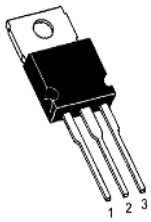
Three-Terminal Negative-Voltage Regulators

These voltage regulators are monolithic integrated circuits designed as fixed-voltage regulators for a wide variety of applications including local, on-card regulation. These regulators employ internal current limiting, thermal shutdown, and safe-area compensation. With adequate heatsinking they can deliver output currents in excess of 1.0A. Although designed primarily as a fixed voltage regulator, these devices can be used with external components to obtain adjustable voltage and currents.

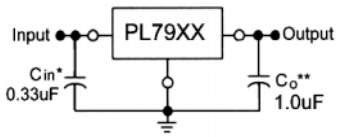
- Output current Excess of 1.0 Ampere
- No External Components Require
- Internal Thermal Overload Protection
- Internal Short-Circuit Current Limiting
- Output Transistor Safe-Area Compensation

PLASTIC PACKAGE TO-220



PIN: 1. Gnd
2. Input
3. Output

STANDARD APPLICATION



A common ground is required between the input and the output voltages. The input voltage must remain typically 2.0V above the output voltage even during the low 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 improve stability and transient response.

Maximum Rating

Rating	Symbol	Value	Unit
Input Voltage	V_{IN}	-35	V_{DC}
Power Dissipation	P_D	Internally Limited	Watts
Operating Junction Temperature Range	T_J	0 to +150	°C
Storage Junction Temperature Range	T_{stg}	-65 to +150	°C

Device	Output Voltage Tolerance	Operating Junction Temperature Range
PL79xx A	±2 %	0 to +150 °C
PL79xx B	±4 %	0 to +150 °C

DEVICE TYPE/NOMINAL OUTPUT VOLTAGE			
PL7905	-5.0V	PL7912	-12V
PL7906	-6.0V	PL7915	-15V
PL7908	-8.0V	PL7918	-18V
PL7909	-9.0V	PL7924	-24V

PL7905A

ELECTRICAL CHARACTERISTICS: V_{IN}=-10V, I_{OUT}=500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=35Vdc, I_{OUT} =50mA	Vo	-4.9 -4.8	-5.0 -5.0	-5.1 -5.2	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.0A, P_D≤ 15W, -7.0 Vdc ≥ V_{IN} ≥ -20Vdc	Vo	-4.8	-5.0	-5.25	Vdc
Line Regulation -7.0 Vdc ≥ V_{IN} ≥ -25 Vdc -8.0 Vdc ≥ V_{IN} ≥ -12 Vdc	Reg_{line}	- -	- -	50 25	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	100 50	mV
Input Bias Current	I_B	-	2.5	8.0	mA
Quiescent Current Change -7.0 Vdc ≥ V_{IN} ≥ -25 Vdc 5.0 mA ≤ I_{OUT} ≤ 1.5 A	ΔI_B	- -	- -	1.3 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7905B

ELECTRICAL CHARACTERISTICS: V_{IN}=-10V, I_{OUT}=500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=35Vdc, I_{OUT} =50mA	Vo	-4.8 -4.75	-5.0 -5.0	-5.2 -5.25	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.0A, P_D≤ 15W, -7.0 Vdc ≥ V_{IN} ≥ -20Vdc	Vo	-4.75	-5.0	-5.25	Vdc
Line Regulation -7.0 Vdc ≥ V_{IN} ≥ -25 Vdc -8.0 Vdc ≥ V_{IN} ≥ -12 Vdc	Reg_{line}	- -	- -	50 25	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	100 50	mV
Input Bias Current	I_B	-	2.5	8.0	mA
Quiescent Current Change -7.0 Vdc ≥ V_{IN} ≥ -25 Vdc 5.0 mA ≤ I_{OUT} ≤ 1.5 A	ΔI_B	-	-	1.3 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7906A

