SK79LXX 150mA Negative Voltage Regulators

GENERAL DESCRIPTION

The SK79LXX series negative voltage regulators feature thermal overload protection and short-circuit protection, making them remarkably rugged. In most applications, no external components are required for operation. If adequate heat-sink is provided, they can deliver up to 150mA output current.

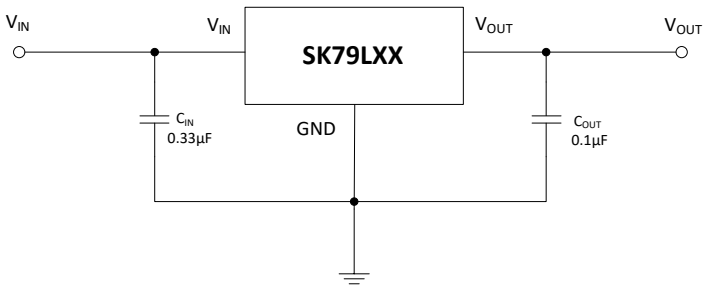
The SK79LXX series are intended as fixed voltage regulators in a wide range of applications including local or on card regulation for elimination of noise and distribution problems associated with single-point regulation. In addition, they can be used with power pass elements to make high-current voltage regulators.

The SK79LXX series are available in SOT89-3 package.

FEATURES

- Maximum Output Current: 150mA
- Built-in Short-Circuit Protection
- Internal Thermal Overload Protection

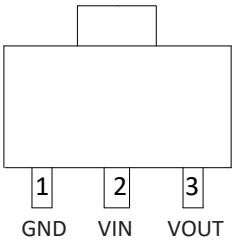
TYPICAL APPLICATION CIRCUIT



Note: It's recommended that the regulator input be bypassed with a capacitor if the regulator is connected to the power supply filter with long wire length, or if the output load capacitance is large. An input bypass capacitor should be selected to provide good high frequency characteristics to insure stable operation under all load conditions. A 0.33µF or larger tantalum, mylar, or other capacitor having low internal impedance at high frequencies should be chosen. The bypass capacitor should be mounted with the shortest possible leads directly across the regulator's input terminals. Normally good construction techniques should be used to minimize ground loops and lead resistance drops since the regulator has no external sense lead. Bypassing the output is also recommended.

PIN CONFIGURATION

TOP VIEW



SOT89-3L

PIN DESCRIPTION

PIN NO.	PIN NAME	FUNCTION
1	GND	GND pin
2	VIN	Input voltage pin
3	VOUT	Output voltage pin

ORDERING INFORMATION

Part No.	Output Voltage	Package	TAPE & REEL
SK79L05	-5.0V	SOT89-3L	1000
SK79L06	-6.0V		1000
SK79L08	-8.0V		1000
SK79L09	-9.0V		1000
SK79L12	-12.0V		1000
SK79L15	-15.0V		1000

ABSOLUTE MAXIMUM RATINGS

T_A=25°C

Parameter	Rating	Unit
Input supply voltage: VIN MAX	-35	V
MAX. Output current: Iout	-150	mA
MAX Power: Pmax	0.5	W
Junction temperature: Tj	-55~150	°C
Operation temperature: Topr	-40~125	°C
Storage temperature: Tstr	-55~150	°C
Soldering temperature and time	+260(Recommended 10s)	°C

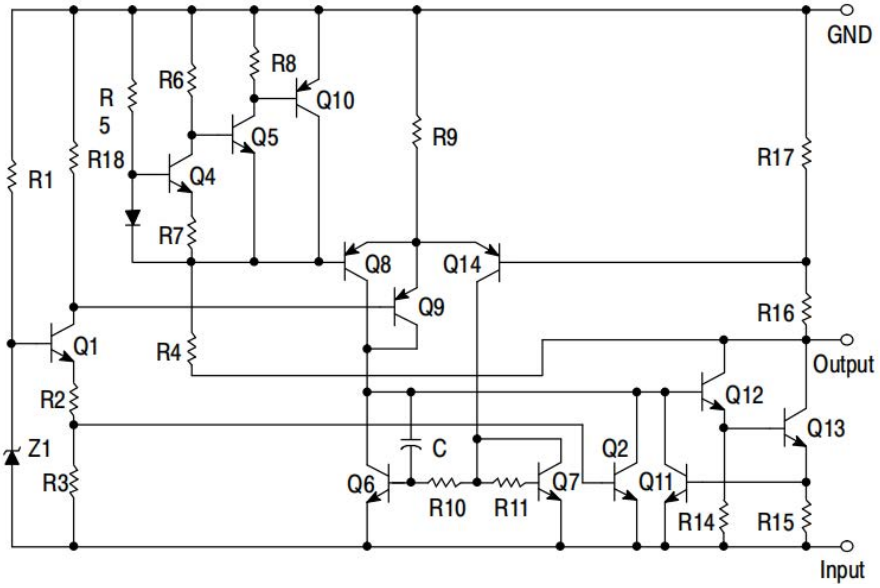
Note: The Absolute Maximum Ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.

