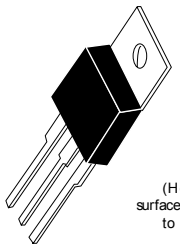
IL79XXC SERIES

THREE-TERMINAL NEGATIVE VOLTAGE REGULATORS

The IL7900 series of fixed output negative voltage regulators are intended as complements to the IL7800 series devices. These negative regulators are available in the same seven-voltage options as the IL7800 devices. In addition, one extra voltage option commonly employed in MECL systems is also available in the current series.

TO-220 AB



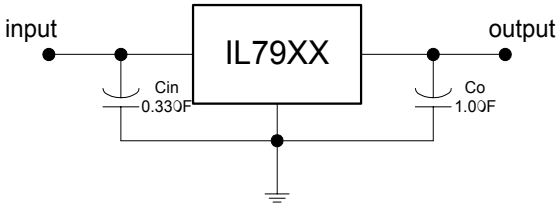
Pin 1. Input
2. Ground
3. Output

(Heatsink surface connected to Pin 2.)

Available in fixed output voltage options from -5.0 to -24 volts, these regulators employ current limiting, thermal shutdown, and safe-area compensation - making them remarkably rugged under most operating conditions. With adequate heatsinking they can deliver output currents in excess of 1.0 ampere.

- ♦ No External Components Required
- ♦ Internal Thermal Overload Protection
- ♦ Internal Short - Circuit Current Limiting
- ♦ Output Transistor Safe - Area Compensation
- ♦ Available in 4% Voltage Tolerance

STANDARD APPLICATION



A common ground is required between the input and the output voltages. The input voltage must remain typically 2.0V more negative even during the high point on the input ripple voltage.
XX - these two digits of the type number indicate voltage
Cin - is required if regulator is located an appreciable distance from power supply filter
Co - improves stability and transient response

Device type/nominal output voltage			
IL7905	5 V	IL7912	12 V
IL7905.2	5.2 V	IL7915	15 V
IL7906	6 V	IL7918	18 V
IL7908	8 V	IL7924	24 V

Maximum ratings (T_A = +25 °C unless otherwise noted)

Rating	Symbol	Value	Unit
Input Voltage (-5.0V ≥Vo≥- 18V) (24 V)	V_I	-35 -40	Vdc
Power Dissipation Plastic Package T**A = +**25 °C Derate above T**A = +**25 °C Tc = **+**25 °C Derate above Tc=+95°C	 PD $1/R_{\Theta JA}$ PD $1/R_{\Theta JA}$	 Internally Limited 15.4 Internally Limited 200	 Watts mW/°C Watts mW/°C
Storage Junction Temperature Rang	Tstg	-65 to +150	°C
Operating Junction Temperature Rang	TJ	0 to +150	°C

INTEGRAL

IL7905

Electrical characteristics

(V_I = -10V, Io = 500mA, 0°C <T_J<+125°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Voltage (TJ=+25°C)	Vo	-4.8	-5.0	-5.2	Vdc
Line Regulation (Note 1)	Regline				mV
(TJ=+25°C, Io = 100mA)		-	7.0	50	
-7.0Vdc ≥ V_I ≥ -25Vdc		-	2.0	25	
-8.0Vdc ≥ V_I ≥ -12Vdc					
(TJ=+25°C, Io =500mA)					
-7.0Vdc ≥ V_I ≥ -25Vdc		-	35	100	
-8.0Vdc ≥ V_I ≥ -12Vdc		-	8.0	50	
Load Regulation (TJ=+25°C, Note 1)	Regload				mV
5.0mA ≤ Io ≤ 1.5A		-	11	100	
250mA ≤ Io ≤ 750 mA		-	4.0	50	
Output Voltage	Vo	-4.75	-	-5.25	Vcd
5.0mA ≤ Io ≤ 1.0A, Po ≤15 W					
-7.0Vdc ≥ V_I ≥ -25Vdc					
Input Bias Current (TJ=+25°C)	I_{IB}	-	4.3	8.0	mA
Input Bias Current Change	ΔI_{IB}				mA
-7.0Vdc ≥ V_I ≥ -25Vdc		-	-	1.3	
5.0mA ≤ Io ≤ 1.0A		-	-	0.5	
Output Noise Voltage (TA=+25°C)	e_{on}	-	40	-	μV
10 Hz ≤ f ≤ 100 kHz					
Ripple Rejection (Io=20mA f=120Hz)	RR	-	70	-	dB
Dropout Voltage (Io=1.0A, T_J =+25°C)	V_I-Vo	-	2.0	-	Vdc
Average Temperature Coefficient of	DVo/DT	-	-1.0	-	mV/°C
Output Voltage Io=5.0mA, 0°C <T_J<+125°C					

