

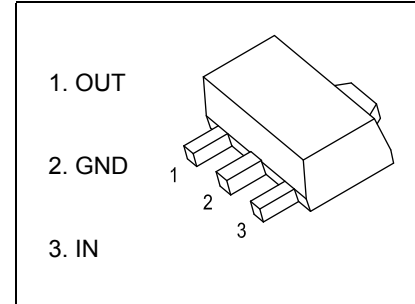
## SOT-89 Plastic-Encapsulate Voltage Regulators

### 78L12 Three-terminal positive voltage regulator

### SOT-89-3L

#### FEATURES

- Maximum output current  
 $I_{OM}: 0.1A$
- Output voltage  
 $V_O: 12V$
- Continuous total dissipation  
 $P_D: 0.6 W (T_a = 25^\circ C)$



#### ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

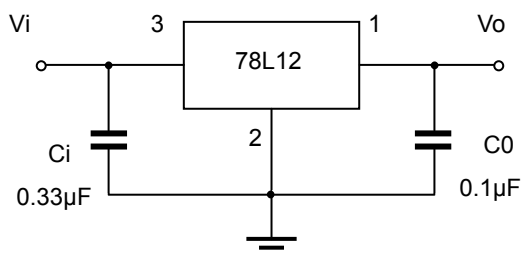
Parameter	Symbol	Value	Unit
Input Voltage	$V_i$	30	V
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	166.7	$^\circ C/W$
Operating Junction Temperature Range	$T_{OPR}$	-40~+125	$^\circ C$
Storage Temperature Range	$T_{STG}$	-65~+150	$^\circ C$

#### ELECTRICAL CHARACTERISTICS AT SPECIFIED VIRTUAL JUNCTION TEMPERATURE ( $V_i=19V, I_o=40mA, C_i=0.33\mu F, C_o=0.1\mu F$ , unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit	
Output voltage	$V_o$	$25^\circ C$	11.5	12	12.5	V	
		0-125 $^\circ C$	$14V \leq V_i \leq 27V, I_o = 1mA-40mA$	11.4	12	12.6	V
			$I_o = 1mA-70mA$	11.4	12	12.6	V
Load Regulation	$\Delta V_o$	$I_o = 1mA-100mA$	$25^\circ C$		22	100	mV
		$I_o = 1mA-40mA$	$25^\circ C$		13	50	mV
Line regulation	$\Delta V_o$	$14.5V \leq V_i \leq 27V$	$25^\circ C$		55	250	mV
		$16V \leq V_i \leq 27V$	$25^\circ C$		49	200	mV
Quiescent Current	$I_q$	$25^\circ C$		4.3	6.5	mA	
Quiescent Current Change	$\Delta I_q$	$16V \leq V_i \leq 27V$	0-125 $^\circ C$		1.5	mA	
	$\Delta I_q$	$1mA \leq I_o \leq 40mA$	0-125 $^\circ C$		0.1	mA	
Output Noise Voltage	$V_N$	$10Hz \leq f \leq 100KHz$	$25^\circ C$		70	$\mu V/V_o$	
Ripple Rejection	RR	$15V \leq V_i \leq 25V, f=120Hz$	0-125 $^\circ C$	37	42	dB	
Dropout Voltage	$V_d$	$25^\circ C$			1.7	V	

\* Pulse test.

#### TYPICAL APPLICATION

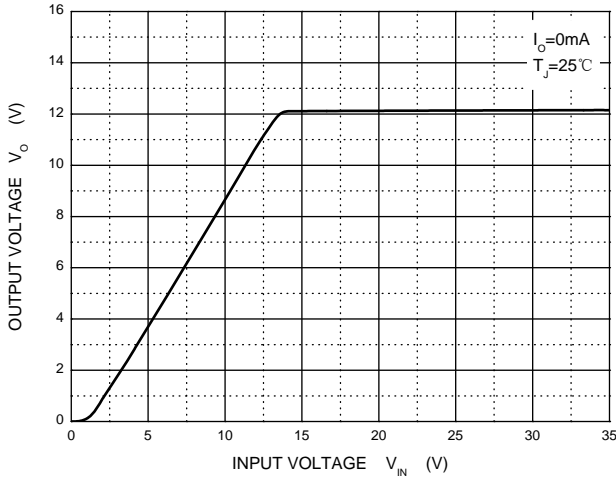


Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as

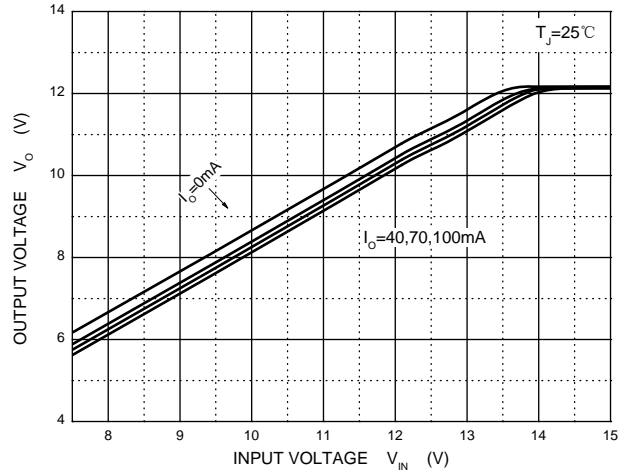
The above data are for reference only.

