

3-Terminal 1.5 A Positive Voltage Regulator

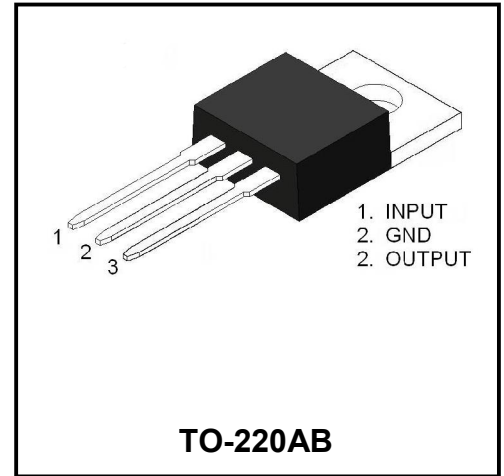
The 7812 3-terminal positive regulators are available in the TO-220AB package and with several fixed output voltages, making them useful in a wide range of applications. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1.5A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

Features

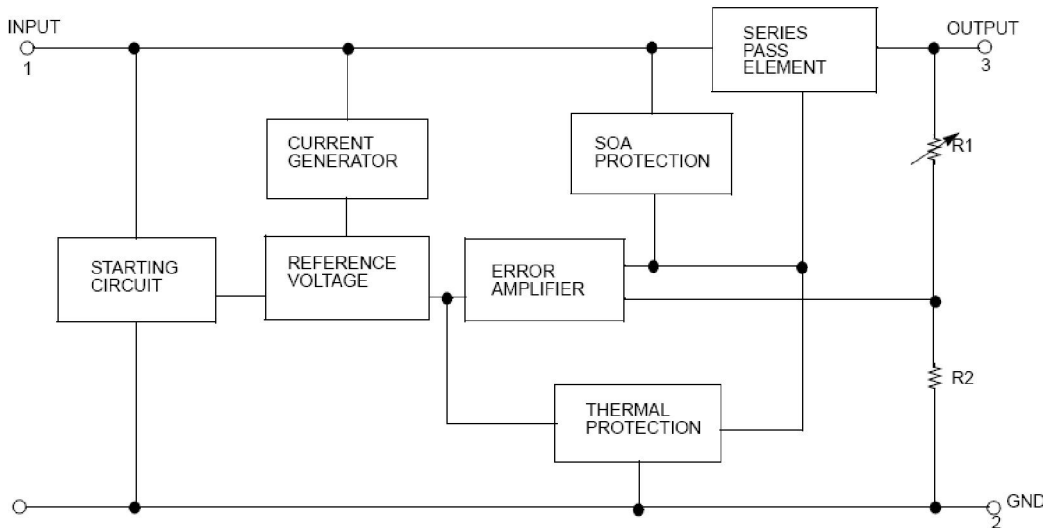
- Output Current up to 1.5A
- Output Voltages of 12V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating area (SOA) Protection

Description

The 7812 3-terminal positive regulators are available in the TO-220AB package with several fixed output voltages making it useful in a wide range of applications.



Internal Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	30	V
Output Current	I_{OUT}	1.5	A
Power Dissipation	P_D	Internally Limited	W
Operating Junction Temperature Range	T_{OPR}	0 ~ 150	°C
Storage Temperature Range	T_{STG}	-55 ~ + 150	°C

Thermal Resistances

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-Case	$R_{\theta JC}$	5	$^{\circ}C/W$
Thermal Resistance Junction-Air ($T_a = +25^{\circ}C$)	$R_{\theta JA}$	65	$^{\circ}C/W$

Electrical Characteristics

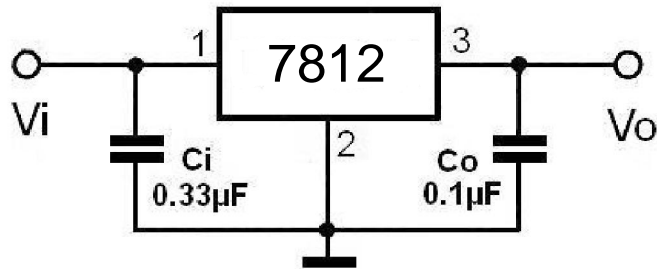
 (Refer to the test circuits, $I_o = 0.75A$, $V_I = 19V$, $C_I = 0.33\mu F$, $C_O = 0.1\mu F$ unless otherwise specified)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Output Voltage	V_o	$I_o = 5mA \sim 1A$	11.5	12	12.5	V
		$V_I = 14.5 \sim 27V$, $I_o = 5mA \sim 1.5A$	11.4	12	12.6	
Line Regulation(Note)	ΔV_o	$T_j = 25^{\circ}C$	$V_I = 14.5V \sim 30V$		240	mV
			$V_I = 16V \sim 30V$		120	
Load Regulation(Note)	ΔV_o	$T_j = 25^{\circ}C$	$I_o = 5mA \sim 1.5A$		240	mV
			$I_o = 0.25A \sim 1.5A$		120	
Quiescent Current	I_q	$T_j = 25^{\circ}C$			8.0	mA
Quiescent Current Change	ΔI_q	$I_o = 5mA \sim 1.5A$			0.5	mA
		$V_I = 14.5 \sim 30V$			1.0	
Output Voltage Drift	$\Delta V / \Delta T$	$I_o = 5mA$, $T_j = 0 \sim 125^{\circ}C$		-0.8		mV/ $^{\circ}C$
Output Noise Voltage	V_N	$f = 10Hz \sim 100KHz$		75		μV
Ripple Rejection	RR	$f = 120Hz$, $V_I = 15 \sim 25V$	55			dB
Dropout Voltage	V_D	$T_j = 25^{\circ}C$, $I_o = 500mA$		2		V
Short Circuit Current	I_{SC}	$T_j = 25^{\circ}C$, $V_I = 35V$		300		mA
Peak Current	I_{PK}	$T_j = 25^{\circ}C$		2.2		A

