

## TO-220 Plastic-Encapsulate Voltage Regulator

**FS7809CTG** Three-terminal positive voltage regulator

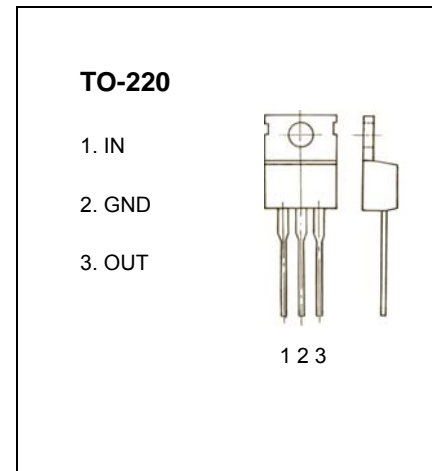
### FEATURES

**Maximum Output current  $I_{OM}$ : 1.5 A**

**Output voltage  $V_o$ : 9 V**

**Continuous total dissipation**

**$P_D$ : 2 W ( $T_J = 25^\circ\text{C}$ )**



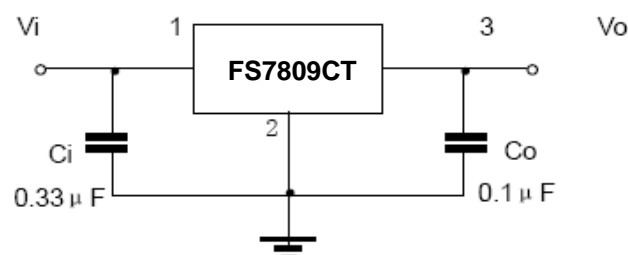
### ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

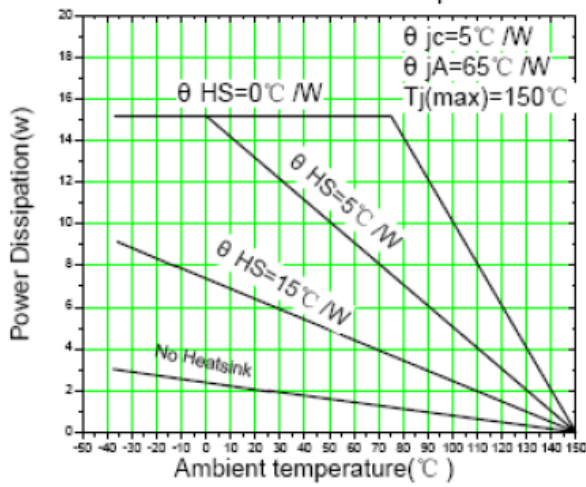
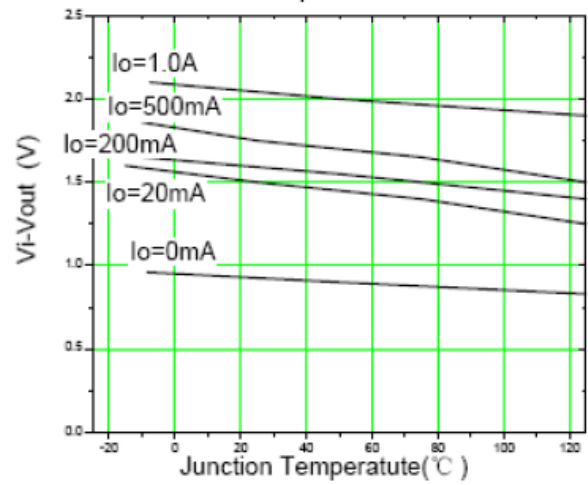
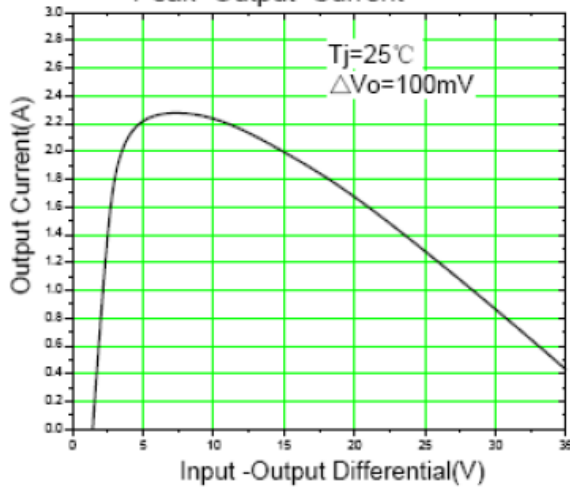
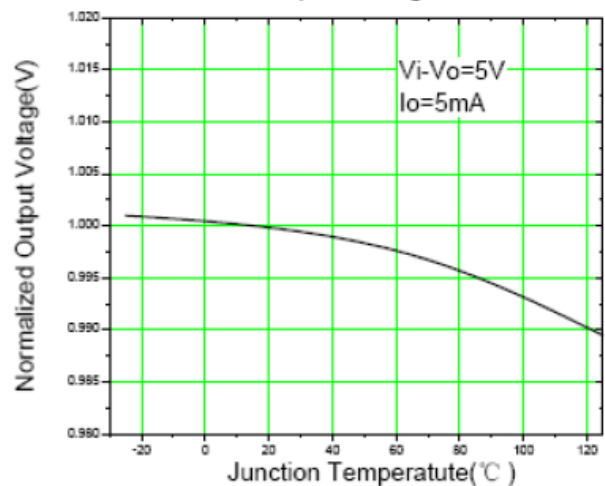
Parameter	Symbol	Value	Unit
Input Voltage	$V_i$	35	V
Thermal resistance junction-air	$R_{\theta JA}$	65	$^\circ\text{C}/\text{W}$
Thermal resistance junction-cases	$R_{\theta JC}$	5	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	$T_{OPR}$	0-150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65-150	$^\circ\text{C}$