ELECTRICAL CHARACTERISTICS

The following specifications are based on the SK79L06, and under the condition of C_{IN}=C_{OUT}=1μF, T_A=25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V_{out}	Io=40mA, V_{IN}=-10V	-5.784	-6	-6.216	V
		Io=1mA ~ 40m A VIN=-7V ~ -18V	-5.760	-6	-6.240	
		Io=1mA ~ 100mA V_{IN}=-10V	-5.700	-6	-6.300	
Line Regulation	LNR	V_{IN}=-7V ~ -18V, Io=10mA	-50	-	50	mV
		V_{IN}=-8V ~ -18V, Io=10mA	-30	-	30	
Load Regulation	LDR	V_{IN}=-10V, Io=1mA ~ 100mA	-90	-	90	mV
		V_{IN}=-10V, Io=1mA ~ 40mA	-60	-	60	
Dropout Voltage	V_{DIF}	T_A=25°C, Io=100mA	-	1	-	V
Output noise Voltage	V_N	F=10Hz to 100KHz	-	200	-	uV/Vo
Ripple Rejection	PSRR	Ta=25°C, f=120H z, Io=-40mA, V_{IN}=-8V e_{IN}=1Vpp	-	60	-	dB
Quiescent Current	I_Q	V_{IN}=-10V	-	3	-	mA

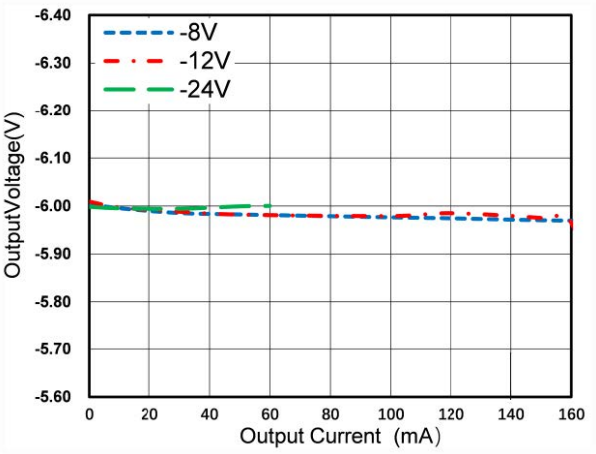
BLOCK DIAGRAM



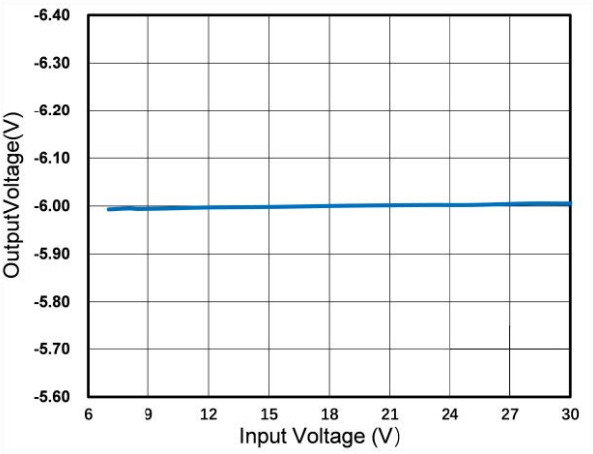
TYPICAL PERFORMANCE CHARACTERISTICS

C_{IN}=0.33µF, C_{OUT}=0.1µF, T_A=25°C, unless specified otherwise.

