Negative Voltage Regulator

FEATURES

Low power consumption.

Low temperature coefficient.

Output short-circuit protection.

Wide operating voltage range.

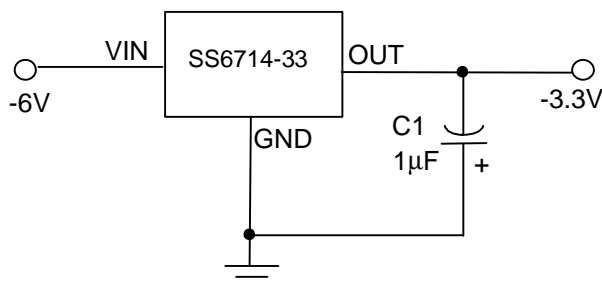Good input stability.

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.
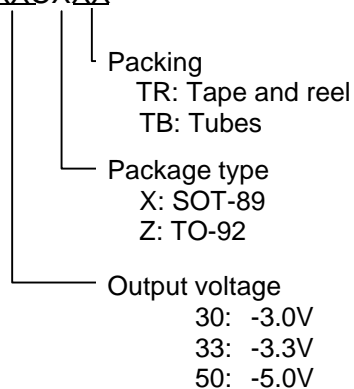
TYPICAL APPLICATION CIRCUIT

Negative Voltage Regulator

ORDERING INFORMATION

SS6714-XXCXXX

Packing
TR: Tape and reel
TB: Tubes

Package type
X: SOT-89
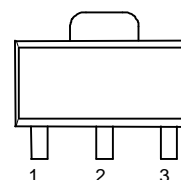Z: TO-92

Output voltage
30: -3.0V
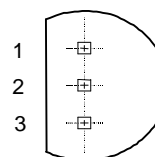33: -3.3V
50: -5.0V

Example: SS6714-30CXTR

→ -3.0V output, in SOT-89 package

shipped in tape and reel

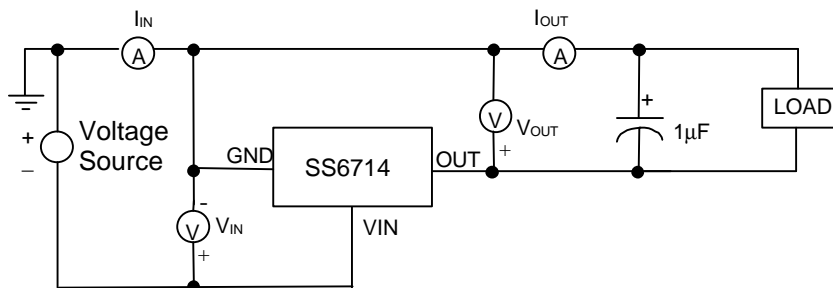## PIN CONFIGURATION

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, TJ=25°C, unless otherwise specified.)

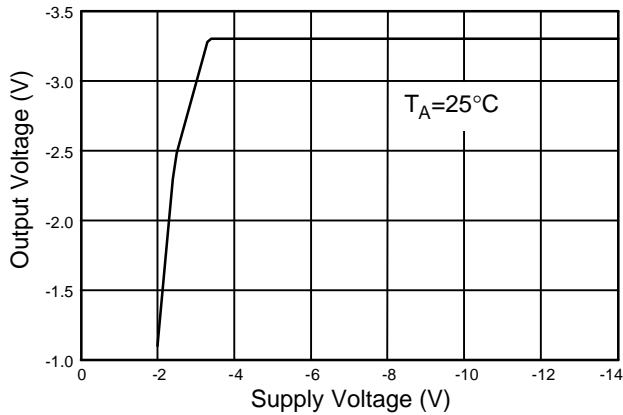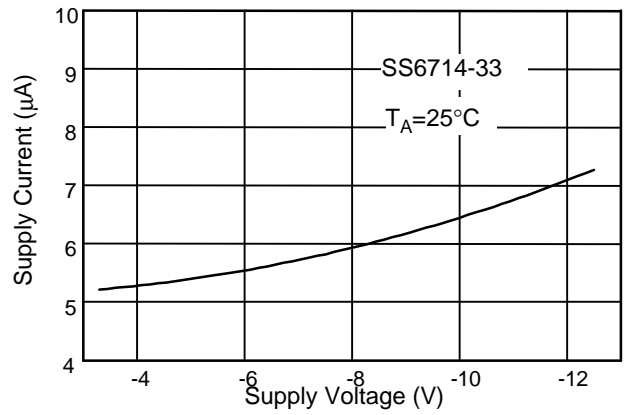| PARAMETER	TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNIT
Output Voltage	I_{OUT}=300µA	SS6714-30	V_{OUT}	-2.95	-3.0	-3.05	V
		SS6714-33		-3.25	-3.3	-3.35	V
		SS6714-50		-4.93	-5.0	-5.07	V
Load Regulation	I_{OUT}=0~5mA		ΔV_{OUT}		20	100	mV
I/O Voltage Difference	I_{OUT}=300µA		V_{DIFF}		50	200	mV
Supply Current	I_{OUT}=0		I_{IN}		6	12	µA
Input Stability			$\dfrac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$		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=300μA)

