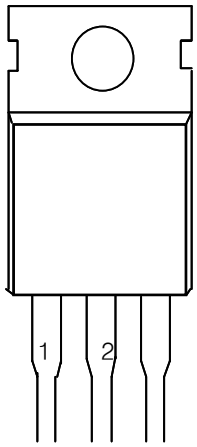
3-TERMINAL 1A NEGATIVE VOLTAGE REGULATORS

The LM79XX series of three-terminal negative regulators, are designed for a wide range of applications.

This series are abailable in TO-220 package and with several fixed output voltages.

Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible.

TO-220 PKG(FRONT VIEW)



PIN FUNCTION
1. Gnd
2. Vin
3. Vout

FEATURES

◇ Output current in excess of 1A
◇ Output voltages of −5, −6, −8, −12, −15, −18, −24V
◇ Internal thermal overload protection
◇ Short circuit protection
◇ Output transistor safe-area compensation

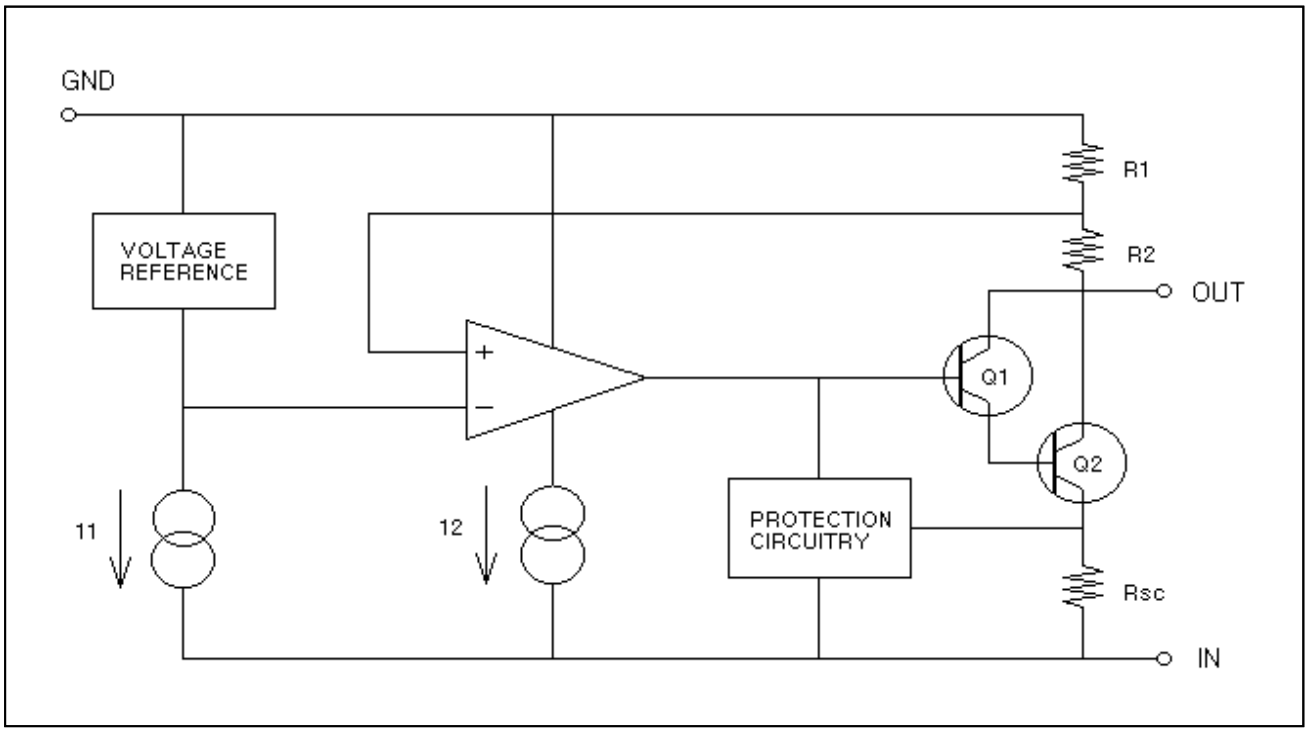
ORDERING INFORMATION

DEVICE	MARKING	PKG
LM79XX	LM79XX	TO-220

