

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

**7809** Three-terminal positive voltage regulator

## FEATURES

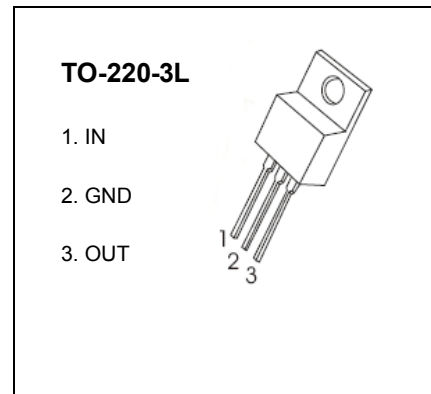
Maximum output current  $I_{OM}$ : 1.5 A

Output voltage  $V_o$ : 9 V

Continuous total dissipation

$P_D$ : 1.5 W ( $T_a = 25^\circ\text{C}$ )

15 W ( $T_c = 25^\circ\text{C}$ )



## 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	$^\circ\text{C}/\text{W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	8.3	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	$T_{OPR}$	0~+150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55~+150	$^\circ\text{C}$

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

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Output voltage	$V_o$	$25^\circ\text{C}$	8.65	9	9.35	V
		$11.5\text{V} \leq V_i \leq 24\text{V}$ , $I_o = 5\text{mA} - 1\text{A}$ , $P \leq 15\text{W}$ $0 - 125^\circ\text{C}$	8.55	9	9.45	V
Load Regulation	$\Delta V_o$	$I_o = 5\text{mA} - 1.5\text{A}$ $25^\circ\text{C}$		12	180	mV
		$I_o = 250\text{mA} - 750\text{mA}$ $25^\circ\text{C}$		4	90	mV
Line regulation	$\Delta V_o$	$11.5\text{V} \leq V_i \leq 27\text{V}$ $25^\circ\text{C}$		7	180	mV
		$13\text{V} \leq V_i \leq 19\text{V}$ $25^\circ\text{C}$		2	90	mV
Quiescent Current	$I_q$	$25^\circ\text{C}$		4.3	8	mA
Quiescent Current Change	$\Delta I_q$	$11.5\text{V} \leq V_i \leq 27\text{V}$ $0 - 125^\circ\text{C}$			1	mA
		$5\text{mA} \leq I_o \leq 1\text{A}$ $0 - 125^\circ\text{C}$			0.5	mA
Output voltage drift	$\Delta V_o / \Delta T$	$I_o = 5\text{mA}$ $0 - 125^\circ\text{C}$		-1		$\text{mV}/^\circ\text{C}$
Output Noise Voltage	$V_N$	$10\text{Hz} \leq f \leq 100\text{KHz}$ $25^\circ\text{C}$		60		$\mu\text{V}$
Ripple Rejection	RR	$12\text{V} \leq V_i \leq 22\text{V}$ , $f = 120\text{Hz}$ $0 - 125^\circ\text{C}$	55	70		dB
Dropout Voltage	$V_d$	$I_o = 1\text{A}$ $25^\circ\text{C}$		2		V
Output resistance	$R_o$	$f = 1\text{KHz}$ $25^\circ\text{C}$		18		$\text{m}\Omega$
Short Circuit Current	$I_{sc}$	$25^\circ\text{C}$		400		mA
Peak Current	$I_{pk}$	$25^\circ\text{C}$		2.2		A

## TYPICAL APPLICATION

