



DONGGUAN NANJING ELECTRONICS LTD.,

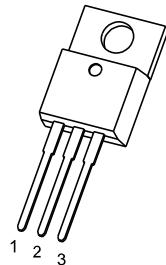
## TO-220-3L Plastic-Encapsulate Voltage Regulators

**7809** Three-terminal positive voltage regulator**FEATURES**

- Maximum output current  $I_{OM}$ : 1.5 A
- Output voltage  $V_O$ : 9V
- Continuous total dissipation  $P_D$ : 1.5W ( $T_a = 25^\circ C$ )

TO-220-3L

1. IN
2. GND
3. OUT

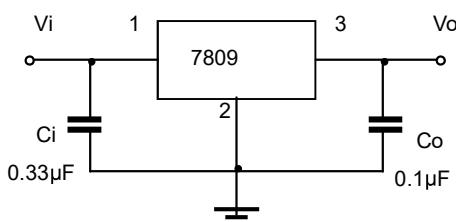
**ABSOLUTE MAXIMUM RATINGS** (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Value	Unit
Input Voltage	$V_i$	35	V
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	83.3	°C/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	8.3	°C/W
Operating Junction Temperature Range	$T_{OPR}$	-40~+125	°C
Storage Temperature Range	$T_{STG}$	-65~+150	°C

ELECTRICAL CHARACTERISTICS AT SPECIFIED VIRTUAL JUNCTION TEMPERATURE  $(V_i=16V, I_o=500mA, C_i=0.33\mu F, C_o=0.1\mu F, \text{unless otherwise specified})$ 