ELECTRICAL CHARACTERISTICS: V_{IN}=-11V, I_{OUT} =500mA, T_J = 25°C, C_{IN} = 0.33 µF, C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=35Vdc, I_{OUT} =50mA	Vo	-5.88 -5.70	-6.0 -6.0	-6.12 -6.30	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.5A, P_D≤ 15W, -8.0 Vdc ≤ V_{IN} ≤ -21Vdc	Vo	-5.70	-6.0	-6.30	Vdc
Line Regulation -8.0 Vdc ≤ V_{IN} ≤ -25 Vdc -9.0 Vdc ≤ V_{IN} ≤ -13 Vdc	Reg_{line}	- -	- -	120 60	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	120 60	mV
Quiescent Current	I_B	-	-	8.0	mA
Quiescent Current Change -7.0Vdc≤ V_{IN} ≤ -25 Vdc 5.0mA ≤ I_{OUT} ≤ 1.5A	ΔI_B	- -	- -	1.3 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7906B

ELECTRICAL CHARACTERISTICS: V_{IN}=-11V, I_{OUT} =500mA, T_J = 25°C, C_{IN} = 0.33 µF, C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=35Vdc, I_{OUT} =50mA	Vo	-5.75 -5.70	-6.0 -6.0	-6.25 -6.30	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.0A, P_0 ≤ 15W, -8.0 Vdc ≤ V_{IN} ≤ -21Vdc	Vo	-5.70	-6.0	-6.30	Vdc
Line Regulation -8.0 Vdc ≤ V_{IN} ≤ -25 Vdc -9.0 Vdc ≤ V_{IN} ≤ -13 Vdc	Reg_{line}	- -	- -	120 60	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	120 60	mV
Quiescent Current	I_B	-	-	8.0	mA
Quiescent Current Change -7.0 Vdc≤ V_{IN} ≤ -25 Vdc 5.0mA ≤ I_{OUT} ≤ 1.0A	ΔI_B	-	-	1.3 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7909A

ELECTRICAL CHARACTERISTICS: V_{IN}=-14V, I_{OUT} =500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=35Vdc, I_{OUT} =50mA	Vo	-8.82 -8.64	-9.0 -9.0	-9.18 -9.36	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.0A, P_D≤ 15W, -11.5Vdc ≤ V_{IN} ≤ -23Vdc	Vo	-8.64	-9.0	-9.36	Vdc
Line Regulation -11.5 Vdc ≤ V_{IN} ≤ -25 Vdc -12.0 Vdc ≤ V_{IN} ≤ -20 Vdc	Reg_{line}	- -	- -	180 90	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	180 90	mV
Input Bias Current	I_B	-	2.5	8.0	mA
Input Bias Current Change -11.5Vdc≤ V_{IN} ≤ -25 Vdc 5.0mA ≤ I_{OUT} ≤ 1.0A	ΔI_B	- -	- -	1.0 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7909B

ELECTRICAL CHARACTERISTICS: V_{IN}=-14V, I_{OUT} =500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=35Vdc, I_{OUT} =50mA	Vo	-8.64 -8.55	-9.0 -9.0	-9.36 -9.45	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.0A, P_D≤ 15W, -11.5Vdc ≤ V_{IN} ≤ -23Vdc	Vo	-8.55	-9.0	-9.45	Vdc
Line Regulation -11.5 Vdc ≤ V_{IN} ≤ -25 Vdc -12.0 Vdc ≤ V_{IN} ≤ -20 Vdc	Reg_{line}	- -	- -	180 90	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	180 90	mV
Input Bias Current	I_B	-	2.5	8.0	mA
Input Bias Current Change -11.5Vdc≤ V_{IN} ≤ -25 Vdc 5.0mA ≤ I_{OUT} ≤ 1.0A	ΔI_B	-	-	1.0 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7912A