Typical Characteristics

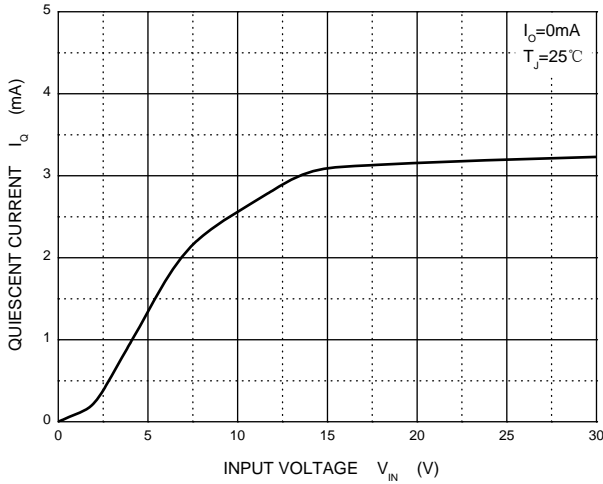
Output Characteristics



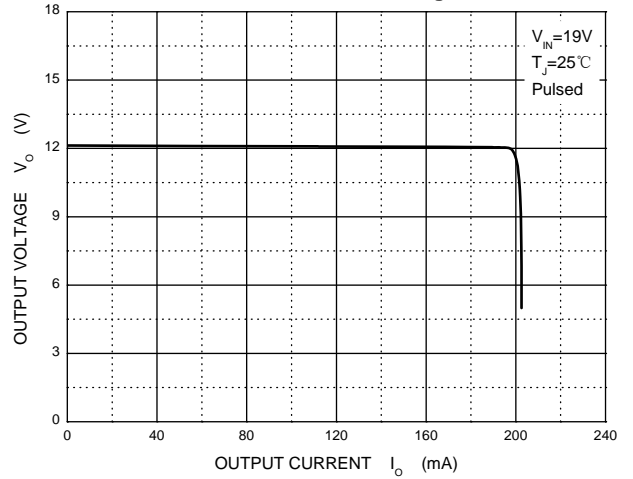
Dropout Characteristics



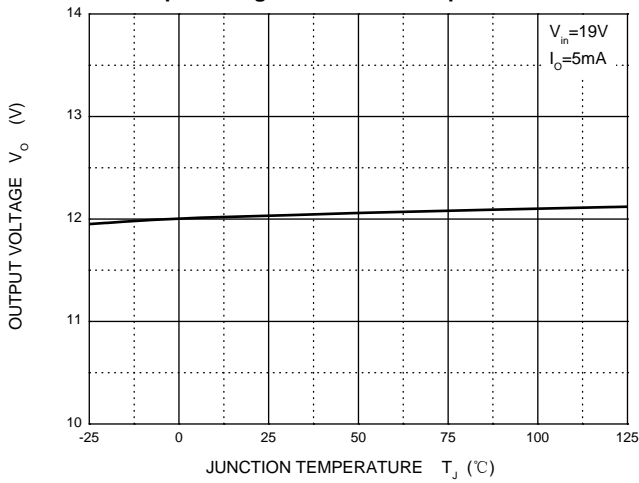
Quiescent Current



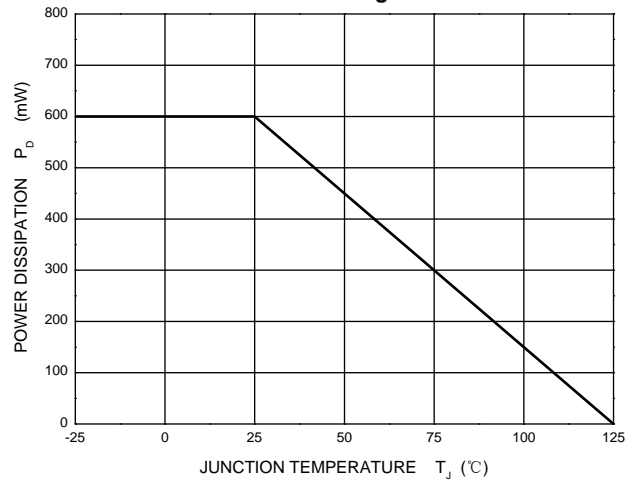
Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature

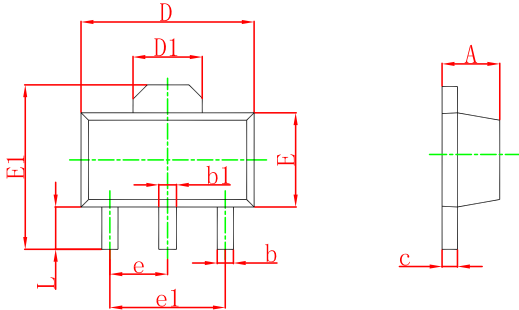


Power Derating Curve



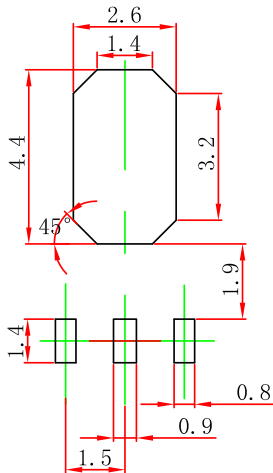
**Outline Drawing**

**SOT-89-3L 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

**SOT-89-3L Suggested Pad Layout**



Note:

1. Controlling dimension: in/millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

**PACKAGE SPECIFICATIONS**

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	G.W.(Kg)
SOT-89-3L	7'	330	1000	203×203×195	40000	438×438×220	180000