Supply Current Voltage vs. Supply Voltage
(No Load)
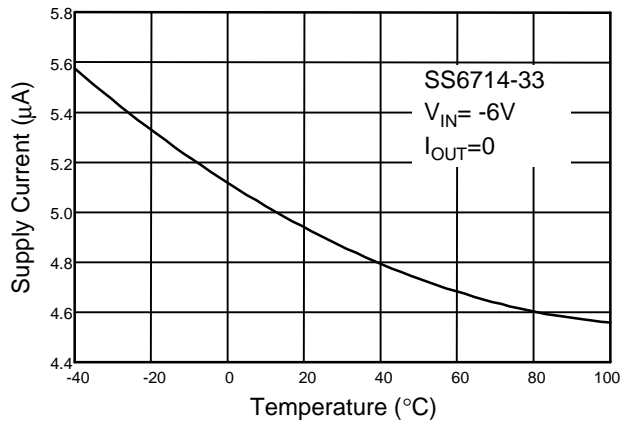
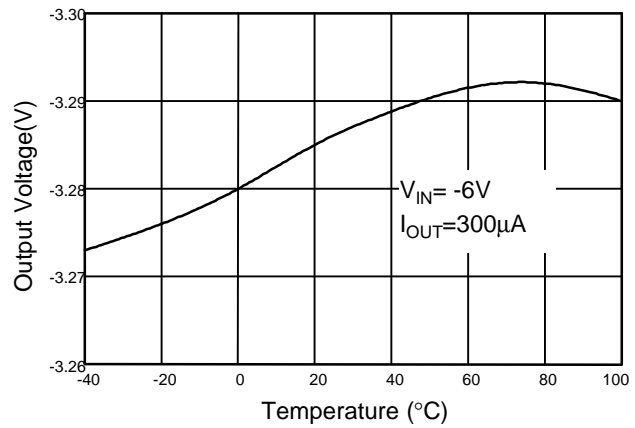Fig. 3   Supply Current vs Temperature
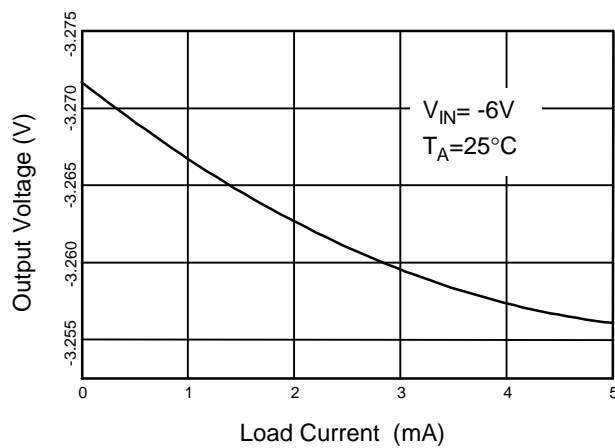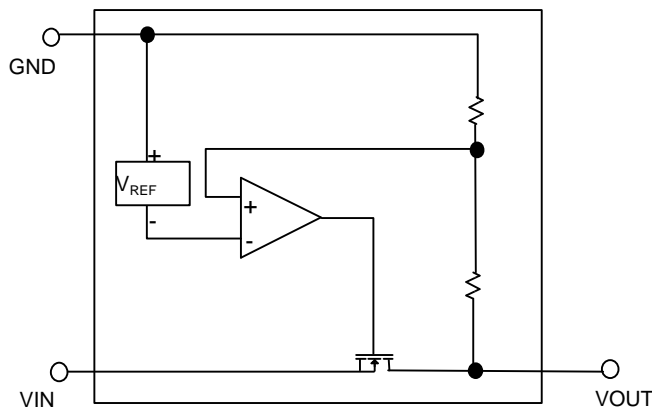
Fig 4   Output Voltage vs Temperature

Fig. 5   Output Voltage vs Load Current

BLOCK DIAGRAM

PIN DESCRIPTIONS

VOUT PIN - Output pin.

GND PIN   - Power GND.

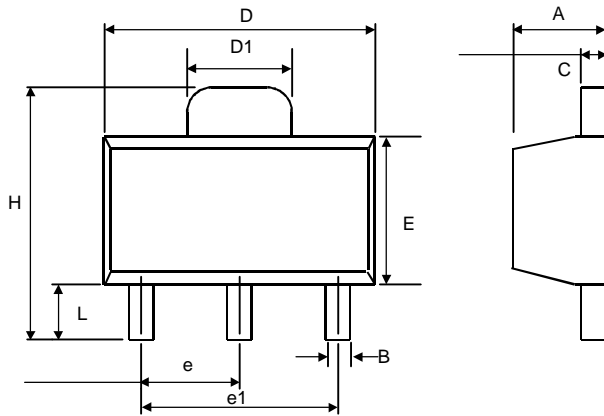VIN PIN   - Power Supply Input.

APPLICATION INFORMATION

A capacitor of at least 1µF 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 5Ω 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 0.1µF 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).
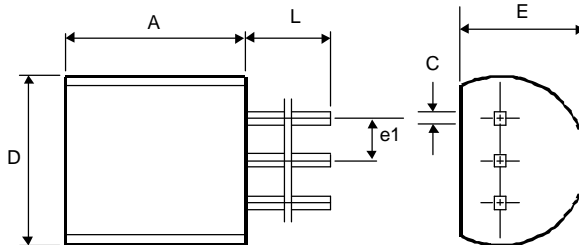
PHYSICAL DIMENSIONS

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	-