ELECTRICAL CHARACTERISTICS: V_{IN}=-19V, I_{OUT}=500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=35Vdc, I_{OUT} =50mA	Vo	-11.76 -11.5	-12 -12	-12.24 -12.5	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.0A, P_D≤ 15W, -14.5Vdc ≤ V_{IN} ≤ -27Vdc	Vo	-11.5	-12	-12.5	Vdc
Line Regulation -14.5 Vdc ≤ V_{IN} ≤ -30 Vdc -16 Vdc ≤ V_{IN} ≤ -22 Vdc	Reg_{line}	- -	- -	240 120	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	240 120	mV
Input Bias Current	I_B	-	2.5	8.0	mA
Input Bias Current Change -14.5Vdc≤ V_{IN} ≤ -30 Vdc 5.0mA ≤ I_{OUT} ≤ 1.0A	ΔI_B	- -	- -	1.0 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7912B

ELECTRICAL CHARACTERISTICS: V_{IN}=-19V, I_{OUT}=500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=35Vdc, I_{OUT} =50mA	Vo	-11.5 -11.4	-12 -12	-12.5 -12.6	Vdc
Output Voltage (0° to + 125°C) 5.0Ma ≤ I_{OUT} ≤ 1.0A, P_D≤ 15W, -14.5Vdc ≤ V_{IN} ≤ -27Vdc	Vo	-11.4	-12	-12.6	Vdc
Line Regulation -14.5 Vdc ≤ V_{IN} ≤ -30 Vdc -16 Vdc ≤ V_{IN} ≤ -22 Vdc	Reg_{line}	- -	- -	240 120	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	240 120	mV
Input Bias Current	I_B	-	2.5	8.0	mA
Input Bias Current Change -14.5Vdc≤ V_{IN} ≤ -30 Vdc 5.0mA ≤ I_{OUT} ≤ 1.0A	ΔI_B	-	-	1.0 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7915A

ELECTRICAL CHARACTERISTICS: V_{IN}=-23 V, I_{OUT}=500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=-35Vdc, I_{OUT} =50mA	Vo	-14.7 -14.4	-15 -15	-15.3 -15.6	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.0A, P_D≤ 15W, -14.5Vdc ≤ V_{IN} ≤ -27Vdc	Vo	-14.4	-15	-15.6	Vdc
Line Regulation -14.5 Vdc ≤ V_{IN} ≤ -30 Vdc -16 Vdc ≤ V_{IN} ≤ -22 Vdc	Reg_{line}	- -	- -	300 150	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	300 150	mV
Quiescent Current	I_B	-	-	8.0	mA
Quiescent Current Change -14.5Vdc≤ V_{IN} ≤ -30 Vdc 5.0mA ≤ I_{OUT} ≤ 1.0A	ΔI_B	- -	- -	1.0 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7915B

ELECTRICAL CHARACTERISTICS: V_{IN}=-23V, I_{OUT}=500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=-35Vdc, I_{OUT} =50mA	Vo	-14.40 -14.25	-15 -15	-15.60 -15.75	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.0A, P_0≤ 15W, -17.5 Vdc ≤ V_{IN} ≤ -30Vdc	Vo	-14.25	-15	-15.75	Vdc
Line Regulation -17.5 Vdc ≤ V_{IN} ≤ -30 Vdc -20 Vdc ≤ V_{IN} ≤ -26 Vdc	Reg_{line}	- -	- -	300 150	mV
Load Regulation 5.0 Ma ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	300 150	mV
Quiescent Current	I_B	-	-	8.0	mA
Quiescent Current Change -17.5Vdc≤ V_{IN} ≤ -30 Vdc 5.0mA ≤ I_{OUT} ≤ 1.0A	ΔI_B	-	-	1.3 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7918A