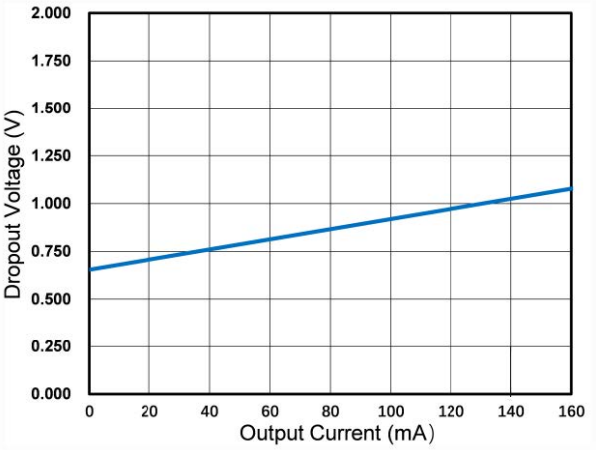
Output Voltage **VS** Output Current
(V_{OUT}=-6.0V)



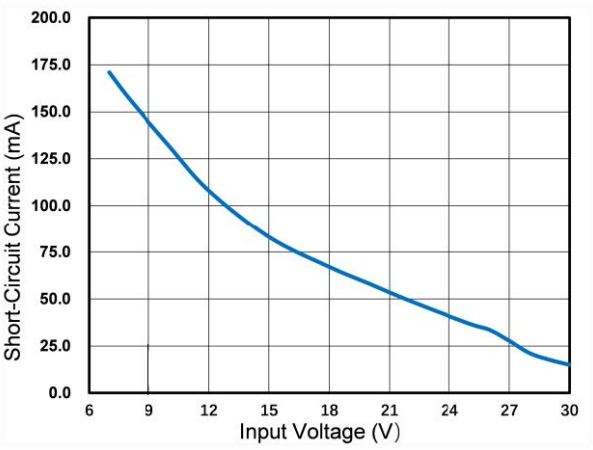
Output Voltage **VS** Input Voltage
(V_{OUT}=-6.0V)



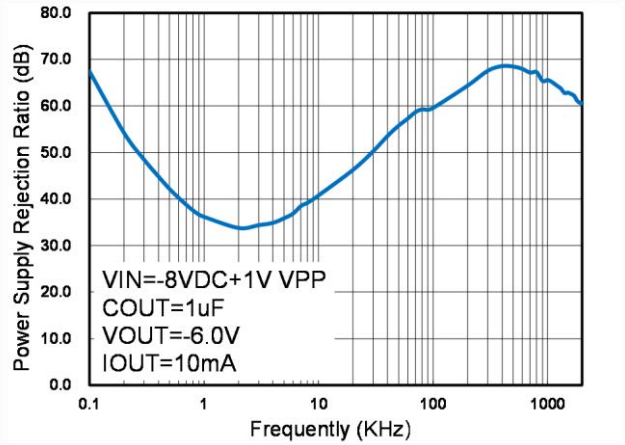
Dropout Voltage **VS** Output Current
(V_{OUT}=-6.0V)



Short-Circuit Current **VS** Input Voltage
(V_{OUT}=-6V)