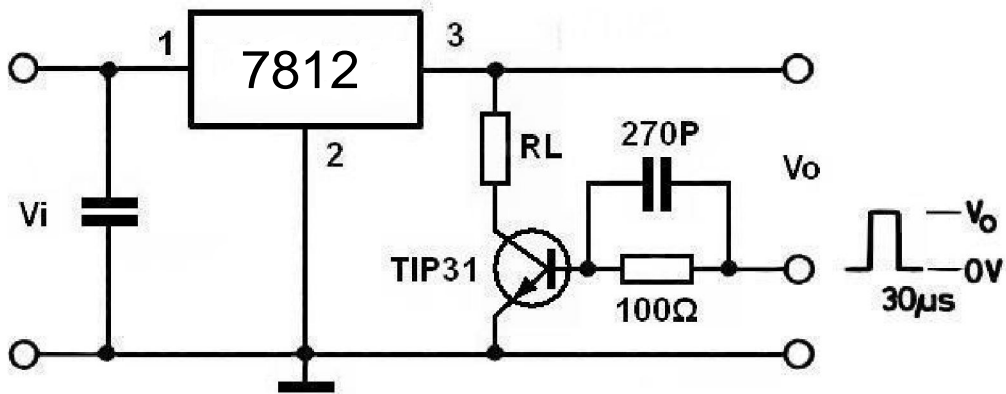
Notes:

Load and line regulation are specified at constant junction temperature. Change in V_o due to heating effects must be taken into account separately. Pulse testing with low duty is used.

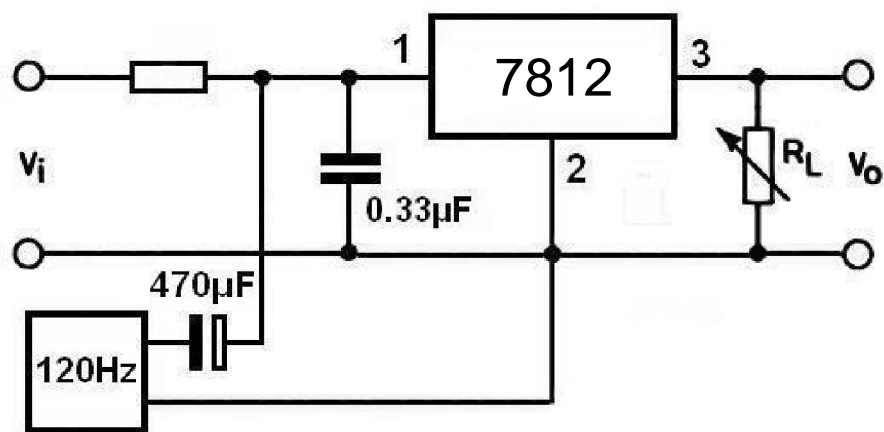
Test Circuits



DC Parameter



Load Regulation



Ripple Rejection

Package Dimensions

TO-220AB	Symbol	Millimeter		Inches	
		Min.	Max.	Min.	Max.
	A	4.30	4.70	0.169	0.185
	A1	0.00	0.15	0.000	0.006
	b	0.71	0.91	0.028	0.036
	b1	1.17	1.37	0.046	0.054
	c	0.30	0.50	0.012	0.020
	c1	1.17	1.37	0.046	0.054
	D	9.90	10.20	0.390	0.402
	E	8.50	8.90	0.335	0.350
	E1	12.00	12.50	0.472	0.492
	e	2.44	2.64	0.096	0.104
	e1	4.88	5.28	0.192	0.208
	F	2.60	2.80	0.102	0.110
	L	13.20	13.80	0.520	0.543
	L1	3.80	4.20	0.150	0.165
Φ	3.60	3.96	0.142	0.156	

Product Specification Classification

Part Number	Package	Marking	Pack
7812	TO-220AB	YFW 7812 XXXXX	1000PCS /box

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