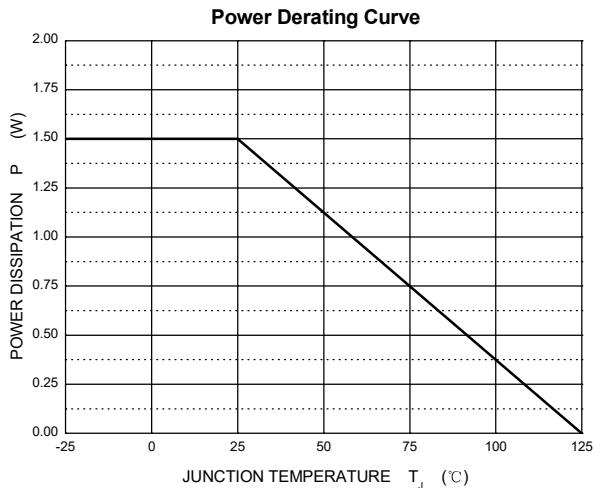
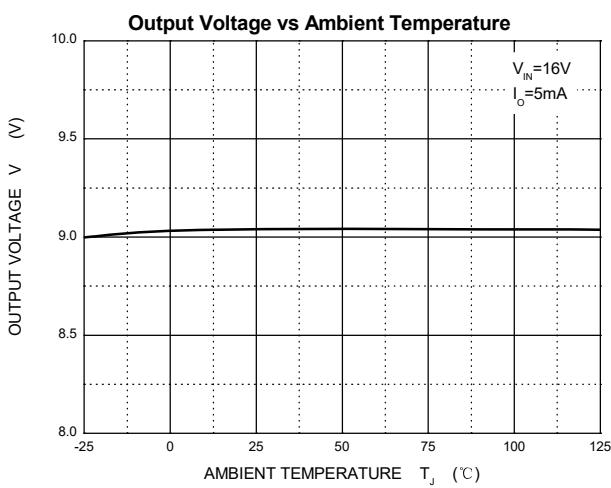
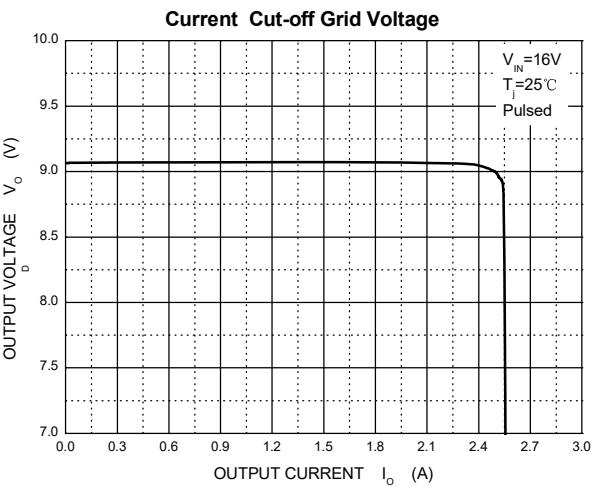
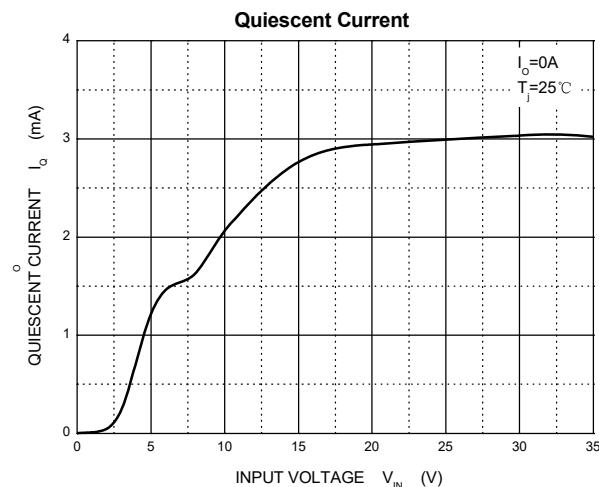
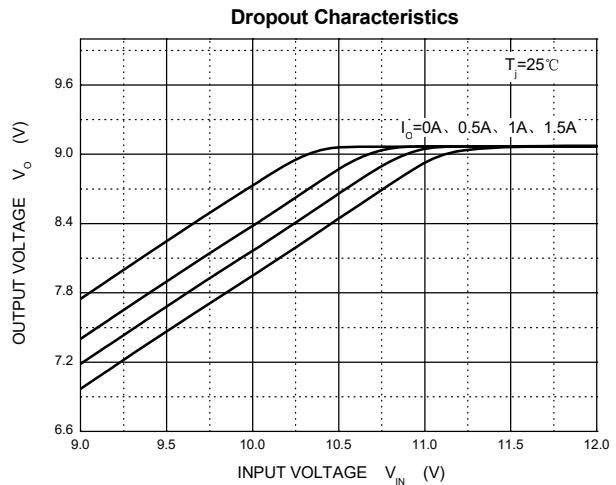
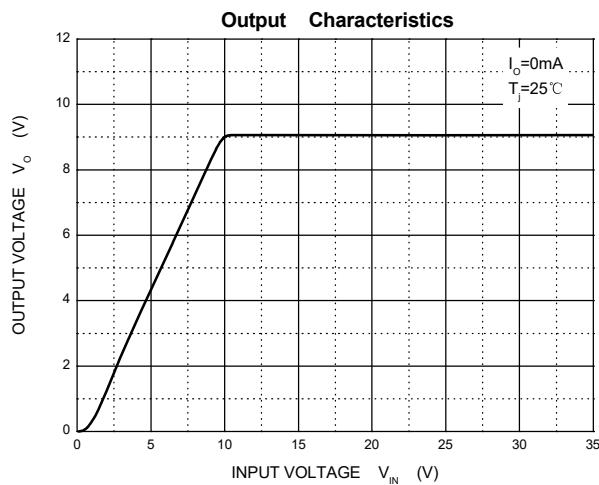
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT	
Output voltage	$V_o$	25°C	8.65	9	9.35	V	
		11.5V≤ $V_i$ ≤24V, $I_o$ = 5mA-1A, $P$ ≤15W	-25-125°C	8.55	9	9.45	V
Load Regulation	$\Delta V_o$	$I_o$ =5mA-1.5A	25°C		12	180	mV
		$I_o$ =250mA-750mA	25°C		4	90	mV
Line regulation	$\Delta V_o$	11.5V≤ $V_i$ ≤27V	25°C		7	180	mV
		13V≤ $V_i$ ≤19V	25°C		2	90	mV
Quiescent Current	$I_q$		25°C		4.3	8	mA
Quiescent Current Change	$\Delta I_q$	11.5V≤ $V_i$ ≤27V	-25-125°C			1	mA
		5mA≤ $I_o$ ≤1A	-25-125°C			0.5	mA
Output voltage drift	$\Delta V_o/\Delta T$	$I_o$ =5mA	-25-125°C		-1		mV/°C
Output Noise Voltage	$V_N$	10Hz≤f≤100KHz	25°C		60		μV/Vo
Ripple Rejection	$RR$	12V≤ $V_i$ ≤22V, f=120Hz	-25-125°C	55	70		dB
Dropout Voltage	$V_d$	$I_o$ =1A	25°C		2		V
Output resistance	$R_o$	f=1KHz	25°C		18		mΩ
Short Circuit Current	$I_{sc}$		25°C		400		mA
Peak Current	$I_{pk}$		25°C		2.2		A

