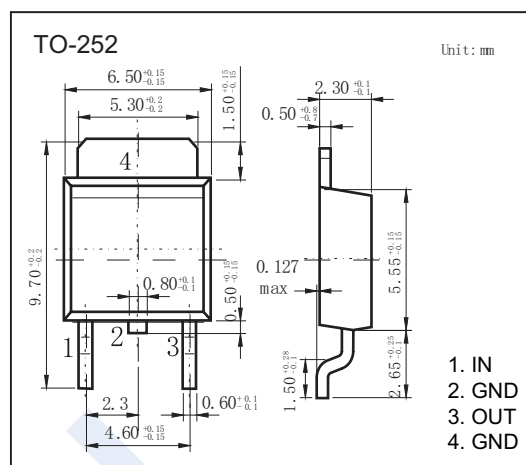


Three Terminal Positive Voltage Regulator

78M09

■ Features

- Maximum Output Current $I_o = 500\text{mA}$
- Output Voltage $V_o = 9\text{V}$
- Internal Thermal Overload Protection
- Internal Short Circuit Current Limiting
- Output Transistor Safe Operating Area Protection



■ Absolute Maximum Ratings(unless otherwise noted)

Parameter	Symbol	Rating	Unit
Input Voltage	V_i	35	V
Maximum Output Current	I_o	0.5	A
Thermal Resistance, Junction-to-Ambient	R_{thJA}	80	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	R_{thJC}	5	
Operating Junction Temperature	T_J	0 to 125	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-65 to 150	

■ Electrical Characteristics ($0^{\circ}\text{C} \leq T_J \leq 125^{\circ}\text{C}$, $I_o = 500\text{mA}$, $V_i = 15\text{V}$, $C_i = 0.33\mu\text{F}$, $C_o = 0.1\mu\text{F}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_o	$T_J = 25^{\circ}\text{C}$	8.65	9.0	9.35	V
		$5.0\text{mA} \leq I_o \leq 0.5\text{A}$, $P_D \leq 10\text{W}$, $11.5\text{V} \leq V_i \leq 24\text{V}$	8.6	9.0	9.4	
Line Regulation	ΔV_o	$T_J = 25^{\circ}\text{C}$, $11.5\text{V} \leq V_i \leq 25\text{V}$			180	mV
		$T_J = 25^{\circ}\text{C}$, $12\text{V} \leq V_i \leq 18\text{V}$			90	
Load Regulation	ΔV_o	$T_J = 25^{\circ}\text{C}$, $5.0\text{mA} \leq I_o \leq 0.5\text{A}$			180	
		$T_J = 25^{\circ}\text{C}$, $250\text{mA} \leq I_o \leq 750\text{mA}$			90	
Quiescent Current	I_q	$T_J = 25^{\circ}\text{C}$			8.0	mA
Quiescent Current Change	ΔI_q	$5\text{mA} \leq I_o \leq 0.5\text{A}$			0.5	
		$11.5\text{V} \leq V_i \leq 26\text{V}$			1.3	
Output Noise Voltage	V_N	$T_A = 25^{\circ}\text{C}$, $10\text{Hz} \leq f \leq 100\text{kHz}$		58		μV
Ripple Rejection	R_R	$f = 120\text{Hz}$, $13\text{V} \leq V_i \leq 23\text{V}$	56			dB
Dropout Voltage	V_d	$I_o = 0.5\text{A}$, $T_J = 25^{\circ}\text{C}$		2		V
Output Resistance	R_o	$f = 1\text{kHz}$		17		$\text{m}\Omega$
Short Circuit Current Limit	I_{sc}	$V_i = 35\text{V}$, $T_A = 25^{\circ}\text{C}$		250		mA
Peak Output Current	I_{pk}	$T_J = 25^{\circ}\text{C}$		2.2		A

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Typical Characteristics