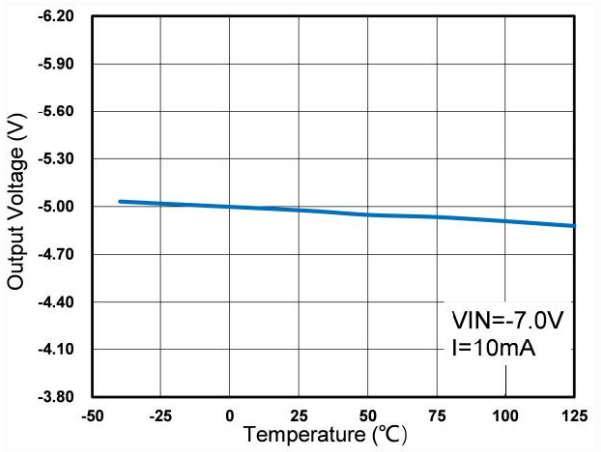


PSRR

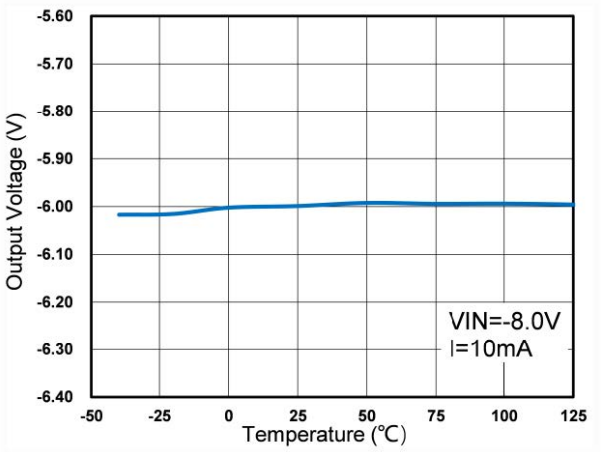


TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

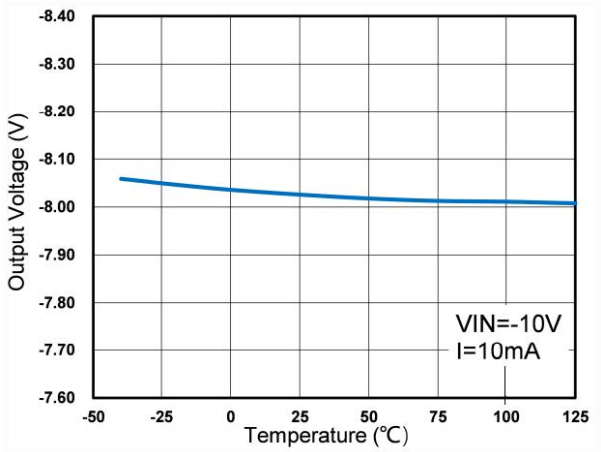
Output Voltage VS Temperature
(V_{OUT}=-5.0V)



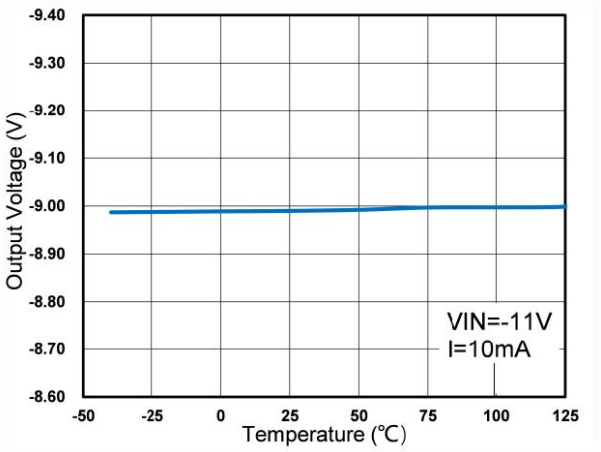
Output Voltage VS Temperature
(V_{OUT}=-6.0V)



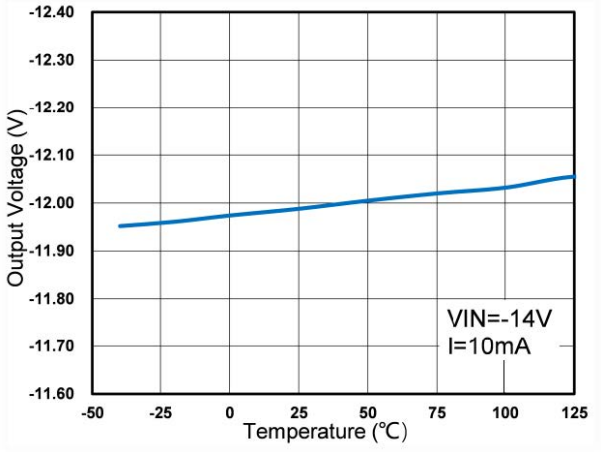
Output Voltage VS Temperature
(V_{OUT}=-8.0V)



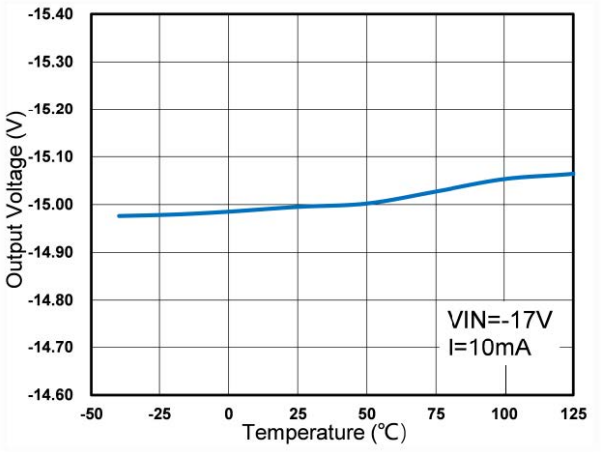
Output Voltage VS Temperature
(V_{OUT}=-9.0V)