IL7905.2

Electrical characteristics

(V_I = -10V, Io = 500mA, 0°C <T_J<+125°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Voltage (TJ=+25°C)	Vo	-5.0	-5.2	-5.4	Vdc
Line Regulation (Note 1)	Regline				mV
(TJ=+25°C, Io = 100mA)		-	8.0	52	
-7.2Vdc ≥ V_I ≥ -25Vdc		-	2.2	27	
-8.0Vdc ≥ V_I ≥ -12Vdc					
(TJ=+25°C, Io =500mA)					
-7.2Vdc ≥ V_I ≥ -25Vdc		-	37	105	
-8.0Vdc ≥ V_I ≥ -12Vdc		-	8.5	52	
Load Regulation (TJ=+25°C, Note 1)	Regload				mV
5.0mA ≤ Io ≤ 1.5A		-	12	105	
250mA ≤ Io ≤ 750 mA		-	4.5	52	
Output Voltage	Vo	-4.95	-	-5.45	Vcd
5.0mA ≤ Io ≤ 1.0A, Po ≤15 W					
-7.2Vdc ≥ V_I ≥ -20Vdc					
Input Bias Current (TJ=+25°C)	I_{IB}	-	4.3	8.0	mA
Input Bias Current Change	ΔI_{IB}				mA
-7.2Vdc ≥ V_I ≥ -25Vdc		-	-	1.3	
5.0mA ≤ Io ≤ 1.5A		-	-	0.5	
Output Noise Voltage (TA=+25°C)	e_{on}	-	42	-	μV
10 Hz ≤ f ≤ 100 kHz					
Ripple Rejection (Io=20mA f=120Hz)	RR	-	68	-	dB
Dropout Voltage (Io=1.0A, T_J =+25°C)	V_I-Vo	-	2.0	-	Vdc
Average Temperature Coefficient of	DVo/Vo	-	-1.0	-	mV/°C
Output Voltage Io=5.0mA, 0°C <T_J<+125°C					

Note:

1. 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 cycle is used.

IL7906

Electrical characteristics

(V_I = -11V, Io = 500mA, 0°C <T_J<+125°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Voltage (TJ=+25°C)	Vo	-5.75	-6.0	-6.25	Vdc
Line Regulation (Note 1)	Regline				mV
(TJ=+25°C, Io = 100mA)		-	9.0	60	
-8.0Vdc ≥ V_I ≥ -25Vdc		-	3.0	30	
-9.0Vdc ≥ V_I ≥ -13Vdc					
(TJ=+25°C, Io =500mA)					
-8.0Vdc ≥ V_I ≥ -25Vdc		-	43	120	
-9.0Vdc ≥ V_I ≥ -13Vdc		-	10	60	
Load Regulation (TJ=+25°C, Note 1)	Regload				mV
5.0mA ≤ Io ≤ 1.5A		-	13	120	
250mA ≤ Io ≤ 750 mA		-	5.0	60	
Output Voltage	Vo	-5.7	-	-6.3	Vcd
5.0mA ≤ Io ≤ 1.0A, Po ≤15 W					
-8.0Vdc ≥ V_I ≥ -21Vdc					
Input Bias Current (TJ=+25°C)	I_{IB}	-	4.3	8.0	mA
Input Bias Current Change	ΔI_{IB}				mA
-8.0Vdc ≥ V_I ≥ -25Vdc		-	-	1.3	
5.0mA ≤ Io ≤ 1.5A		-	-	0.5	
Output Noise Voltage (TA=+25°C)	e_{on}	-	45	-	μV
10 Hz ≤ f ≤ 100 kHz					
Ripple Rejection (Io=20mA f=120Hz)	RR	-	65	-	dB
Dropout Voltage (Io=1.0A, T_J =+25°C)	V_I-Vo	-	2.0	-	Vdc
Average Temperature Coefficient of	DVo/Vo	-	-1.0	-	mV/°C
Output Voltage Io=5.0mA, 0°C <T_J<+125°C					