ELECTRICAL CHARACTERISTICS: V_{IN}=-27 V, I_{OUT}=500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=-35Vdc, I_{OUT} =50mA	Vo	-17.64 -17.10	-18 -18	-18.36 -18.90	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.5A, P_D≤ 15W, -21.0Vdc ≤ V_{IN} ≤ -33Vdc	Vo	-17.10	-18	-18.90	Vdc
Line Regulation -21 Vdc ≤ V_{IN} ≤ -33 Vdc -24 Vdc ≤ V_{IN} ≤ -30 Vdc	Reg_{line}	- -	- -	360 180	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	360 180	mV
Quiescent Current	I_B	-	-	8.0	mA
Quiescent Current Change -21Vdc≤ V_{IN} ≤ -33 Vdc 5.0mA ≤ I_{OUT} ≤ 1.5A	ΔI_B	- -	- -	1.0 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7918B

ELECTRICAL CHARACTERISTICS: V_{IN}=-27V, I_{OUT}=500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=-35Vdc, I_{OUT} =50mA	Vo	-17.3 -17.1	-18 -18	-18.7 -18.9	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.0A, P_0 ≤ 15W, -21 Vdc ≤ V_{IN} ≤ -33Vdc	Vo	-17.1	-18	-18.9	Vdc
Line Regulation -21 Vdc ≤ V_{IN} ≤ -33 Vdc -24 Vdc ≤ V_{IN} ≤ -30 Vdc	Reg_{line}	- -	- -	360 180	mV
Load Regulation 5.0 Ma ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	360 180	mV
Quiescent Current	I_B	-	-	8.0	mA
Quiescent Current Change -21Vdc≤ V_{IN} ≤ -33 Vdc 5.0mA ≤ I_{OUT} ≤ 1.0A	ΔI_B	-	-	1.0 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7924A

ELECTRICAL CHARACTERISTICS: V_{IN}=-33 V, I_{OUT}=500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=-35Vdc, I_{OUT} =50mA	Vo	-23.5 -23.0	-24 -24	-24.5 -25.0	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.5A, P_D≤ 15W, -27.0Vdc ≤ V_{IN} ≤-38Vdc	Vo	-23.0	-24	-25.0	Vdc
Line Regulation -27 Vdc ≤ V_{IN} ≤ -38 Vdc -30 Vdc ≤ V_{IN} ≤ -36 Vdc	Reg_{line}	- -	- -	480 240	mV
Load Regulation 5.0 mA ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	480 240	mV
Quiescent Current	I_B	-	-	8.0	mA
Quiescent Current Change -27Vdc≤ V_{IN} ≤ -38 Vdc 5.0mA ≤ I_{OUT} ≤ 1.5A	ΔI_B	- -	- -	1.0 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

PL7924B

ELECTRICAL CHARACTERISTICS: V_{IN}=-33V, I_{OUT}=500mA,T_J = 25°C,C_{IN} = 0.33 µF,C_{OUT} = 0.1µF, unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage V_{IN}=-35Vdc, I_{OUT} =50mA	Vo	-23.0 -22.8	-24 -24	-25.0 -25.2	Vdc
Output Voltage (0° to + 125°C) 5.0mA ≤ I_{OUT} ≤ 1.0A, P_0 ≤ 15W, -27 Vdc ≤ V_{IN} ≤ -38Vdc	Vo	-22.8	-24	-25.2	Vdc
Line Regulation -27 Vdc ≤ V_{IN} ≤ -38 Vdc -30 Vdc ≤ V_{IN} ≤ -36 Vdc	Reg_{line}	- -	- -	480 240	mV
Load Regulation 5.0 Ma ≤ I_{OUT} ≤ 1.5 A 250mA ≤ I_{OUT} ≤ 750mA	Reg_{load}	- -	- -	480 240	mV
Quiescent Current	I_B	-	-	8.0	mA
Quiescent Current Change -27Vdc≤ V_{IN} ≤ -38 Vdc 5.0mA ≤ I_{OUT} ≤ 1.0A	ΔI_B	-	-	1.0 0.5	mA
Dropout Voltage I_{OUT} = 1.0 A	V_{IN}- V_0	-	2.0	-	Vdc