Output Voltage VS Temperature
(V_{OUT}=-12.0V)

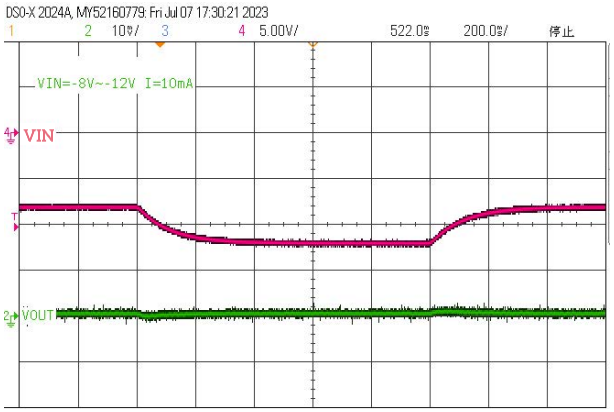


Output Voltage VS Temperature
(V_{OUT}=-15.0V)

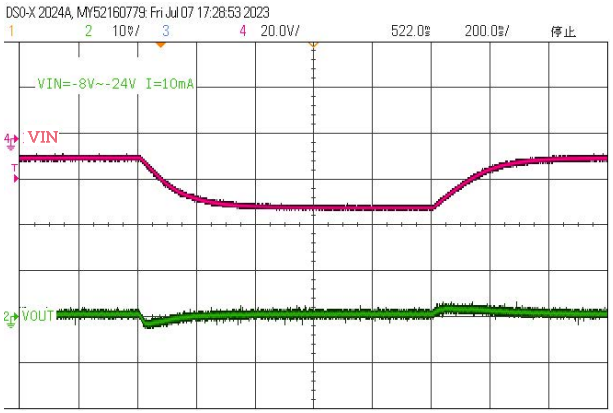


TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

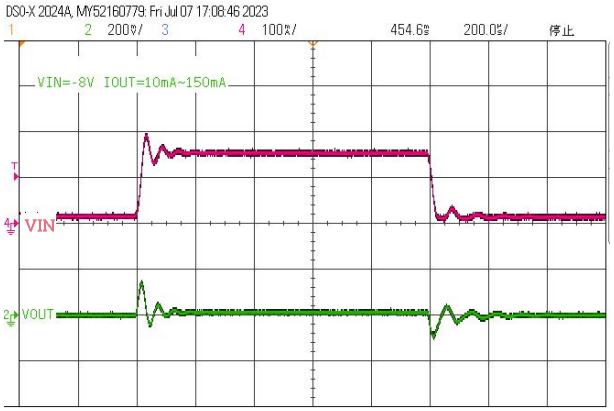
Input Transient Response
(V_{IN}=-8V ~ -12V)



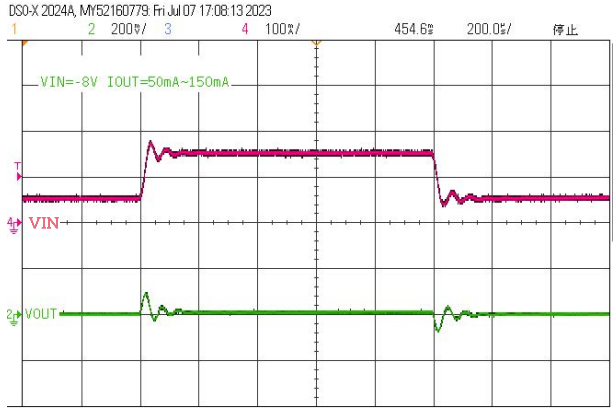
Input Transient Response
(V_{IN}=-8V ~ -24V)