IL7908

Electrical characteristics

(V_I = -14V, Io = 500mA, 0°C <T_J<+125°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Voltage (TJ=+25°C)	Vo	-7.7	-8.0	-8.3	Vdc
Line Regulation (Note 1)	Regline				mV
(TJ=+25°C, Io = 100mA)		-	12	80	
-10.5Vdc ≥ V_I ≥ -25Vdc		-	5.0	40	
-11Vdc ≥ V_I ≥ -17Vdc					
(TJ=+25°C, Io =500mA)					
-10.5Vdc ≥ V_I ≥ -25Vdc		-	50	160	
-11Vdc ≥ V_I ≥ -17Vdc		-	22	80	
Load Regulation (TJ=+25°C, Note 1)	Regload				mV
5.0mA ≤ Io ≤ 1.5A		-	26	160	
250mA ≤ Io ≤ 750 mA		-	9.0	80	
Output Voltage	Vo	-7.6	-	-8.4	Vcd
5.0mA ≤ Io ≤ 1.0A, Po ≤15 W					
-10.5Vdc ≥ V_I ≥ -23Vdc					
Input Bias Current (TJ=+25°C)	I_{IB}	-	4.3	8.0	mA
Input Bias Current Change	ΔI_{IB}				mA
-10.5Vdc ≥ V_I ≥ -25Vdc		-	-	1.0	
5.0mA ≤ Io ≤ 1.5A		-	-	0.5	
Output Noise Voltage (TA=+25°C)	e_{on}	-	52	-	μV
10 Hz ≤ f ≤ 100 kHz					
Ripple Rejection (Io=20mA f=120Hz)	RR	-	62	-	dB
Dropout Voltage (Io=1.0A, T_J =+25°C)	V_I-Vo	-	2.0	-	Vdc
Average Temperature Coefficient of	DVo/Vo	-	-1.0	-	mV/°C
Output Voltage Io=5.0mA, 0°C <T_J<+125°C					

Note:

1. 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 cycle is used.

IL7915

Electrical characteristics

(V_I = -23V, Io = 500mA, 0°C <T_J<+125°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Voltage (TJ=+25°C)	Vo	-14.4	-15	-15.6	Vdc
Line Regulation (Note 1)	Regline				mV
(TJ=+25°C, Io = 100mA)		-	14	150	
-17.5Vdc ≥ V_I ≥ -30Vdc		-	6.0	75	
-20Vdc ≥ V_I ≥ -26Vdc					
(TJ=+25°C, Io =500mA)					
-17.5Vdc ≥ V_I ≥ -30Vdc		-	57	300	
-20Vdc ≥ V_I ≥ -26Vdc		-	27	150	
Load Regulation (TJ=+25°C, Note 1)	Regload				mV
5.0mA ≤ Io ≤ 1.5A		-	68	300	
250mA ≤ Io ≤ 750 mA		-	25	150	
Output Voltage	Vo	-14.25	-	-15.75	Vcd
5.0mA ≤ Io ≤ 1.0A, Po ≤15 W					
-17.5Vdc ≥ V_I ≥ -30Vdc					
Input Bias Current (T_J=+25°C)	I_{IB}	-	4.4	8.0	mA
Input Bias Current Change	ΔI_{IB}				mA
-17.5Vdc ≥ V_I ≥ -30Vdc		-	-	1.0	
5.0mA ≤ Io ≤ 1.0A		-	-	0.5	
Output Noise Voltage (TA=+25°C)	e_{on}	-	90	-	μV
10 Hz ≤ f ≤ 100 kHz					
Ripple Rejection (Io=20mA f=120Hz)	RR	-	60	-	dB
Dropout Voltage (Io=1.0A, T_J =+25°C)	V_I-Vo	-	2.0	-	Vdc
Average Temperature Coefficient of Output Voltage Io=5.0mA, 0°C <T_J<+125°C	DVo/Vo	-	-1.0	-	mV/°C

IL7912

Electrical characteristics

(V_I = -19V, Io = 500mA, 0°C <T_J<+125°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Voltage (TJ=+25°C)	Vo	-11.5	-12	-12.5	Vdc
Line Regulation (Note 1)	Regline				mV
(TJ=+25°C, Io = 100mA)		-	13	120	
-14.5Vdc ≥ V_I ≥ -30Vdc		-	6.0	60	
-16Vdc ≥ V_I ≥ -22Vdc					
(TJ=+25°C, Io =500mA)					
-14.5Vdc ≥ V_I ≥ -30Vdc		-	55	240	
-16Vdc ≥ V_I ≥ -22Vdc		-	24	120	
Load Regulation (TJ=+25°C, Note 1)	Regload				mV
5.0mA ≤ Io ≤ 1.5A		-	46	240	
250mA ≤ Io ≤ 750 mA		-	17	120	
Output Voltage	Vo	-11.4	-	-12.6	Vcd
5.0mA ≤ Io ≤ 1.0A, Po ≤15 W					
-14.5Vdc ≥ V_I ≥ -27Vdc					
Input Bias Current (T_J=+25°C)	I_{IB}	-	4.4	8.0	mA
Input Bias Current Change	ΔI_{IB}				mA
-14.5Vdc ≥ V_I ≥ -30Vdc		-	-	1.0	
5.0mA ≤ Io ≤ 1.5A		-	-	0.5	
Output Noise Voltage (TA=+25°C)	e_{on}	-	75	-	μV
10 Hz ≤ f ≤ 100 kHz					
Ripple Rejection (Io=20mA f=120Hz)	RR	-	61	-	dB
Dropout Voltage (Io=1.0A, T_J =+25°C)	V_I-Vo	-	2.0	-	Vdc
Average Temperature Coefficient of Output Voltage Io=5.0mA, 0°C <T_J<+125°C	DVo/Vo	-	-1.0	-	mV/°C