Figure 1. Worst Case Power Dissipation as a Function of Ambient Temperature

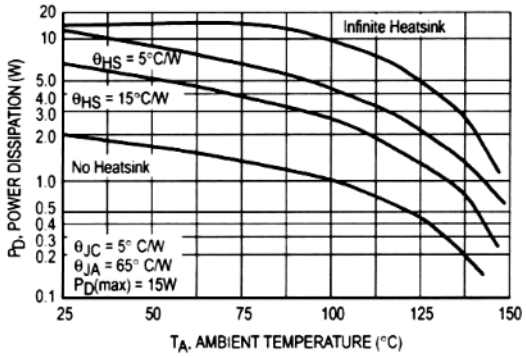


Figure 2. Peak Output Current as a Function of Input–Output Differential Voltage

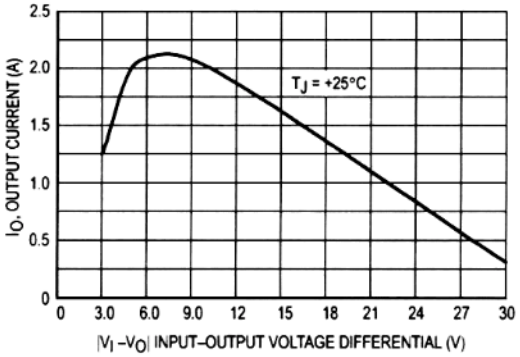


Figure 3. Ripple Rejection as a Function of Frequency

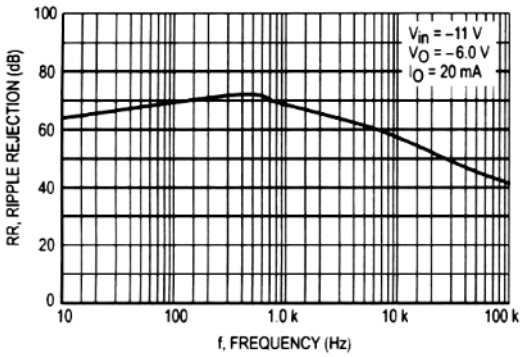


Figure 4. Ripple Rejection as a Function of Output Voltage

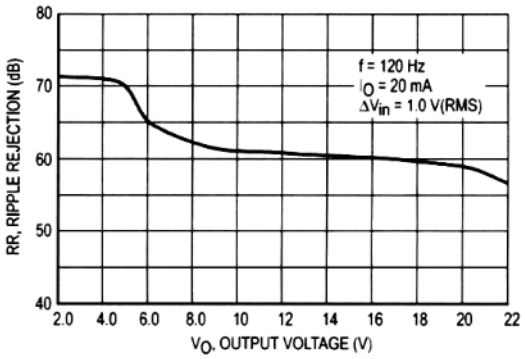


Figure 5. Output Voltage as a Function of Junction Temperature

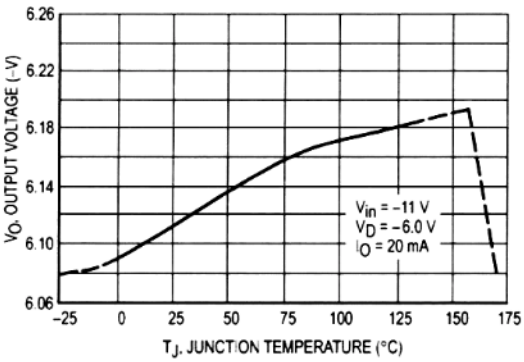
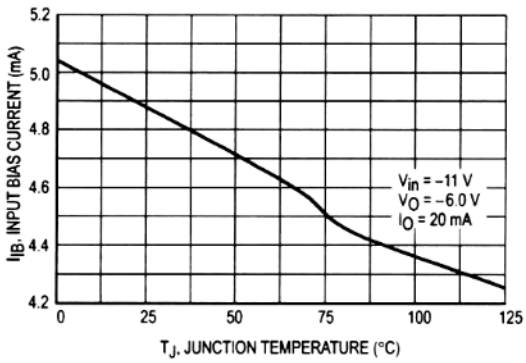


