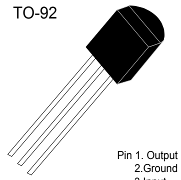
THREE-TERMINAL LOW CURRENT POSITIVE VOLTAGE REGULATORS

The IL79LXX, A Series negative voltage regulators are inexpensive, easy-to-use devices suitable for numerous applications requiring up to 100 mA. This series features thermal shutdown and current limiting, making them remarkably rugged. In most applications, no external components are required for operation.

The IL79LXX devices are useful for on-card regulation or any other application where a regulated negative voltage at a modest current level is needed. These regulators offer substantial advantage over the common resistor/zener diode approach.

TO-226AA /
TO-92

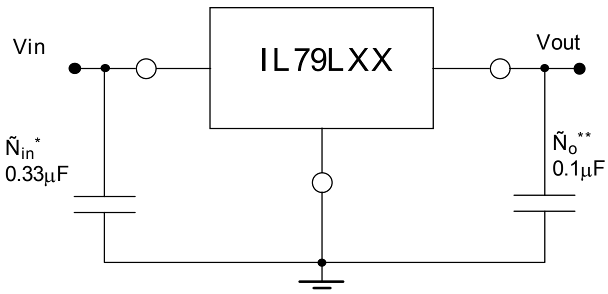


Pin 1. Output
2.Ground
3.Input

FEATURES

No External Components Required
- Internal Short Circuit Current Limiting
- Internal Thermal Overload Protection
- Low Cost
- Complementary Positive Regulators Offered (IL78LXX Series)
- Available in Either ±5% (AC) or±10% (C) Selections

Standard application



A common ground is required between the input and the output voltages. The input voltage must remaintypically 2.0 V above the output voltage even during the low point on the input ripple voltage.
*C in is required if regulator is located an appreciable distance from power supply filter.
**C O is not needed for stability; however, it does improve transient response.

ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Input Voltage (-5.0 V) (-12, -15, -18V) (-24V)	V_I	-30 -35 -40	Vdc
Storage Temperature Range	Tstg	-65 to +150	°C
Operating Junction Temperature Range	T_J	+150	°C

IL79L05 *ELECTRICAL CHARACTERISTICS*

(V_I=-10 V, Io= 40 mA, C_I = 0.33 μF, Co = 0.1 μF, -40°C < T_J < +125°C unless otherwise noted.)

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage (T_J=+25°C)	V_O	-4.8	-5.0	-5.2	Vdc
Line Regulation (T_J = +25°C) -7.0 Vdc ≥ Vi ≥ 20 Vdc -8.0 Vdc ≥ Vi ≥20 Vdc	Reg_{line}	 - -	 - -	 150 100	mV
Load Regulation T_J = +25°C, 1.0 mA ≤ IO ≤ 100 mA) 1.0 mA £≤ Io ≤ 40 mA)	Peg_{load}	 - -	 - -	 60 30	mV
Output Voltage -7.0 Vdc ≥Vi≥ -20Vdc, (Vi=-10 V, 1.0 mA≤Io≤70 mA)	VO	 -4.75 -4.75	 - -	 -5.25 -5.25	Vdc
Input Bias Current (T_J = +25°C) (T_J =+125°C)	I_{IB}	 - -	 -	 6.0 5.5	mA
Input Bias Current Change -8.8 Vdc ≥Vi ≥-£20 Vdc) 1.0 mA ≤Io≤ 40 mA	ΔI_{IB}	 - -	 - -	 1.5 0.1	mA
Output Noise Voltage (T_A=+25°C, 10 Hz≤f≤100 kHz)	Vn	-	40	-	μV
Ripple Rejection (-8.0 Vdc ≥Vi ≥ -18 V, f= 120 Hz, T_J= +25°C)	RR	41	49	-	dB
Dropout Voltage (IO=40 mA, T_J = +25°C)	Vi-Vo	-	1.7	-	Vdc

IL79L12 *ELECTRICAL CHARACTERISTICS*

(Vi =-19 V, Io =40 mA, Ci = 0.33 μF, Co = 0.1 μF, -40°C < T_J < +125°C, unless otherwise noted.)

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage (T_J = +25°C)	Vo	-11.1	-12	-12.9	Vdc
Line Regulation (T_J = +25°C) -14.5Vdc ≥Vi ≥ 27Vdc -16 Vdc ≥Vi ≥ 27 Vdc	Reg_{line}	 - -	 - -	 250 200	mV
Load Regulation T_J = +25°C, 1.0 mA ≤ Io ≤ 100 mA 1.0 mA ≤ Io ≤ 40 mA	Peg_{load}	 - -	 - -	 100 50	mV
Output Voltage -14.5Vdc ≥Vi ≥-27Vdc, 1.0mA≤Io≤ 40mA) Vi = -19V, 1.0mA ≤Io ≤ 70mA)	Vo	 -10.8 -- 10.8	 - -	 -13.2 -13.2	Vdc
Input Bias Current (T_J = +25°C) (T_J = +125°C)	I_{IB}	 - -	 - -	 6.5 6.0	mA
Input Bias Current Change -16Vdc ≥ Vi ≥ -27Vdc 1.0 mA ≤ Io ≤ 40 mA	ΔI_{IB}	 - -	 - -	 1.5 0.2	mA
Output Noise Voltage (T_A = +25°C, 10Hz ≤ f ≤ 100 kHz)	Vn	-	80	-	μV
Ripple Rejection -15V ≥ Vi ≥ -25V, f= 120 Hz, T_J=+25°C)	RR	36	42	-	dB
Dropout Voltage (IO= 40 mA, T_J = +25°C)	Vi-Vo	"	1.7	-	Vdc

IL79L15 *ELECTRICAL CHARACTERISTICS*

(Vi = -23 V, Io = 40 mA, Ci = 0.33 μF, Co= 0.1 μF, -40°C < TJ < +125°C), unless otherwise noted.)