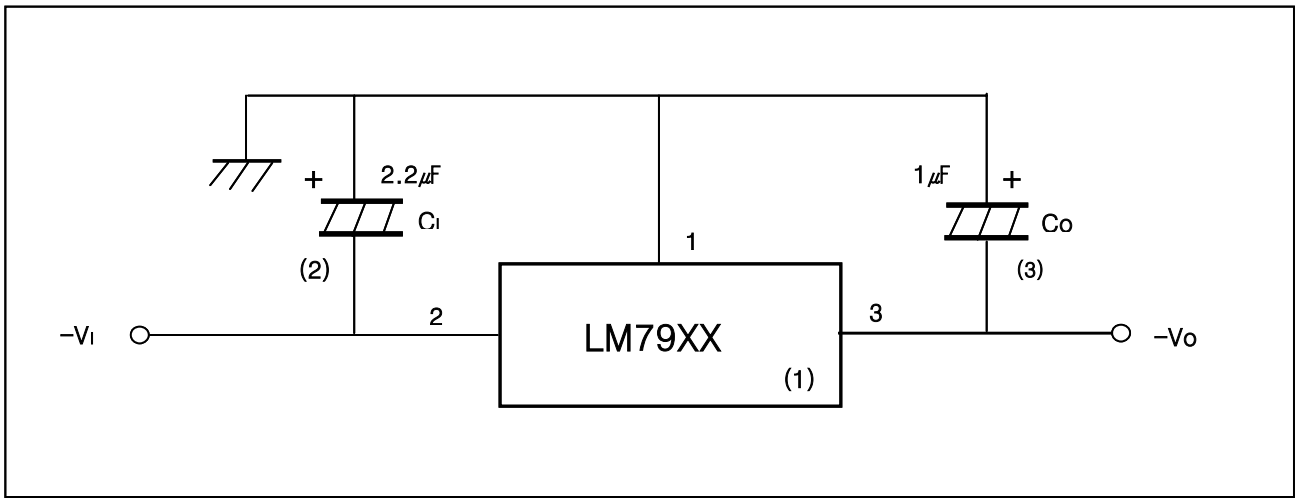
ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Input Voltage	V	−35	V
Thermal Resistance Junction-Cases	$R_{\Theta JC}$	5	℃/W
Thermal Resistance Junction-Cases	$R_{\Theta JA}$	65	℃/W
Operating Junction Temperature Range	T_{OPR}	0 ~ +150	℃
Storage Temperature Range	T_{STG}	−65 ~ +150	℃

1. BLOCK DIAGRAM



2. TYPICAL APPLICATIONS



Notes :

To specify an output voltage, substitute voltage value for "XX"

C_I is required if regulator is located in appreciable distance from power supply filter.

Co improves stability and transient response.

LM7905 ELECTRICAL CHARACTERISTICS

(V_I=10V, I_O=500 , 0 ≤T_J≤125 , C_I=2.2 , Co=1 , unless otherwise specified.)