Figure 6. Quiescent Current as a Function of Temperature



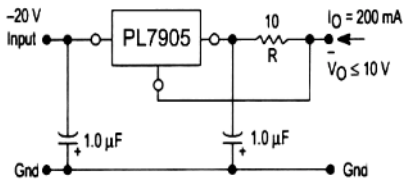
APPLICATIONS INFORMATION

Design Considerations

The PL7900 Series of fixed voltage regulators are designed with Thermal overload Protection that shuts down the circuit when subjected to an excessive power overload condition. Internal Short Circuit Protection that limits the maximum current the circuit will pass, and Output Transistor Safe-Area Compensation that reduces the output short circuit current as the voltage across the pass transistor is increased.

In manylow current applications, compensation capacitors are not required. However, it is recommended that the regulator input be bypassed with a capacitor if the regulator is connected to the power supply filter with long wire lengths, or if the output load capacitance is large.
An input bypass capacitor should be selected to provide good high-frequency characteristics to insure stable operation under all load conditions. A 0.33 μF or larger tantalum, mylar, or other capacitor having low internal impedance at high frequencies should be chosen. The capacitor chosen should have an equivalent series resistance of less than 0.7Ω. The bypass capacitor should be mounted with the shortest possible leads directly across the regulators input terminals. Normally good construction techniques should be used to minimize ground loops and lead resistance drops since the regulator has no external sense lead. Bypassing the output is also recommended.

Figure 7. Current Regulator

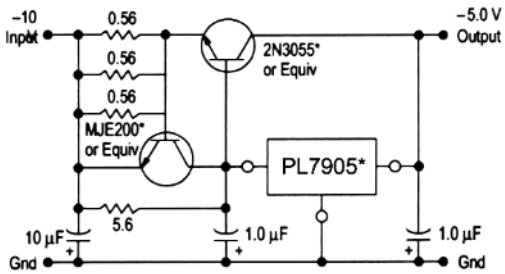


The PL7905, −5.0 V regulator can be used as a constant current source when connected as above. The output current is the sum of resistor R current and quiescent bias current as follows.

$$I_O = \frac{5.0\ V}{R} + I_B$$

The quiescent current for this regulator is typically 4.3 mA. The 5.0 V regulator was chosen to minimize dissipation and to allow the output voltage to operate to within 6.0 V below the input voltage.

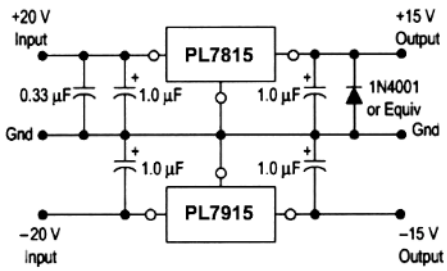
Figure 8. Current Boost Regulator
(−5.0 V @ 4.0 A, with 5.0 A Current Limiting)



*Mounted on heatsink.

When a boost transistor is used, short circuit currents are equal to the sum of the series pass and regulator limits, which are measured at 3.2 A and 1.8 A respectively in this case. Series pass limiting is approximately equal to 0.6 V/R_{SC}. Operation beyond this point to the peak current capability of the PL7905C is possible if the regulator is mounted on a heatsink; otherwise thermal shutdown will occur when the additional load current is picked up by the regulator.

Figure 9. Operational Amplifier Supply
(±15 @ 1.0 A)



The PL7815 and PL7915 positive and negative regulators may be connected as shown to obtain a dual power supply for operational amplifiers. A clamp diode should be used at the output of the PL7815 to prevent potential latch−up problems whenever the output of the positive regulator (PL7815) is drawn below ground with an output current greater than 200 mA.

