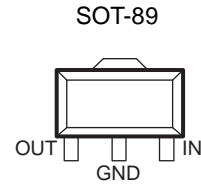




## FEATURES

- Wide range of available, fixed output voltage.
- Low cost.
- Internal short-circuit current limiting.
- Internal thermal overload protection.
- No external components required.

## PIN DESCRIPTION



## APPLICATIONS

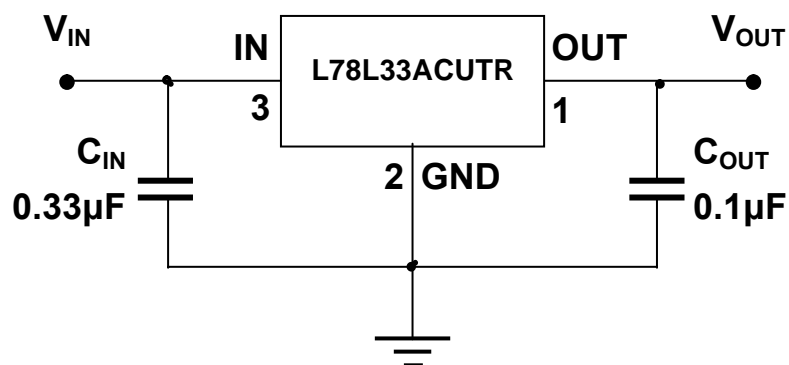
- Three-terminal positive voltage regulator.

## MAXIMUM RATING

 operating temperature range applies unless otherwise specified

Symbol	Parameter	Value	Units
$V_I$	Input voltage	30	V
$I_{CM}$	Maximum output current	100	mA
$P_D$	Power dissipation	500	mW
$T_{OPR}$	Operating junction temperature	0 to +125	°C
$T_j, T_{stg}$	Storage temperature range	-40 to +150	°C

## TYPICAL APPLICATION CIRCUIT



**Conventional Circuit**



## ELECTRICAL CHARACTERISTICS

( $V_{IN}=10V, I_O=40mA, 0^{\circ}C < T_j < 125^{\circ}C, C_I=0.33\mu F, C_O=0.1\mu F$ , unless otherwise specified)

Parameter	Symbol	Test conditions	78L33			UNIT
			MIN	TYP	MAX	
Output voltage	$V_O$	$T_j=25^{\circ}C$ $5.3V \leq V_i \leq 20V, I_O=1mA-40mA$ $V_i=8.3V, I_O=1mA-70mA$	3.168 3.135 3.135	3.3	3.432 3.465 3.465	V
Load regulation	$Reg_{load}$	$T_j=25^{\circ}C, I_O=1mA-100mA$ $T_j=25^{\circ}C, I_O=1mA-40mA$			60 30	mV
Line regulation	$Reg_{line}$	$5.3V \leq V_i \leq 20V, T_j=25^{\circ}C$ $6.3V \leq V_i \leq 20V, T_j=25^{\circ}C$			150 100	mV
Input Bias Current	$I_{IB}$	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$			6.0 5.5	mA
Input Bias Current Change	$\Delta I_{IB}$	$6.3V \leq V_i \leq 20V$ $1mA \leq I_O \leq 40mA$			1.5 0.1	mA
Output noise voltage	$V_N$	$10Hz \leq f \leq 100KHz$		40		$\mu V$
Ripple rejection	RR	$I_O=40mA, 6.3V \leq V_i \leq 16.3V$ $f=120Hz, T_j=25^{\circ}C$	41	49		dB
Dropout voltage	$V_I-V_O$	$T_j=25^{\circ}C$		1.7		V



