

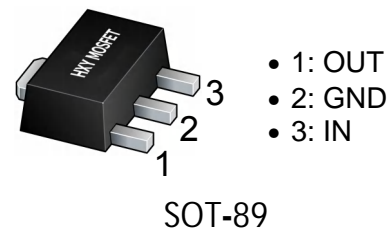


### FEATURES

- Available Output Voltage:9.0V
- Maximum Input Voltage:  
30V for  $V_{OUT} < 10V$
- Maximum Output Current:  
Exceed 100mA at  $T_J = 25^{\circ}C$
- Output Tolerances:  
 $\pm 3\%$  at  $T_J = 25^{\circ}C$   
 $\pm 5\%$  over the Operating  $T_J$
- No External Components

### Applications

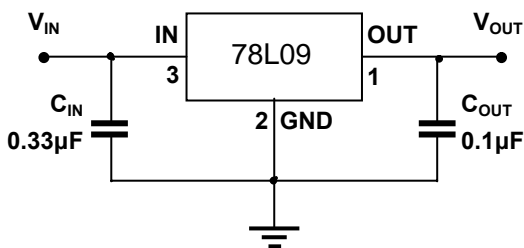
- TV Board
- Air Conditioner
- Vehicle Mounted Radar
- Charging Device



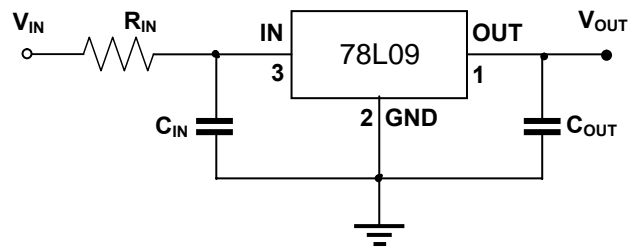
### Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
78L09	SOT-89	78L09	1000

### Typical Application Circuit



Conventional Circuit



Resistance are used at IN



**Absolute Maximum Ratings**

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Maximum input voltage	$V_{IN}$	30	V
Maximum junction temperature	$T_{J\ Max}$	150	°C
Storage temperature	$T_{stg}$	- 65 ~ 150	°C
Soldering temperature & time	$T_{solder}$	260°C, 10s	-

**Electrical Characteristics (continued)**

78L09 ( $V_{OUT} = 9.0V$ ,  $V_{IN} = 16V$ ,  $I_{OUT} = 40mA$ ,  $C_{IN} = 0.33\mu F$ ,  $C_{OUT} = 0.1\mu F$ ,  $T_J = 25^\circ C$ , unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	MIN.	TYP. <sup>(1)</sup>	MAX.	UNIT
Input voltage	$V_{IN}$	-	-	-	30	V
Output voltage	$V_{OUT}$	$T_J = 25^\circ C$	8.73	9.00	9.27	V
		$V_{IN} = 12$ to $24V$ , $I_{OUT} = 1$ to $40mA$	8.55	9.00	9.45	
		$I_{OUT} = 1$ to $70mA$	8.55	9.00	9.45	
Output current	$I_{OUT}$	$T_J = 25^\circ C$	100	-	-	mA
Quiescent current	$I_Q$	$I_{OUT} = 0mA$	-	4.1	6.0	mA
Quiescent current change	$\Delta I_Q$	$V_{IN} = 13$ to $24V$	-	-	1.5	mA
		$I_{OUT} = 1$ to $40mA$	-	-	0.1	mA
Dropout voltage	$V_{DO}^{(2)}$	$T_J = 25^\circ C$	-	1.7	-	V
Line regulation	$\Delta V_{LINE}$	$V_{IN} = 12$ to $24V$ , $T_J = 25^\circ C$	-	45	175	mV
		$V_{IN} = 13$ to $24V$ , $T_J = 25^\circ C$	-	40	125	
Load regulation	$\Delta V_{LOAD}$	$I_{OUT} = 1$ to $100mA$ , $T_J = 25^\circ C$	-	19	90	mV
		$I_{OUT} = 1$ to $40mA$ , $T_J = 25^\circ C$	-	11	40	
Output noise voltage	$V_N$	$f = 10$ to $100kHz$ , $T_J = 25^\circ C$	-	58	-	$\mu V/V_{OUT}$
Ripple rejection	RR	$V_{IN} = 15$ to $25V$ , $f = 120Hz$	37	45	-	dB

