

Negative Voltage Regulator

FEATURES

- Low power consumption.
- Low temperature coefficient.
- Output short-circuit protection.
- Wide operating voltage range.
- Good input stability.
- Space-saving packages - TO-92 or SOT-89

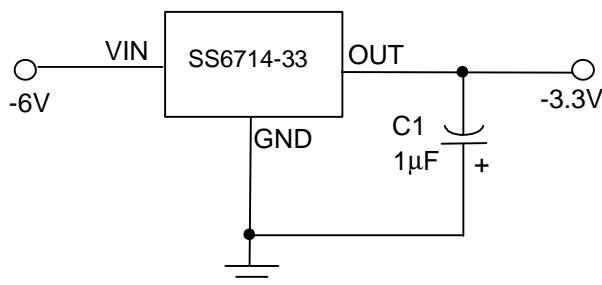
APPLICATIONS

- LCD for Printing Calculators
- Cameras
- Voltage References for Instrumentation

DESCRIPTION

The SS6714 is a series of 3-terminal negative voltage regulators with output voltages internally set below the positive supply voltage. Since the SS6714 consumes less current and requires a smaller input/output voltage difference than existing industry-standard 3-terminal voltage regulators, higher capacity and longer service life can be provide in battery-powered portable equipment. The SS6714 is ideal as a power source for liquid crystal displays.

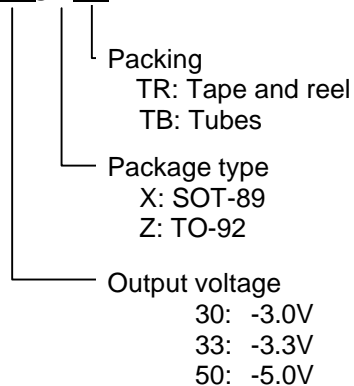
TYPICAL APPLICATION CIRCUIT



Negative Voltage Regulator

ORDERING INFORMATION

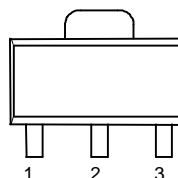
SS6714-XXCXXX



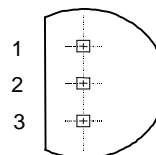
Example: SS6714-30CXTR
 → -3.0V output, in SOT-89 package
 shipped in tape and reel

PIN CONFIGURATION

SOT-89
 TOP VIEW
 1. VIN
 2. GND
 3. VOUT



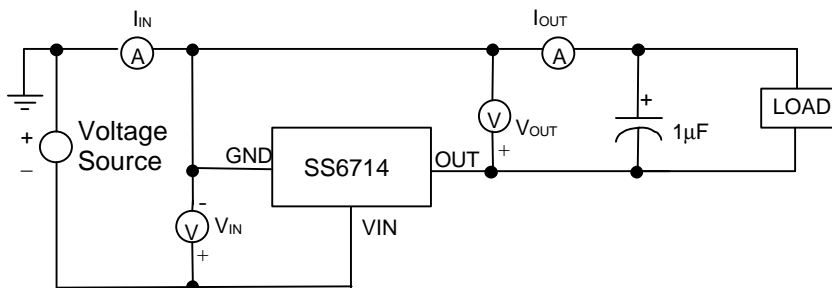
TO-92
 TOP VIEW
 1. GND
 2. VIN
 3. VOUT



ABSOLUTE MAXIMUM RATINGS

Supply Voltage	-13V
Operating Temperature Range	- 20°C~80°C
Storage Temperature Range	- 65°C~150°C
Power Dissipation	SOT-89 Package 0. 80W
	TO-92 Package 0.78W

TEST CIRCUIT



ELECTRICAL CHARACTERISTICS (VIN= -6.0V, T_J=25°C, unless otherwise specified.)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Output Voltage	I _{OUT} =300µA	SS6714-30	-2.95	-3.0	-3.05	V
		SS6714-33	-3.25	-3.3	-3.35	V
		SS6714-50	-4.93	-5.0	-5.07	V
Load Regulation	I _{OUT} =0~5mA	ΔV _{OUT}		20	100	mV
I/O Voltage Difference	I _{OUT} =300µA	V _{DIFF}		50	200	mV
Supply Current	I _{OUT} =0	I _{IN}		6	12	µA
Input Stability		$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$		0.05		%/ V
Temperature Coefficient	-25°C~85°C	T _C		50		ppm
Output Short Circuit Current	R _{LOAD} =0		15	24		mA