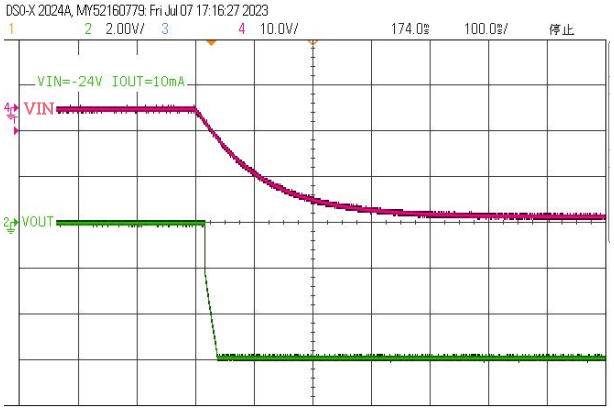
Load Transient Response
(I_{OUT}=10mA ~ 150mA)



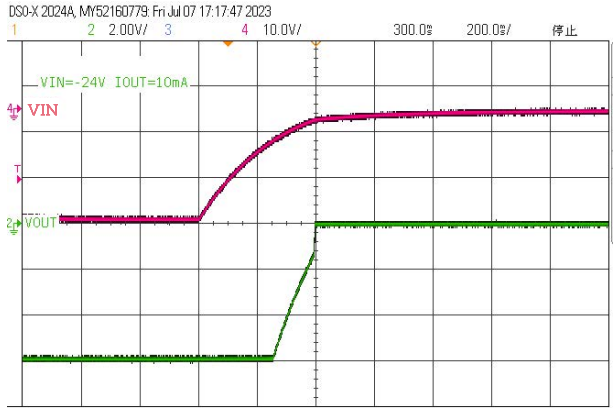
Load Transient Response
(I_{OUT}=50mA ~ 150mA)



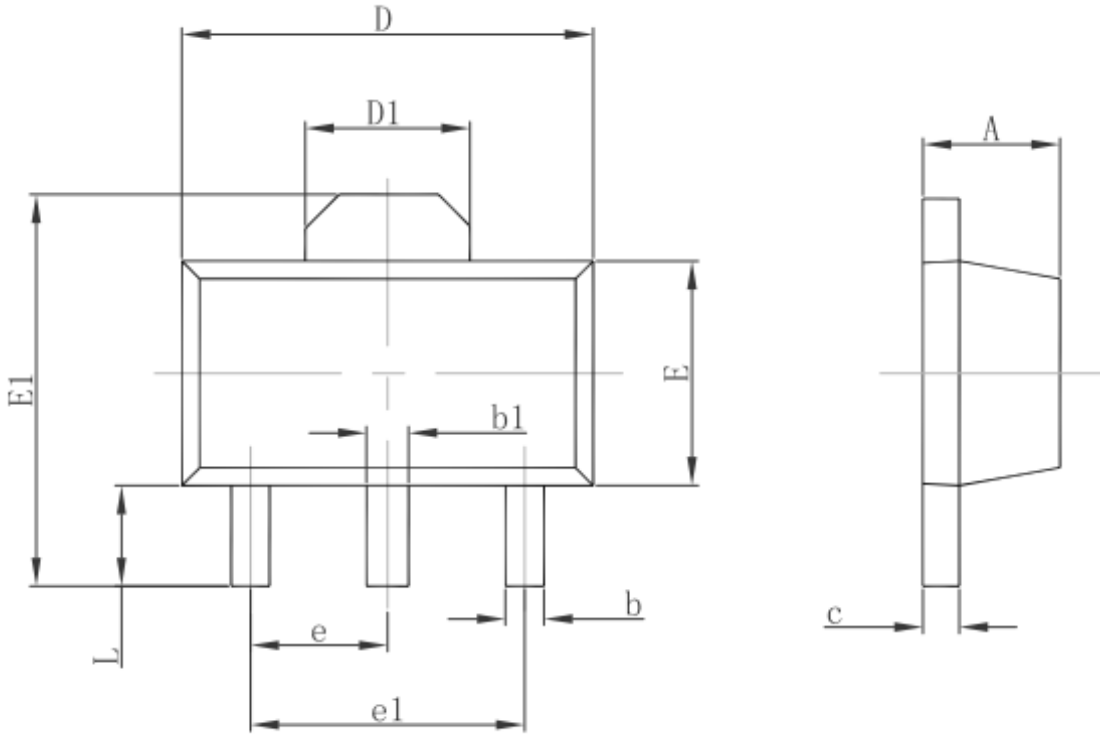
Power ON
(V_{IN}=-24V, I_{OUT}=10mA)



Power OFF
(V_{IN}=-24V, I_{OUT}=10mA)



PACKAGE DIMENSIONS: SOT89-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047