**Note:**

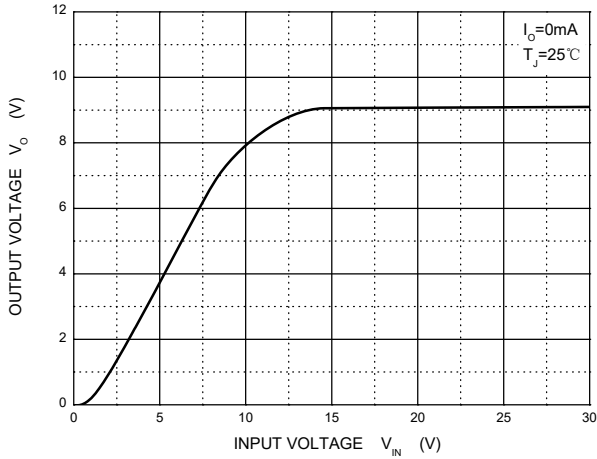
(1) Typical numbers are at  $25^\circ C$  ( $T_J$ ) and represent the most likely norm.

(2) Test the difference of output voltage and input voltage when input voltage is decreased gradually till output voltage equals to 95% of  $V_{OUT}$ .

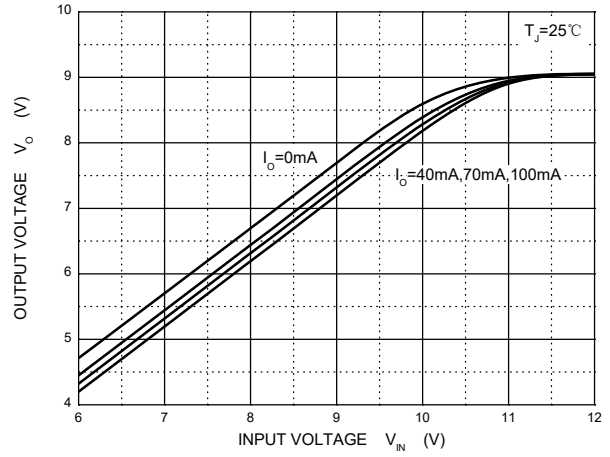


### Typical Characteristics

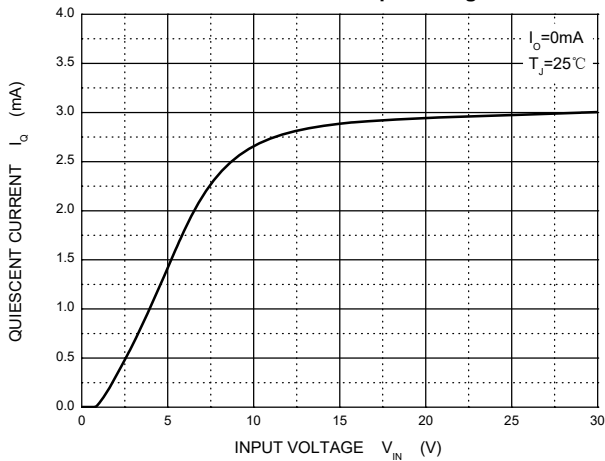
Output Characteristics