### ELECTRICAL CHARACTERISTICS ( $V_i=16\text{V}, I_o=500\text{mA}, 0^\circ\text{C}<T_J<125^\circ\text{C}, C_i=0.33\ \mu\text{F}, C_o=0.1\ \mu\text{F}$ , unless otherwise specified )

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Output voltage	$V_o$	$T_J=25^\circ\text{C}$	8.65	9	9.35	V
		$11.5\text{V} \leq V_i \leq 24\text{V}, I_o = 5\text{mA}-1\text{A}, P \leq 15\text{W}$	8.55	9	9.45	V
Load Regulation	$\Delta V_o$	$T_J=25^\circ\text{C}, I_o=5\text{mA}-1.5\text{A}$		12	180	mV
		$T_J=25^\circ\text{C}, I_o=250\text{mA}-750\text{mA}$		4	90	mV
Line regulation	$\Delta V_o$	$11.5\text{V} \leq V_i \leq 27\text{V}, T_J=25^\circ\text{C}$		7	180	mV
		$13\text{V} \leq V_i \leq 19\text{V}, T_J=25^\circ\text{C}$		2	90	mV
Quiescent Current	$I_q$	$T_J=25^\circ\text{C}$		4.3	8	mA
Quiescent Current Change	$\Delta I_q$	$11.5\text{V} \leq V_i \leq 27\text{V}$			1	mA
		$5\text{mA} \leq I_o \leq 1\text{A}$			0.5	mA
Output voltage drift	$\Delta V_o/\Delta T$	$I_o=5\text{mA}$		-1		mV/ $^\circ\text{C}$
Output Noise Voltage	$V_N$	$10\text{Hz} \leq f \leq 100\text{KHz}$		58		$\mu\text{V}$
Ripple Rejection	RR	$12\text{V} \leq V_i \leq 22\text{V}, f=120\text{Hz}, T_J=25^\circ\text{C}$	55	70		dB
Dropout Voltage	$V_d$	$T_J=25^\circ\text{C}, I_o=1\text{A}$		2		V
Output resistance	$R_o$	$f=1\text{KHz}$		15		$\text{m}\Omega$
Short Circuit Current	$I_{sc}$	$T_J=25^\circ\text{C}$		400		mA
Peak Current	$I_{pk}$	$T_J=25^\circ\text{C}$		2.2		A

### TYPICAL APPLICATION



**Typical Characteristics**
**Ambient temperature VS Worst case Power Dissipation**

**Input Output Differential as a Function of Junction Temperature**

**Peak Output Current**

**Output Voltage**

**Quiescent Current**