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage (TJ = +25°C)	Vo	-13.8	-15	-16.2	Vdc
Line Regulation (TJ = +25°C, Io = 40mA) -30Vdc ≤Vi ≤ -17.5Vdc -30Vdc ≤ Vi ≤ -20Vdc	Reg_{line}	 - -	 - -	 300 250	mV
Load Regulation (TJ = +25°C, 1.0 mA ≤ Io ≤ 100 mA) (TJ = +25°C, 1.0 mA ≤£ Io < 40 mA)	Peg_{load}	 - -	 - -	 150 75	mV
Output Voltage (17.5Vdc≤Vi≤ 30Vdc, 1.0 mA≤Io≤ 40 mA) (Vi = 23V, 1.0mA ≤£Io≤ 70 mA)	Vo	 -13.5 -13.5	 - -	 -16.5 -16.5	Vdc
Input Bias Current (TJ = +25°C) (TJ = +125°C)	I_{IB}	 - -	 - -	 6.5 6.0	mA
Input Bias Current Change (20Vdc ≤ Vi ≤ 30Vdc) (1.0mA ≤ Io ≤ 40 mA)	ΔI_{IB}	 - -	 - -	 1.5 0.2	mA
Output Noise Voltage (T_A = +25°C, 10Hz ≤ f ≤ 100 kHz)	Vn	-	90	-	nV
Ripple Rejection (IO = 40 mA, f =120 Hz, 18.5V ≤ Vi ≤ 28.5V, TJ = +25°C)	RR	33	39	-	dB
Dropout Voltage (TJ = +25°C)	|Vi-Vo|	-	1.7	-	Vdc

IL79L18 *ELECTRICAL CHARACTERISTICS*

(Vi = 27 V, Io = 40 mA, Ci = 0.33 μF, Co = 0.1 μF, 40°C < TJ < +125°C, unless otherwise noted.)

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage (TJ = +25°C)	VO	-16.6	-18	-19.4	Vdc
Line Regulation (TJ = +25°C, Io= 40 mA) -33 Vdc ≤ Vi ≤ -20.7Vdc -33 Vdc ≤ Vi ≤ -22 Vdc	Reg_{line}	 - -	 - -	 325 275	mV
Load Regulation (TJ = +25°C, 1.0 mA ≤ Io ≤ 100 mA) (TJ = +25°C, 1.0 mA ≤ Io ≤ 40 mA)	Peg_{load}	 - -	 - -	 170 85	mV
Output Voltage (-33Vdc ≤Vi≤-21.4Vdc, 1.0 mA ≤Io≤ 40 mA) (Vi = -27 V, 1.0mA ≤Io≤ 70 mA)	Vo	 -16.2 -16.2	 - -	 -19.8 -19.8	Vdc
Input Bias Current (TJ = +25°C) (TJ = +125°C)	I_{IB}	 - -	 - -	 6.5 6.0	mA
Input Bias Current Change (-33Vdc ≤ Vi ≤ -22Vdc) (1.0mA ≤ Io ≤ 40 mA)	ΔI_{IB}	 - -	 - -	 1.5 0.2	mA
Output Noise Voltage (T_A=+25°C,10Hz ≤ Io ≤ 100kHz)	Vn	-	150	-	nV
Ripple Rejection (f = 120 Hz, -33 V ≤ Vi ≤ -23 V, TJ = +25°C)	RR	32	46	-	dB
Dropout Voltage (TJ = +25°C)	|Vi-Vo|	-	1.7	-	Vdc

IL79L24 *ELECTRICAL CHARACTERISTICS*

(Vi = 33 V, Io = 40 mA, Ci = 0.33 µF. Co = 0.1 µF,
0°C < TJ < +125°C, unless otherwise noted.)

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage (T_J = +25°C)	V_O	-22.1	-24	-25.9	Vdc
Line Regulation (T_J = +25°C, Io = 40 mA) 38 Vdc ≤Vi ≤ 27.5 Vdc 38 Vdc ≤ Vi ≤ 28 Vdc	Reg_{line}	 - -	 35 30	 350 300	mV
Load Regulation (T_J = +25°C, 1.0 mA ≤ Io £≤ 100 mA) (T_J = +25°C, 1.0 mA ≤ Io ≤ 40 mA)	Reg_{load}	 - -	 40 20	 200 100	mV
Output Voltage -38Vdc≤Vi≤£ -28Vdc, 1.0 mA ≤ Io ≤40 mA Vi= -33Vdc, 1.0 mA ≤ Io ≤70 mA	V_O	 -21.6 -21.6	 - -	 -26.4 -26.4	Vdc
Input Bias Current (T_J = +25°C) (T_J = +125°C)	I_{IB}	 - -	 - -	 6.5 6.0	mA
Input Bias Current Change (-38 Vdc ≤ Vi ≤£ -28 Vdc) (1.0 mA ≤ Io ≤ 40 mA)	ΔI_{IB}	 - -	 - -	 1.5 0.2	rnA
Output Noise Voltage (T_A = +25°C, 10Hz ≤ f ≤ 100 kHz)	Vn	-	200	-	nV
Ripple Rejection (I_O = 40 mA, f= 120 Hz, -35V ≤ Vi ≤ -29V, T_J = +25°C)	RR	30	43	-	dB
Dropout Voltage (T_J = +25°C)	$\lvert Vi-Vo \rvert$	-	1.7	-	Vdc