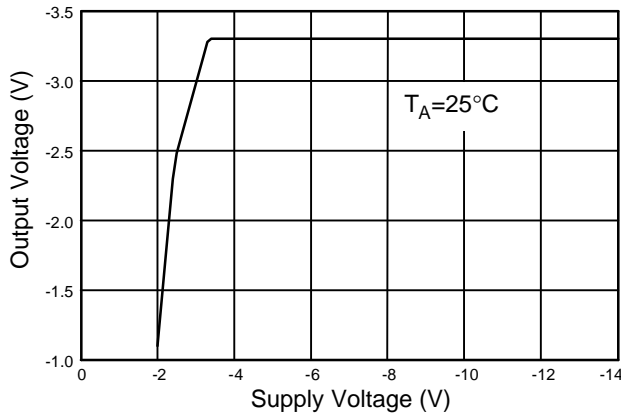
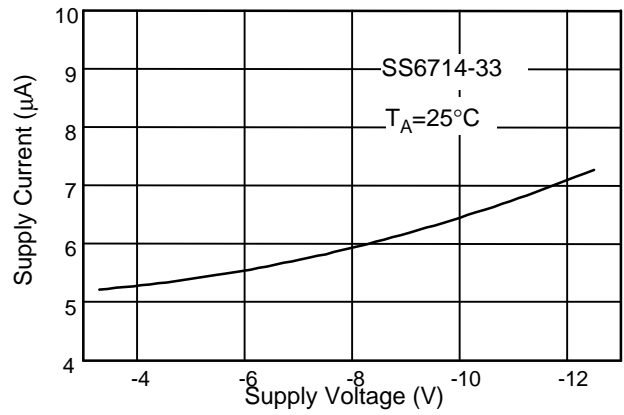
TYPICAL PERFORMANCE CHARACTERISTICS


Fig. 1 Output Voltage vs. Supply Voltage
(Load Current=300 μA)



Supply Current vs. Supply Voltage
(No Load)

