50 V_{IN}=7V, V_{OUT}=0V	300	440		mA
	SS6721 V_{IN}=5V, V_{OUT}=0V	300	440		
	SS6721D-50 V_{IN}=7V, V_{OUT}=0V	300	440		
	SS6721D V_{IN}=5V, V_{OUT}=0V	300	440		
Dropout Voltage (Note 4)	SS6721-50 I_{OUT}=150mA		200	300	mV
	SS6721 I_{OUT}=150mA		270	370	
	SS6721D-50 I_{OUT}=300mA		400	500	
	SS6721D I_{OUT}=300mA		540	640	
Ground Current	I_{OUT}=0.1mA to I_{MAX}				µA
	SS6721/6721D-50 V_{IN}=5.5 to 12V		55	80	
	SS6721/6721D V_{IN}=4 to 12V		55	80	

Note 1: Guaranteed by design.
Note 2: Regulation is measured at a constant junction temperature, which is maintained using pulse testing.
Note 3: Current limit is measured by pulse testing.
Note 4: Dropout voltage is defined as voltage differential at which the output voltage drops 100mV with an initial 1V differential between input and output.
Note5: Specifications over -40°C to 85°C operating temperature range are guaranteed by design with Statistical Quality Controls (SQC), not production test.

TYPICAL PERFORMANCE CHARACTERISTICS

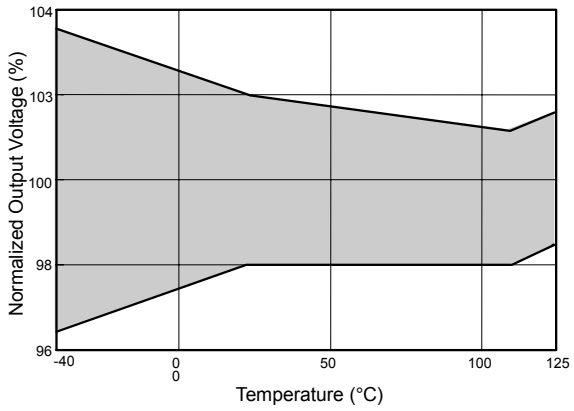


Fig. 1 Output Voltage vs. Temperature

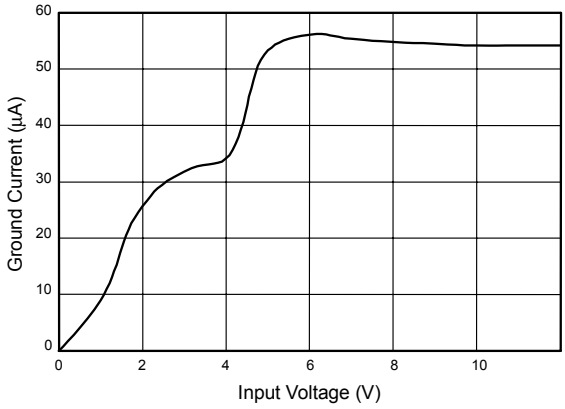


Fig. 2 Ground Current vs. Input Voltage

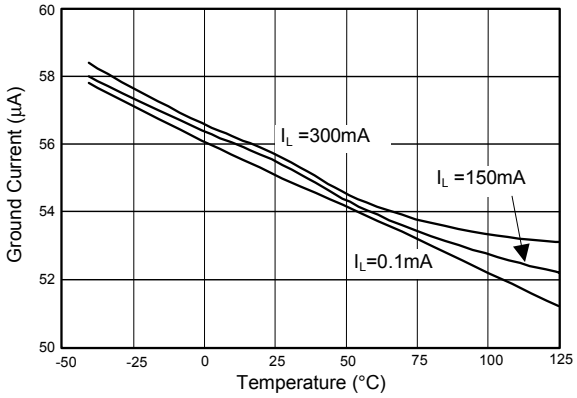


Fig. 3 Ground Current vs. Temperature

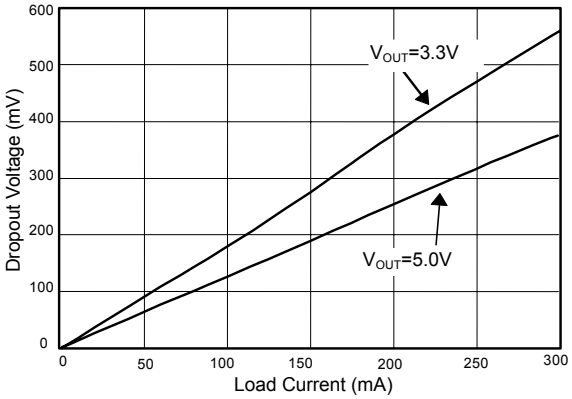


Fig. 4 Dropout Voltage vs. Load Current

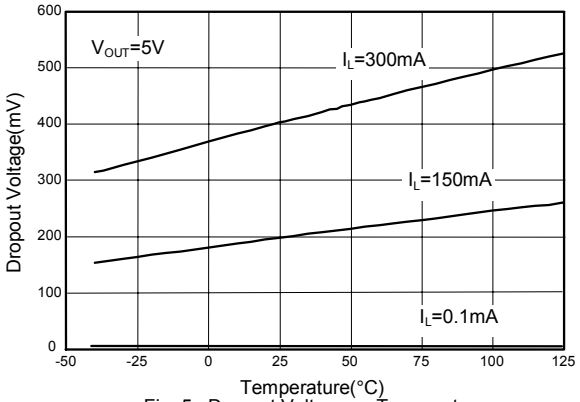


Fig. 5 Dropout Voltage vs Temperature

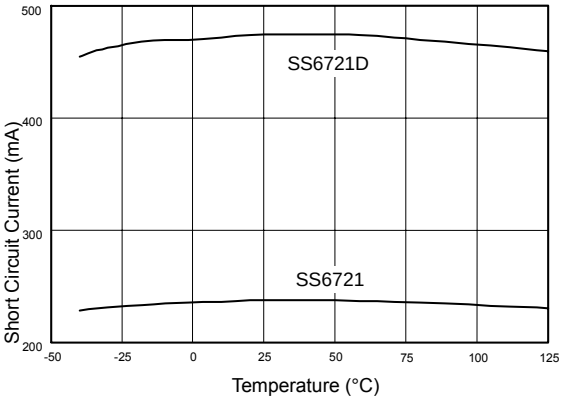


Fig. 6 Short Circuit Current vs. Temperature