Note:

1. 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 cycle is used.

IL7918

Electrical characteristics

(V_I = -27V, Io = 500mA, 0°C <T_J<+125°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Voltage (TJ=+25°C)	Vo	-11.5	-12	-12.5	Vdc
Line Regulation (Note 1)	Regline				mV
(TJ=+25°C, Io = 100mA)		-	25	180	
-21Vdc ≥ V_I ≥ -33Vdc		-	10	90	
-24Vdc ≥ V_I ≥ -30Vdc					
(TJ=+25°C, Io =500mA)					
-21Vdc ≥ V_I ≥ -33Vdc		-	90	360	
-24Vdc ≥ V_I ≥ -30Vdc		-	50	180	
Load Regulation (TJ=+25°C, Note 1)	Regload				mV
5.0mA ≤ Io ≤ 1.5A		-	110	360	
250mA ≤ Io ≤ 750 mA		-	55	180	
Output Voltage	Vo	-17.1	-	-18.9	Vcd
5.0mA ≤ Io ≤ 1.0A, Po ≤15 W					
-21Vdc ≥ V_I ≥ -33Vdc					
Input Bias Current (T_J=+25°C)	I_{IB}	-	4.5	8.0	mA
Input Bias Current Change	ΔI_{IB}				mA
-21Vdc ≥ V_I ≥ -33Vdc		-	-	1.0	
5.0mA ≤ Io ≤ 1.5A		-	-	0.5	
Output Noise Voltage (TA=+25°C)	e_{on}	-	110	-	μV
10 Hz ≤ f ≤ 100 kHz					
Ripple Rejection (Io=20mA f=120Hz)	RR	-	59	-	dB
Dropout Voltage (Io=1.0A, T_J =+25°C)	V_I-Vo	-	2.0	-	Vdc
Average Temperature Coefficient of Output Voltage Io=5.0mA, 0°C <T_J<+125°C	DVo/Vo	-	-1.0	-	mV/°C

IL7924

Electrical characteristics

(V_I = -33V, Io = 500mA, 0°C <T_J<+125°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Voltage (TJ=+25°C)	Vo	-11.5	-12	-12.5	Vdc
Line Regulation (Note 1)	Regline				mV
(TJ=+25°C, Io = 100mA)		-	31	240	
-27Vdc ≥ V_I ≥ -38Vdc		-	14	120	
-30Vdc ≥ V_I ≥ -36Vdc					
(TJ=+25°C, Io =500mA)					
-27Vdc ≥ V_I ≥ -38Vdc		-	118	480	
-30Vdc ≥ V_I ≥ -36Vdc		-	70	240	
Load Regulation (TJ=+25°C, Note 1)	Regload				mV
5.0mA ≤ Io ≤ 1.5A		-	150	480	
250mA ≤ Io ≤ 750 mA		-	85	240	
Output Voltage	Vo	-22.8	-	-25.2	Vcd
5.0mA ≤ Io ≤ 1.0A, Po ≤15 W					
-27Vdc ≥ V_I ≥ -38Vdc					
Input Bias Current (T_J=+25°C)	I_{IB}	-	4.6	8.0	mA
Input Bias Current Change	ΔI_{IB}				mA
-27Vdc ≥ V_I ≥ -38Vdc		-	-	1.0	
5.0mA ≤ Io ≤ 1.5A		-	-	0.5	
Output Noise Voltage (TA=+25°C)	e_{on}	-	170	-	μV
10 Hz ≤ f ≤ 100 kHz					
Ripple Rejection (Io=20mA f=120Hz)	RR	-	56	-	dB
Dropout Voltage (Io=1.0A, T_J =+25°C)	V_I-Vo	-	2.0	-	Vdc
Average Temperature Coefficient of Output Voltage Io=5.0mA, 0°C <T_J<+125°C	DVo/Vo	-	-1.0	-	mV/°C

Note:

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 cycle is used.