

TO-252 Plastic-Encapsulate Voltage Regulators

78M12 Three-terminal positive voltage regulator

Features:

Maximum Output current I_{OM} : 0.5 A

Output voltage V_O : 12V

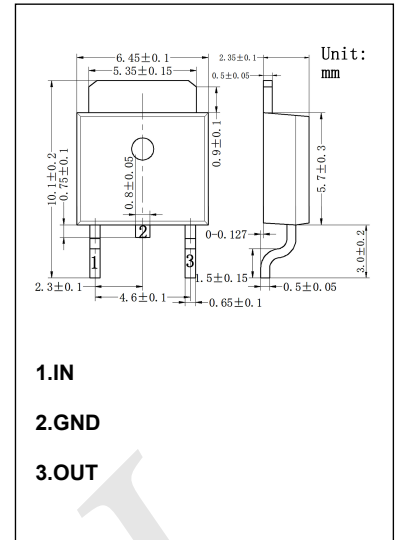
Continuous total dissipation

P_D : 1.25W ($T_a = 25^\circ\text{C}$)

10W ($T_C = 25^\circ\text{C}$)

Absolute Maximum Ratings (Operating temperature range applies unless otherwise specified)

Symbol	Parameter	Value	Unit
V_i	Input Voltage	35	V
T_{OPR}	Operating Junction Temperature Range	0 to +125	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-65 to +150	$^\circ\text{C}$

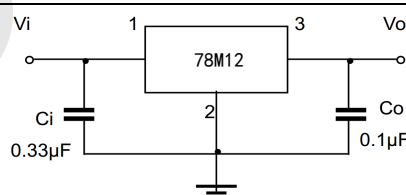


Electrical Characteristics at Specified Virtual Junction Temperature

($V_i = 19\text{V}$, $I_o = 350\text{mA}$, $C_i = 0.33\mu\text{F}$, $C_o = 0.1\mu\text{F}$, unless otherwise specified)

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
V_O	Output Voltage	25°C	11.5	12.0	12.5	V
		$14.5\text{V} \leq V_i \leq 27\text{V}$, $I_o = 5\text{mA} - 350\text{mA}$, $P_O \leq 1.25\text{W}$ $0 - 125^\circ\text{C}$	11.4	12	12.6	V
ΔV_O	Load Regulation	$I_o = 5\text{mA} - 500\text{mA}$ 25°C		20	240	mV
		$I_o = 5\text{mA} - 200\text{mA}$ 25°C		10	120	mV
ΔV_O	Line Regulation	$14.5\text{V} \leq V_i \leq 30\text{V}$, $I_o = 200\text{mA}$ 25°C		10	100	mV
		$16\text{V} \leq V_i \leq 30\text{V}$, $I_o = 200\text{mA}$ 25°C		3	50	mV
I_q	Quiescent Current	25°C		4.6	6	mA
ΔI_q	Quiescent Current Change	$14.5\text{V} \leq V_i \leq 30\text{V}$, $I_o = 200\text{mA}$ $0 - 125^\circ\text{C}$			0.8	mA
ΔI_q		$5\text{mA} \leq I_o \leq 350\text{mA}$ $0 - 125^\circ\text{C}$			0.5	mA
V_N	Output Noise Voltage	$f = 10\text{Hz to } 100\text{KHz}$ 25°C		75		μV
RR	Ripple Rejection	$f = 120\text{Hz}$, $15\text{V} \leq V_i \leq 25\text{V}$, $I_o = 300\text{mA}$ $0 - 125^\circ\text{C}$	55	80		dB
V_d	Dropout Voltage	$I_o = 350\text{mA}$ 25°C		2		V
I_{SC}	Short Circuit Current	$V_i = 19\text{V}$ 25°C		240		mA
I_{pk}	Peak Current	25°C		0.7		A