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

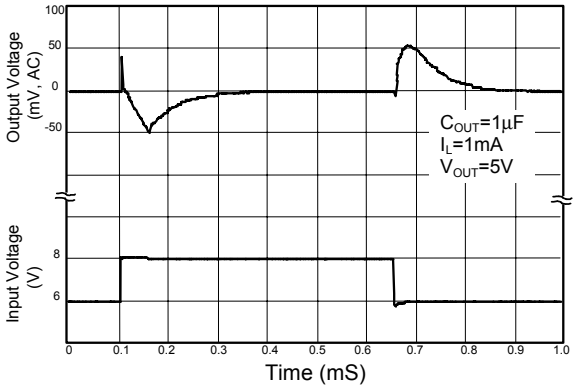


Fig. 7 Line Transient Response

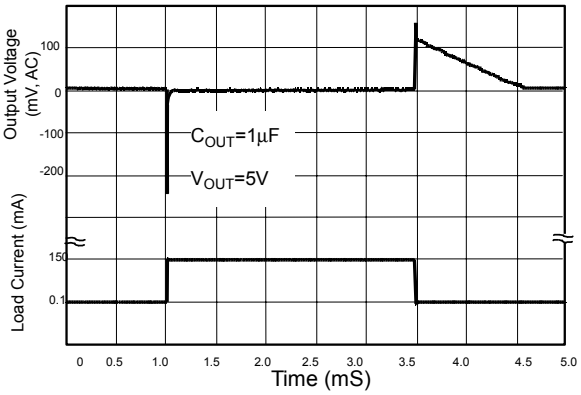


Fig. 8 Load Transient Response

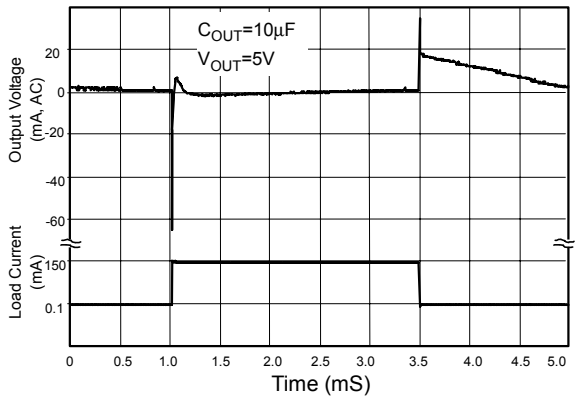
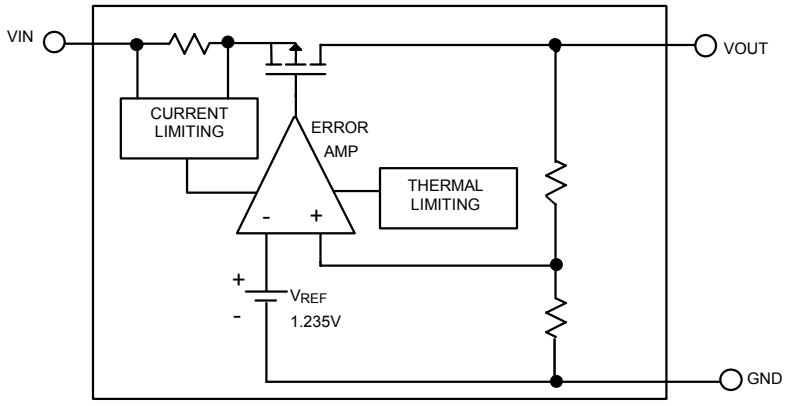


Fig. 9 Load Transient Response

BLOCK DIAGRAM



PIN DESCRIPTIONS

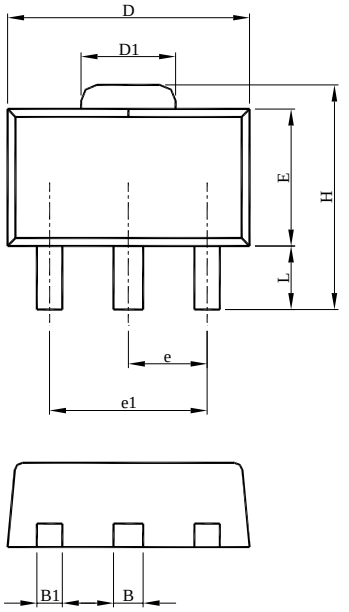
VOUT PIN - Output pin.

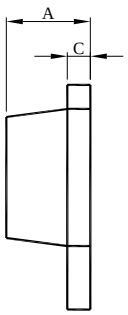
GND PIN - Power GND.

VIN PIN - Power Supply Input.

PHYSICAL DIMENSIONS (unit: mm)

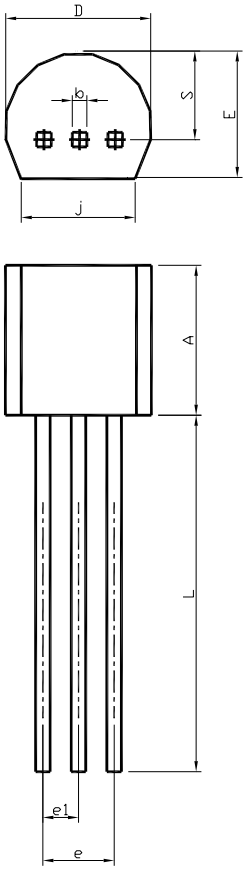
SOT-89





SYMBOL	SOT-89	
	MILLIMETERS	
	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



SYMBOL	TO-92	
	MILLIMETERS	
	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