\* Pulse test.

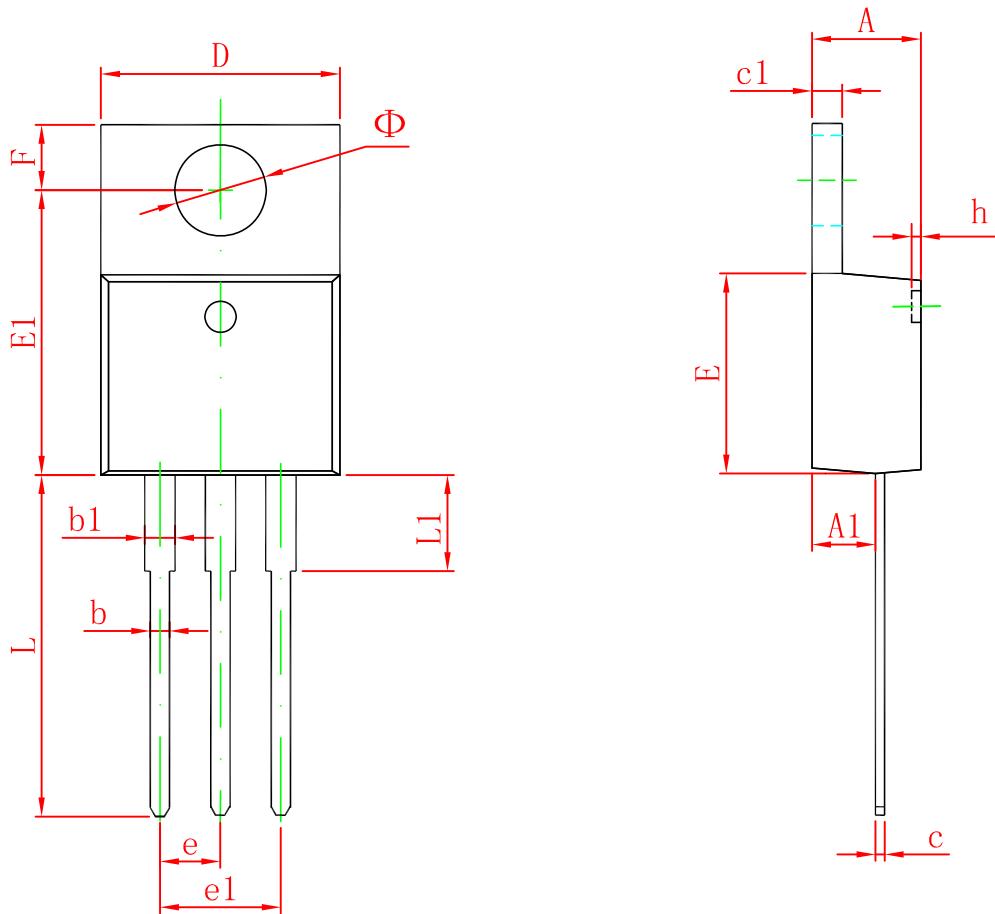
**TYPICAL APPLICATION**

Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

## Typical Characteristics



# TO-220-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155