

L78XX

LINEAR INTEGRATED CIRCUIT

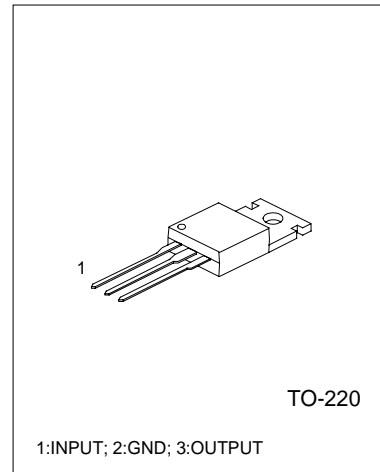
3 TERMINAL 1A POSITIVE VOLTAGE REGULATORS

DESCRIPTION

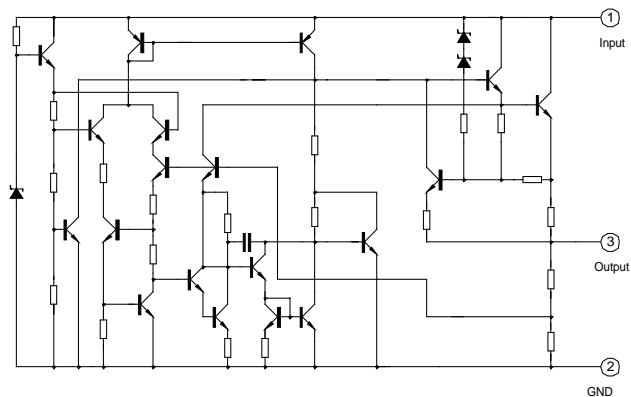
The L78XX series of three-terminal positive regulators are available in TO-220 package and with several fixed output voltage, making them useful in a wide range of application. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1.0A output current. Although designed as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltage and currents.

FEATURES

- *Output current up to 1.2A
- *5V;6V;8V;9V;10V;12V;15V;18V;24V output voltage available
- *Thermal overload protection
- *Short circuit protection
- *Output transistor SOA protection



BLOCK DIAGRAM

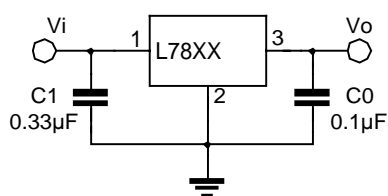
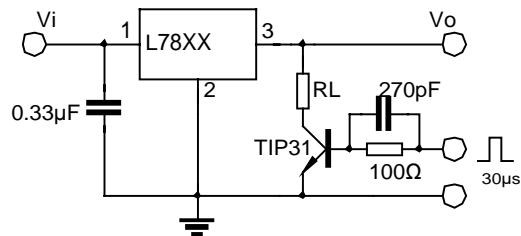
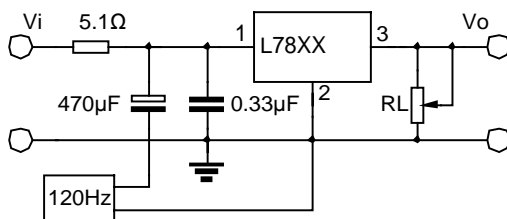


ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Characteristic	Symbol	Value	Unit
Input voltage (for Vo=5V to 18V)	V	30	V
(for Vo=24V)		40	V
Thermal resistance junction-air	R _{θJA}	65	°C/W
Thermal resistance junction-cases	R _{θJC}	5	°C/W
Operating Temperature	T _{opr}	0~ +125	°C
Storage Temperature	T _{stg}	-65 ~ +150	°C

L7805 ELECTRICAL CHARACTERISTICS(Refer to test circuits, $0 < T_j < 125^\circ\text{C}$, $I_o = 500\text{mA}$, $V_i = 10\text{V}$, $C_i = 0.33\mu\text{F}$, $C_o = 0.1\mu\text{F}$, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Output voltage	V_o	$T_j = 25^\circ\text{C}$	4.8	5.0	5.2	V
		$5.0\text{mA} < I_o < 1.0\text{A}$, $P_o < 15\text{W}$ $V_i = 7\text{V to } 20\text{V}$	4.75	5.00	5.25	V
Line regulation	ΔV_o	$T_j = 25^\circ\text{C}$, $V_i = 7\text{V to } 25\text{V}$		4.0	100	mV
		$T_j = 25^\circ\text{C}$, $V_i = 8\text{V to } 12\text{V}$		1.6	50	mV
Load regulation	ΔV_o	$T_j = 25^\circ\text{C}$, $I_o = 5.0\text{mA to } 1.5\text{A}$		9	100	mV
		$T_j = 25^\circ\text{C}$, $I_o = 250\text{mA to } 750\text{mA}$		4	50	mV
Quiescent current	I_q	$T_j = 25^\circ\text{C}$		5.0	8	mA
Quiescent current change	ΔI_q	$I_o = 5\text{mA to } 1.0\text{A}$		0.03	0.5	mA
		$V_i = 7\text{V to } 25\text{V}$		0.3	1.3	mA
Output voltage drift	$\Delta V_o / \Delta T$	$I_o = 5\text{mA}$		-0.8		mV/ $^\circ\text{C}$
Output noise voltage	V_N	$f = 10\text{Hz to } 100\text{kHz}$, $T_a = 25^\circ\text{C}$		42		μV
Ripple rejection	RR	$f = 120\text{Hz}$, $V_i = 8\text{V to } 18\text{V}$	62	73		dB
Dropout voltage	V_o	$I_o = 1.0\text{A}$, $T_j = 25^\circ\text{C}$		2		V
Output resistance	R_o	$f = 1\text{kHz}$		15		$\text{m}\Omega$
Short circuit current	I_{sc}	$V_i = 35\text{V}$, $T_a = 25^\circ\text{C}$		230		mA
peak current	I_{pk}	$T_j = 25^\circ\text{C}$		1.2		A