Characteristic	Symbol	Test condition		Min.	Typ.	Max.	Unit
Output Voltage	Vo	T_J=25		-4.9	-5	-5.1	V
		Io=5 to 1A, Po≤15W V_I=-7V to -20V		-4.8	-5	-5.2	
Line Regulation	Vo	T =25	V=-7V to -20V Io=1A		5	50	
			V=-8V to -12V Io=1A		2	2	
		V=-7.5V to -25V			7	50	
		V=-8 to -12V, Io=1A			7	50	
Load Regulation	Vo	Io=5 to 1.5A			10	100	
		T_J=25 Io=250 to 750			3	5	
Quiescent Current	I	T_J=25			3	6	
Quiescent Current Change	I	Io=5 to 1A			0.05	0.5	
		V_I=-8 to -25V			0.1	0.8	
Temperature Coefficient of V	Vo/ T	Io=5			-0.4		/
Output Noise Voltage	V_N	f=10Hz to 100Khz, T_A=25			140		
Ripple Rejection	RR	f=120Hz, Io=-35V V_I=10V		54	60		
Dropout Voltage	V_D	T_J=25 , Io=1A			2		V
Short Circuit Current	I_{SC}	=25 , V_I=-35V			300		
Peak Current	I_{PK}	T_J=25			2.2		A

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

LM7906 ELECTRICAL CHARACTERISTICS

(V_I=11V, I_O=500 , 0 ≤T_J≤125 , C_I=2.2 , Co=1 , unless otherwise specified.)

Characteristic	Symbol	Test condition		Min.	Typ.	Max.	Unit
Output Voltage	Vo	T_J=25		-5.75	-6	-6.25	V
		Io=5 to 1A, Po≤15W V_I=-9V to -21V		-5.7	-6	-6.3	
Line Regulation	Vo	T =25	V=-8V to -25V		10	120	
			V=-9V to -12V		5	60	
Load Regulation	Vo	T_J=25 Io=5 to 1.5A			10	120	
		T_J=25 Io=250 to 750			3	60	
Quiescent Current	I	T_J=25			3	6	
Quiescent Current	I	Io=5 to 1A				0.5	
Change		V_I=-9 to -25V				1.3	
Temperature Coefficient of V	Vo/ T	Io=5			-0.5		/
Output Noise Voltage	V_N	f=10Hz to 100Khz, T_A=25			130		
Ripple Rejection	RR	f=120Hz, V_I=10V		54	60		
Dropout Voltage	V_D	T_J=25 , Io=1A			2		V
Short Circuit Current	I_{SC}	=25 , V_I=-35V			300		
Peak Current	I_{PK}	T_J=25			2.2		A

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

LM7908 ELECTRICAL CHARACTERISTICS

(V_I=14V, I_O=500 , 0 ≤T_J≤125 , C_I=2.2 , Co=1 , unless otherwise specified.)

Characteristic	Symbol	Test condition		Min.	Typ.	Max.	Unit
Output Voltage	Vo	T_J=25		-7.7	-8	-8.3	V
		Io=5 to 1A, Po≤15W V_I=-1.5V to -23V		-7.6	-8	-8.4	
Line Regulation	Vo	T =25	V=-10.5V to -25V		10	100	
			V=-11V to -17V		5	80	
Load Regulation	Vo	T_J=25 Io=5 to 1.5A			12	160	
		T_J=25 Io=250 to 750			4	80	
Quiescent Current	I	T_J=25			3	6	
Quiescent Current	I	Io=5 to 1A			0.05	0.5	
Change		V=-11.5 to -25V			0.1	1	
Temperature Coefficient of V	Vo/ T	Io=5			-0.6		/
Output Noise Voltage	V_N	f=10Hz to 100Khz, T_A=25			175		
Ripple Rejection	RR	f=120Hz, V_I=10V		54	60		
Dropout Voltage	V_D	T_J=25 , Io=1A			2		V
Short Circuit Current	I_{SC}	=25 , V_I=-35V			300		
Peak Current	I_{PK}	T_J=25			2.2		A

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

LM7909 ELECTRICAL CHARACTERISTICS

(V_I=14V, I_O=500 , 0 ≤T_J≤125 , C_I=2.2 , Co=1 , unless otherwise specified.)