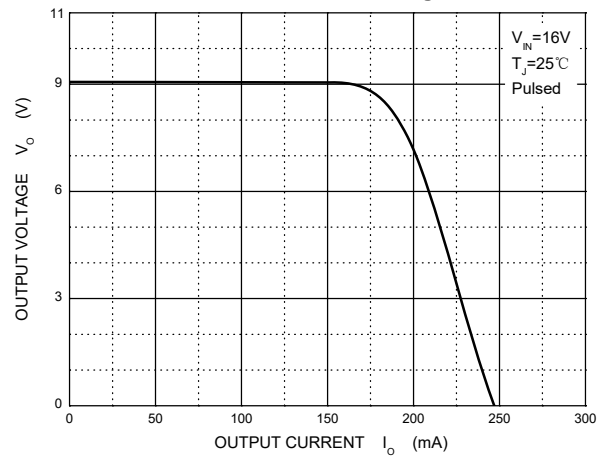
Dropout Characteristics



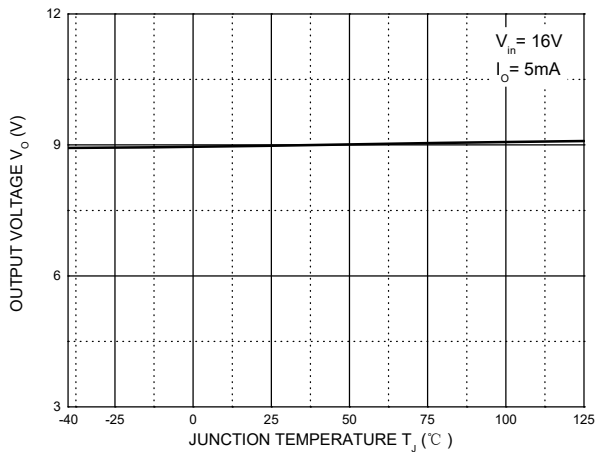
Quiescent Current vs Input Voltage



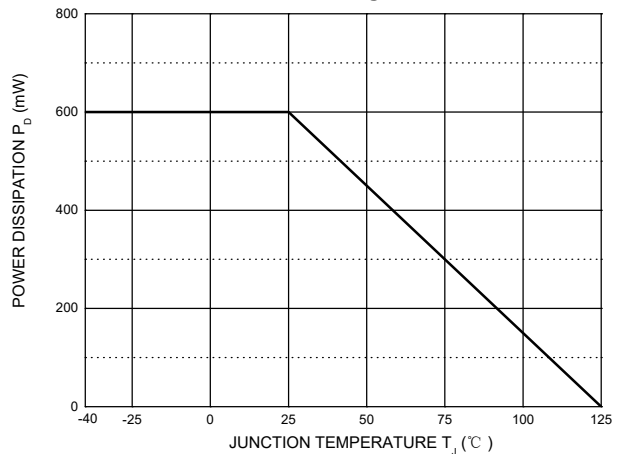
Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature

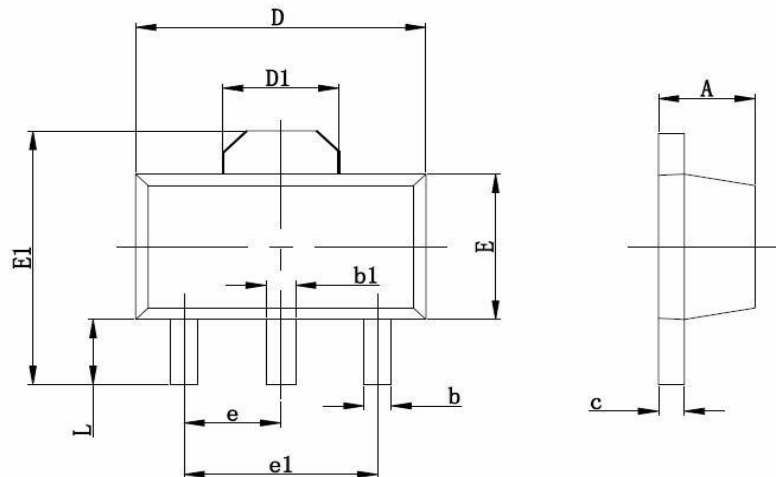


Power Derating Curve





### SOT-89 Package Outline Dimensions



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



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