TEST CIRCUITS**FIG.1 DC PARAMETERS****FIG.2 LOAD REGULATION****FIG.3 RIPPLE REJECTION**

APPLICATION CIRCUITS

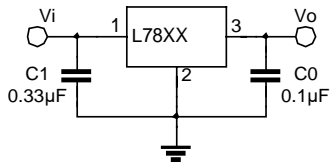


Fig.4 Fixed output regulator

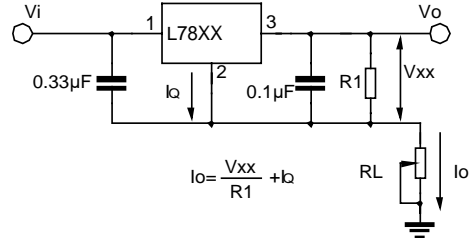


Fig.5 Constant current regulator

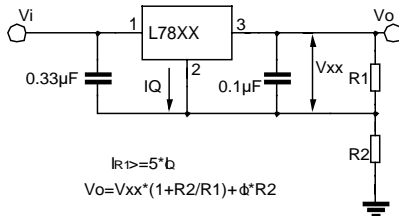


Fig.6 Circuit for increasing Regulator output voltage

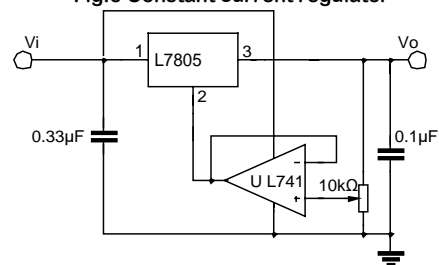


Fig.7 Adjustable output

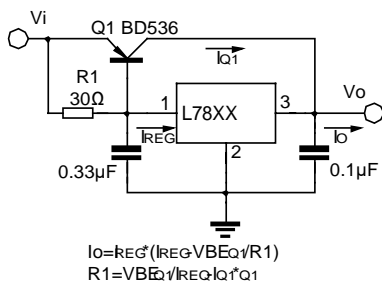


Fig.8 High current with voltage regulator

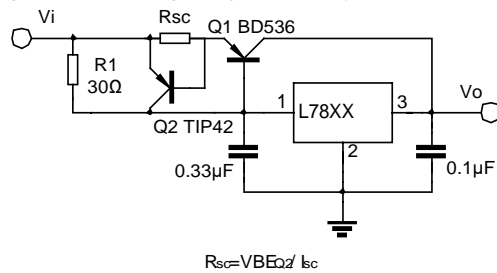


Fig.9 High output current short circuit protection

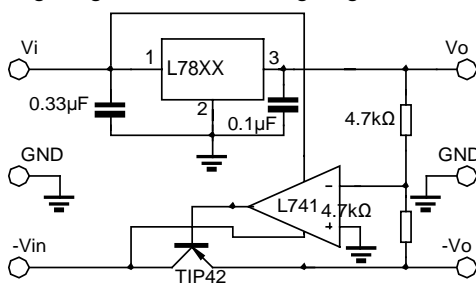


Fig.10 Tracking voltage regulator

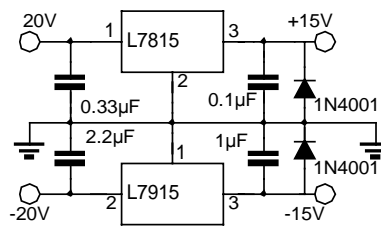


Fig.11 Split power supply (±15V, 1A)

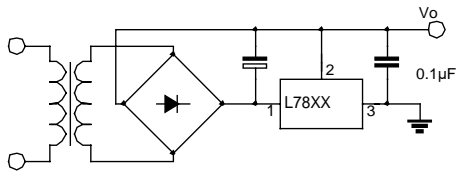


Fig.12 Negative output voltage circuit

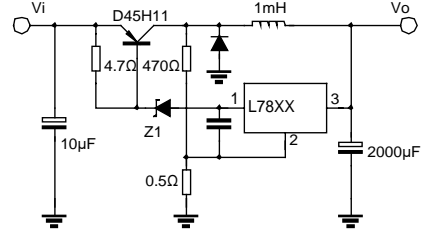


Fig.13 switching regulator

TYPICAL PERFORMANCE CHARACTERISTICS