Characteristic	Symbol	Test condition		Min.	Typ.	Max.	Unit
Output Voltage	Vo	T_J=25		-8.7	-9	-9.3	V
		Io=5 to 1A, Po≤15W V_I=-1.5V to -23V		-8.6	-9	-9.4	
Line Regulation	Vo	T =25	V=-10.5V to -25V		10	180	
			V=-11V to -17V		5	90	
Load Regulation	Vo	T_J=25 Io=5 to 1.5A			12	180	
		T_J=25 Io=250 to 750			4	90	
Quiescent Current	I	T_J=25			3	6	
Quiescent Current	I	Io=5 to 1A			0.05	0.5	
Change		V=-11.5 to -25V			0.1	1	
Temperature Coefficient of V	Vo/ T	Io=5			-0.6		/
Output Noise Voltage	V_N	f=10Hz to 100Khz, T_A=25			175		
Ripple Rejection	RR	f=120Hz, V_I=10V		54	60		
Dropout Voltage	V_D	T_J=25 , Io=1A			2		V
Short Circuit Current	I_{SC}	=25 , V_I=-35V			300		
Peak Current	I_{PK}	T_J=25			2.2		A

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

LM7910 ELECTRICAL CHARACTERISTICS

(V_I=16V, I_O=500 , 0 ≤T_J≤125 , C_I=0.33 , Co=0.1 , unless otherwise specified.)

Characteristic	Symbol	Test condition		Min.	Typ.	Max.	Unit
Output Voltage	Vo	T_J=25		-9.6	-10	-10.4	V
		Io=5 to 1A, Po≤15W V_I=-12.5V to -25V		-9.5	-10	-10.5	
Line Regulation	Vo	T =25	V=-12.5V to -25V		10	200	
			V=-13V to -25V		3	100	
Load Regulation	Vo	T =25 Io=5 to 1.5A			12	200	
		T =25 Io=250 to 750			4	400	
Quiescent Current	I	T_J=25			5.1	8	
Quiescent Current	I	Io=5 to 1A			0.05	0.5	
Change		V=-12.5 to -25V			0.1	1	
Temperature Coefficient of V	Vo/ T	Io=5			-1		/
Output Noise Voltage	V_N	f=10Hz to 100Khz, T_A=25			175		
Ripple Rejection	RR	f=120Hz, V_I=10V		56	71		
Dropout Voltage	V_D	T_J=25 , Io=1A			2		V
Short Circuit Current	I_{SC}	=25 , V_I=-35V			300		
Peak Current	I_{PK}	T_J=25			2.2		A

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

LM7912 ELECTRICAL CHARACTERISTICS

(V_I=18V, I_O=500 , 0 ≤T_J≤125 , C_I=2.2 , Co=1 , unless otherwise specified.)

Characteristic	Symbol	Test condition		Min.	Typ.	Max.	Unit
Output Voltage	Vo	T_J=25		-11.5	-12	-12.5	V
		Io=5 to 1A, Po≤15W V_I=-15.5V to -27V		-11.4	-12	-12.6	
Line Regulation	Vo	T =25	V=-14.5V to -30V		12	240	
			V=-16V to -22V		6	120	
Load Regulation	Vo	T_J=25 Io=5 to 1.5A			12	240	
		T_J=25 Io=250 to 750			4	120	
Quiescent Current	I	T_J=25			3	6	
Quiescent Current	I	Io=5 to 1A			0.05	0.5	
Change		V_I=-15 to -30V			0.1	1	
Temperature Coefficient of V	Vo/ T	Io=5			-0.8		/
Output Noise Voltage	V_N	f=10Hz to 100Khz, T_A=25			200		
Ripple Rejection	RR	f=120Hz, V_I=10V		54	60		
Dropout Voltage	V_D	T_J=25 , Io=1A			2		V
Short Circuit Current	I_{SC}	=25 , V_I=-35V			300		
Peak Current	I_{PK}	T_J=25			2.2		A

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

LM7915 ELECTRICAL CHARACTERISTICS

(V_I=23V, I_O=500 , 0 ≤T_J≤125 , C_I=2.2 , Co=1 , unless otherwise specified.)