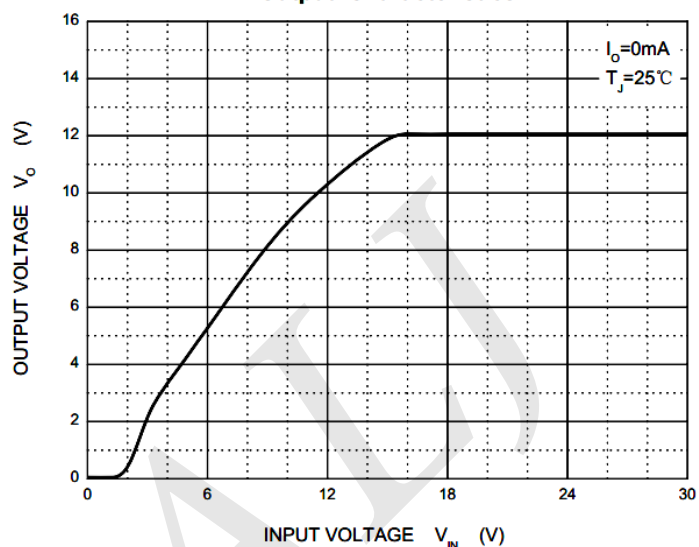
Typical Application



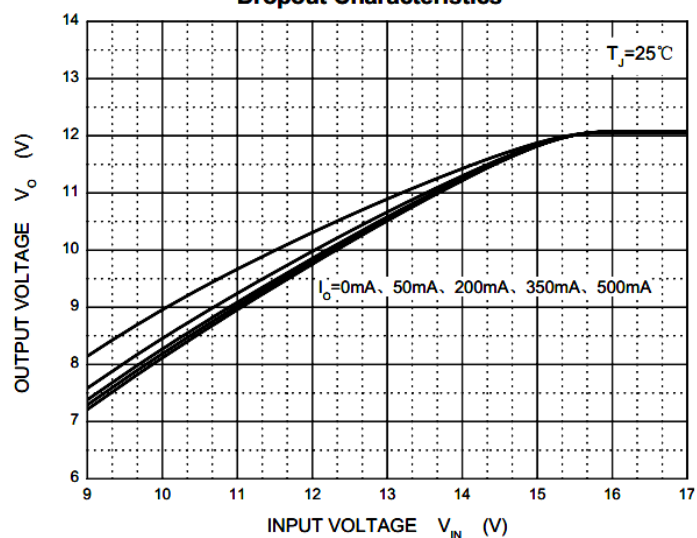
Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

Typical Characteristics

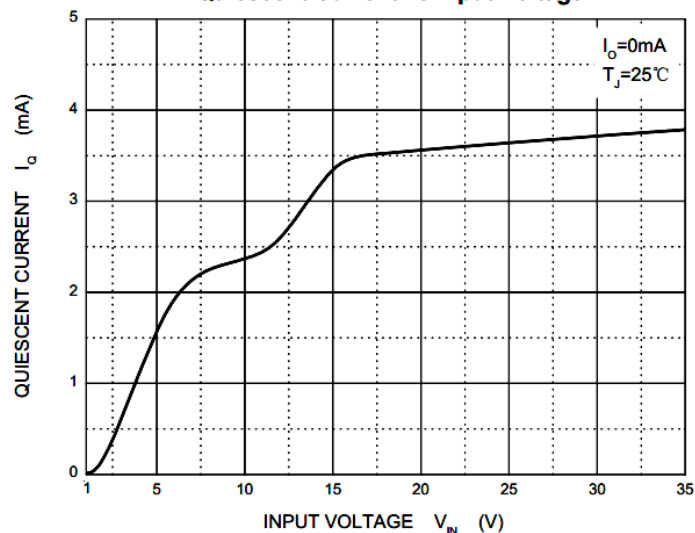
Output Characteristics



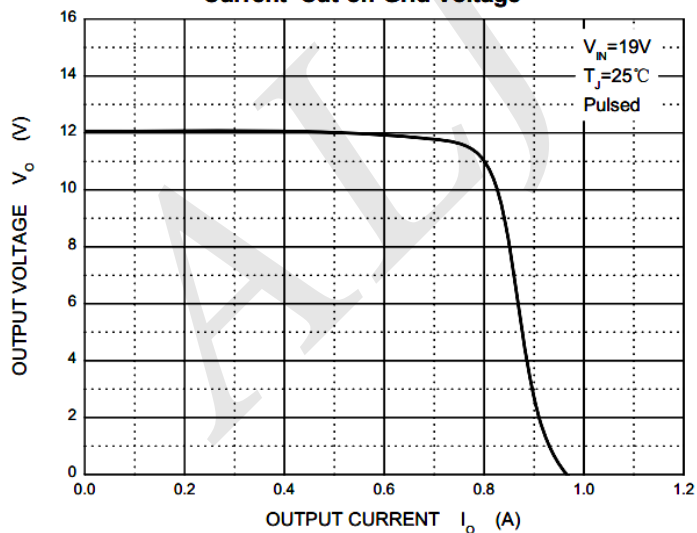
Dropout Characteristics



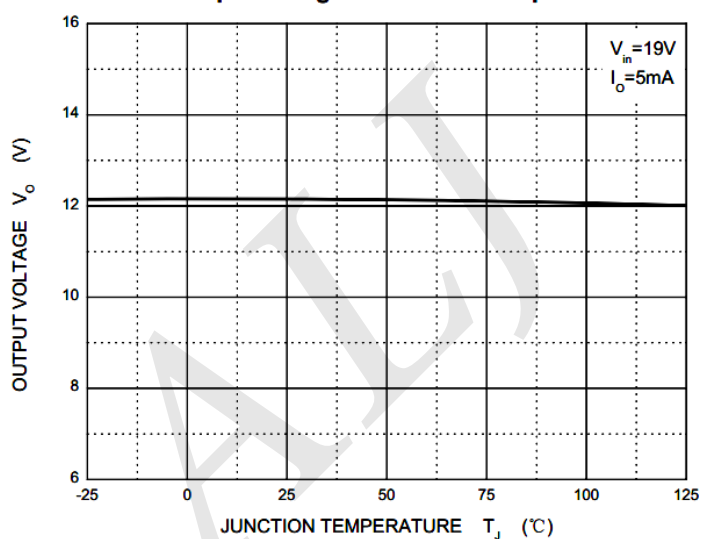
Quiescent Current vs Input Voltage



Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature



Power Derating Curve