TYPICAL CHARACTERISTICS @  $T_a=25^\circ\text{C}$  unless otherwise specified

Figure 1. Dropout Characteristics

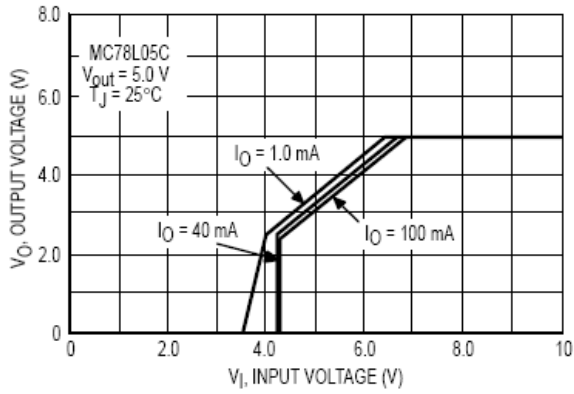


Figure 2. Dropout Voltage versus Junction Temperature

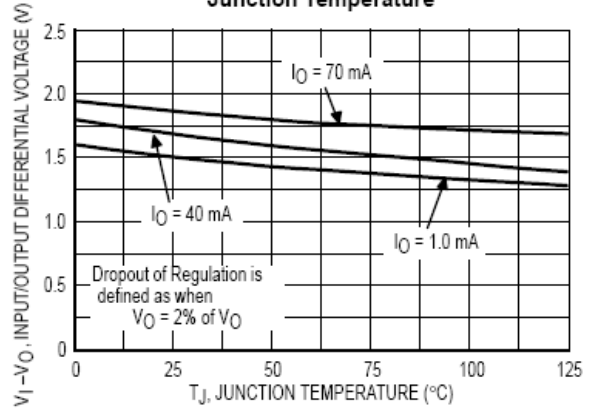


Figure 3. Input Bias Current versus Ambient Temperature

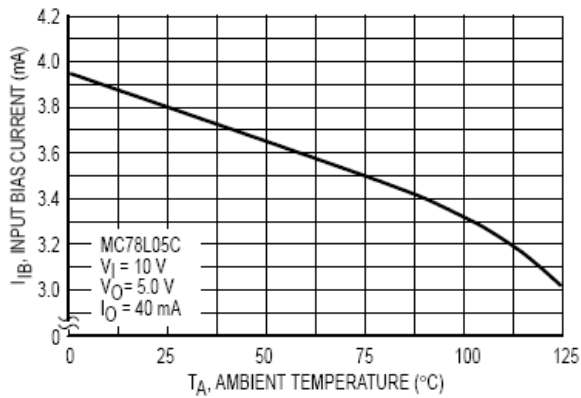
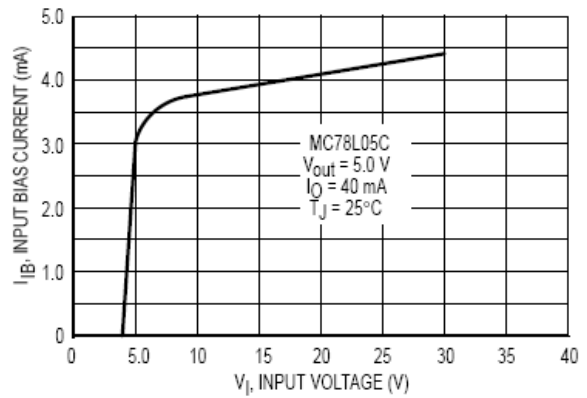


Figure 4. Input Bias Current versus Input Voltage

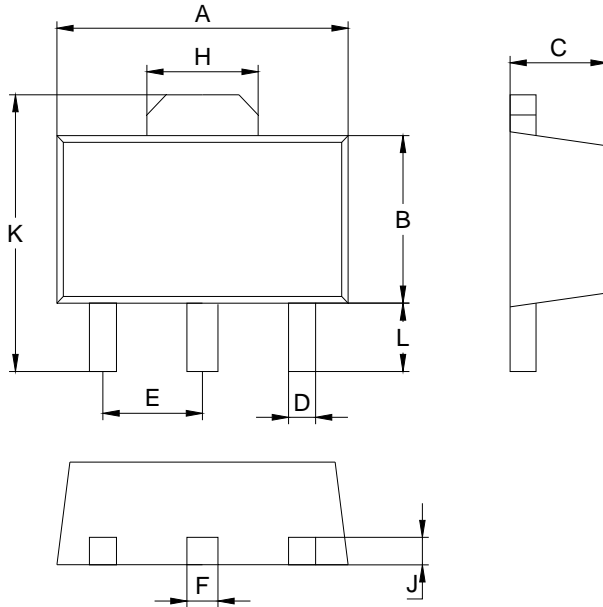




## PACKAGE OUTLINE

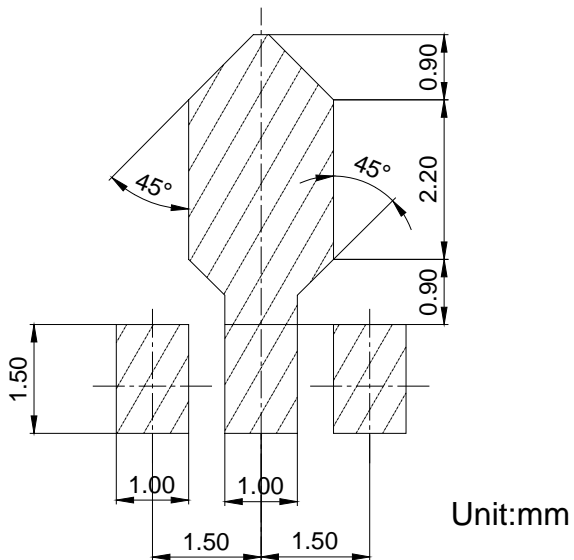
Plastic surface mounted package

SOT-89



SOT-89		
Dim	Min	Max
A	4.30	4.70
B	2.25	2.65
C	1.50 Typical	
D	0.40 Typical	
E	1.40	1.60
F	0.48 Typical	
H	1.60	1.80
J	0.40 Typical	
L	0.90	1.10
K	3.95	4.35
All Dimensions in mm		

## SOLDERING FOOTPRINT





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