Characteristic	Symbol	Test condition		Min.	Typ.	Max.	Unit
Output Voltage	Vo	T_J=25		-14.4	-15	-15.6	V
		Io=5 to 1A, Po≤15W V_I=-18V to -30V		-14.25	-15	-15.75	
Line Regulation	Vo	T =25	V=-17.5V to -30V		12	300	
			V=-20V to -26V		6	150	
Load Regulation	Vo	T_J=25 Io=5 to 1.5A			12	300	
		T_J=25 Io=250 to 750			4	150	
Quiescent Current	I	T_J=25			3	6	
Quiescent Current	I	Io=5 to 1A			0.05	0.5	
Change		V=-18.5 to -30V			0.1	1	
Temperature Coefficient of V	Vo/ T	Io=5			-0.9		/
Output Noise Voltage	V_N	f=10Hz to 100Khz, T_A=25			250		
Ripple Rejection	RR	f=120Hz, V_I=10V		54	60		
Dropout Voltage	V_D	T_J=25 , Io=1A			2		V
Short Circuit Current	I_{SC}	=25 , V_I=-35V			300		
Peak Current	I_{PK}	T_J=25			2.2		A

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

LM7918 ELECTRICAL CHARACTERISTICS

(V_I=27V, I_O=500 , 0 ≤T_J≤125 , C_I=2.2 , Co=1 , unless otherwise specified.)

Characteristic	Symbol	Test condition		Min.	Typ.	Max.	Unit
Output Voltage	Vo	T_J=25		-17.3	-18	-18.7	V
		Io=5 to 1A, Po≤15W V_I=-22.5V to -33V		-17.1	-18	-18.9	
Line Regulation	Vo	T =25	V=-21V to -33V		15	360	
			V=-24V to -30V		8	180	
Load Regulation	Vo	T_J=25 Io=5 to 1.5A			15	360	
		T_J=25 Io=250 to 750			5	180	
Quiescent Current	I	T_J=25			3	6	
Quiescent Current	I	Io=5 to 1A				0.5	
Change		V_I=-22 to -33V				1	
Temperature Coefficient of V	Vo/ T	Io=5			-1		/
Output Noise Voltage	V_N	f=10Hz to 100Khz, T_A=25			300		
Ripple Rejection	RR	f=120Hz, V_I=10V		54	60		
Dropout Voltage	V_D	T_J=25 , Io=1A			2		V
Short Circuit Current	I_{SC}	=25 , V_I=-35V			300		
Peak Current	I_{PK}	T_J=25			2.2		A

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

LM7924 ELECTRICAL CHARACTERISTICS

(V_I=33V, I_O=500 , 0 ≤T_J≤125 , C_I=2.2 , Co=1 , unless otherwise specified.)

Characteristic	Symbol	Test condition		Min.	Typ.	Max.	Unit
Output Voltage	Vo	T_J=25		-23	-24	-25	V
		Io=5 to 1A, Po≤15W V_I=-27V to -38V		-22.8	-24	-25.2	
Line Regulation	Vo	T =25	V_I=-27V to -38V		15	480	
			V_I=-30V to -36V		8	180	
Load Regulation	Vo	T_J=25 Io=5 to 1.5A			15	480	
		T_J=25 Io=250 to 750			5	240	
Quiescent Current	I	T_J=25			3	6	
Quiescent Current	I	Io=5 to 1A				0.5	
Change		V_I=-27 to -38V				1	
Temperature Coefficient of V	Vo/ T	Io=5			-1		/
Output Noise Voltage	V_N	f=10Hz to 100Khz, T_A=25			400		
Ripple Rejection	RR	f=120Hz, V_I=10V		54	60		
Dropout Voltage	V_D	T_J=25 , Io=1A			2		V
Short Circuit Current	I_{SC}	T_J=25 , V_I=-35V			300		
Peak Current	I_{PK}	T_J=25			2.2		A

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