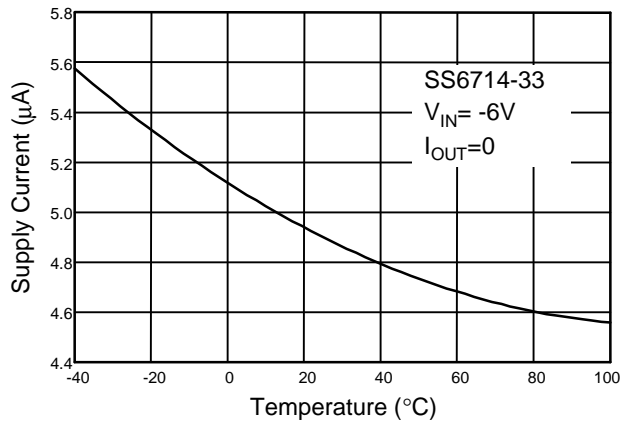


Fig. 3 Supply Current vs Temperature

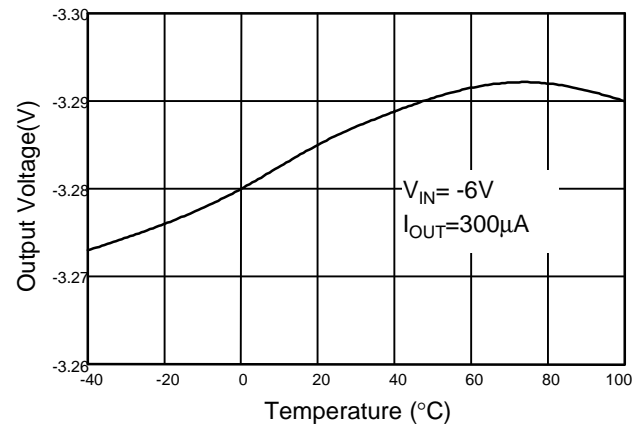


Fig. 4 Output Voltage vs Temperature

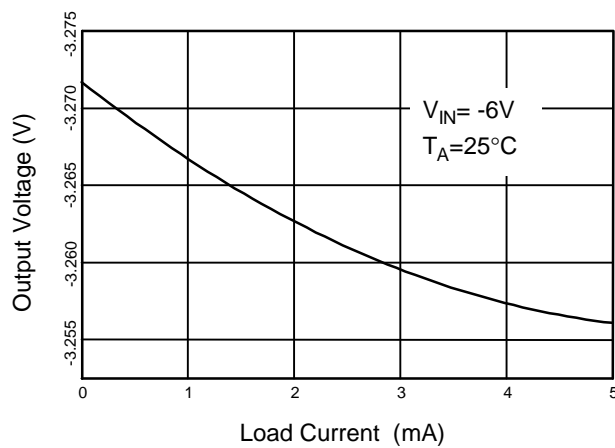
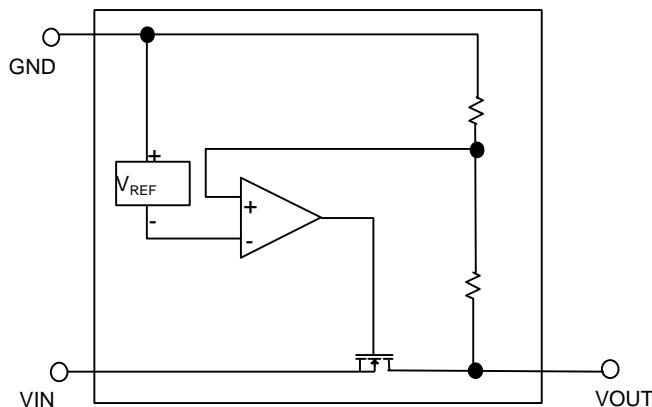


Fig. 5 Output Voltage vs Load Current

BLOCK DIAGRAM



PIN DESCRIPTIONS

VOUT PIN - Output pin.

GND PIN - Power GND.

VIN PIN - Power Supply Input.

APPLICATION INFORMATION

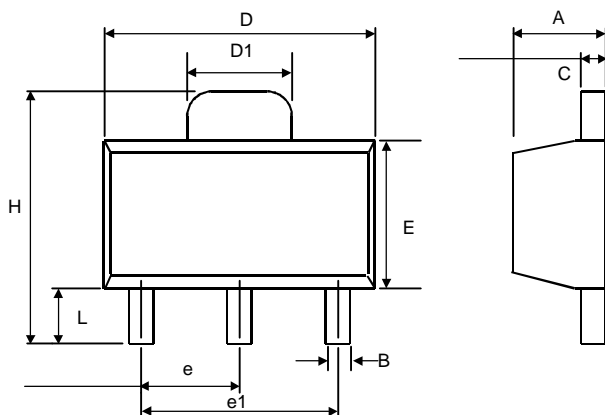
A capacitor of at least 1 μ F is required between the output of the SS6714 and ground for stability. Without this capacitor the part will oscillate. Even though most types of capacitor may work, the equivalent series resistance (ESR) should be held to 5 Ω or less if an aluminum electrolytic type is used. Many aluminum electrolytic capacitors have electrolytes that freeze at about -30°C, so solid

tantalum capacitors are recommended for operation below -25°C. The value of this capacitor may be increased without limit.

A capacitor of at least 0.1 μ F should be placed from the input of the SS6714 to ground if the lead inductance between the input and power source exceeds 500nH (approximately 10 inches of trace).

PHYSICAL DIMENSIONS

SOT-89 (unit: mm)

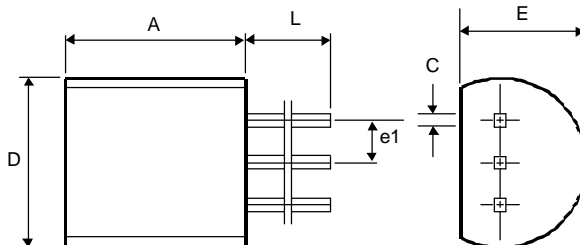


SYMBOL	MIN	MAX
A	1.40	1.60
B	0.36	0.48
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 (TYP.)	
e1	3.00 (TYP.)	
H	3.94	4.25
L	0.89	1.20

SOT89 Marking

Part No.	Marking
SS6714-30	AP30
SS6714-33	AP33
SS6714-50	AP50

TO-92 (unit: mm)



SYMBOL	MIN	MAX
A	4.32	5.33
C	0.38 (TYP.)	
D	4.40	5.20
E	3.17	4.20
e1	1.27 (TYP.)	
L	12.7	-

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