SERIES

Semiconductor

Figure 11. Worst Case Power Dissipation versus Ambient Temperature

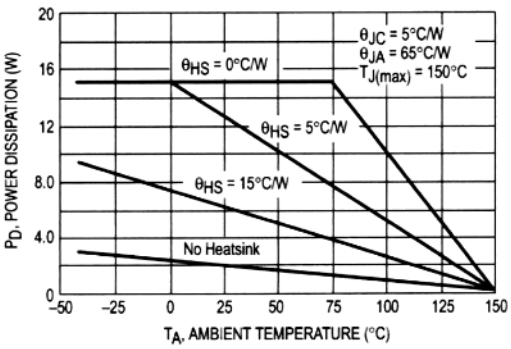
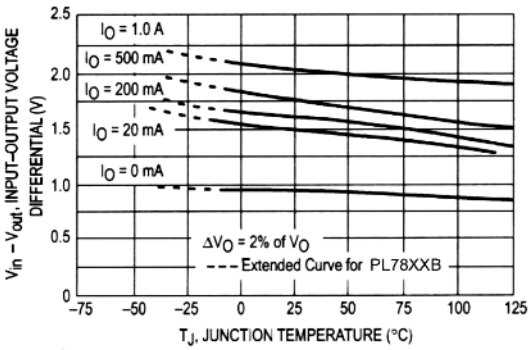


Figure 12. Input Output Differential as a Function of Junction Temperature



DEFINITIONS

Line Regulation – The change in output voltage for a change in the input voltage. The measurement is made under conditions of low dissipation or by using pulse techniques such that the average chip temperature is not significantly affected.

Load Regulation – The change in output voltage for a change in load current at constant chip temperature.

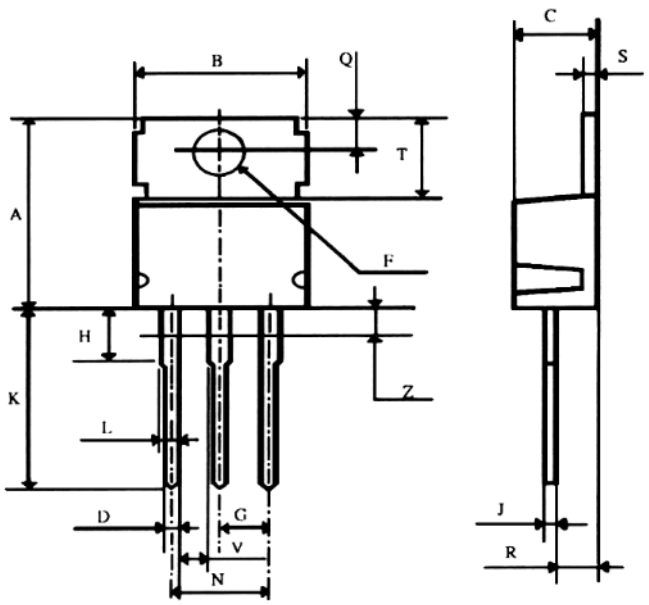
Maximum Power Dissipation – The maximum total device dissipation for which the regulator will operate within specifications.

Quiescent Current – That part of the input current that is not delivered to the load.

Output Noise Voltage – The rms ac voltage at the output, with constant load and no input ripple, measured over a specified frequency range.

Long Term Stability – Output voltage stability under accelerated life test conditions with the maximum rated voltage listed in the devices' electrical characteristics and maximum power dissipation.

TO-220 Dimension



DIM	MILLIMETERS	
	MIN	MAX
A	14.97	16.24
B	9.66	10.28
C	4.07	4.82
D	0.64	0.88
F	3.61	3.73
G	2.42	2.66
H	2.80	3.93
J	0.48	0.67
K	12.70	14.27
L	1.20	1.63
N	4.83	5.33
Q	2.54	3.04
R	2.04	2.78
S	1.05	1.39
T	6.36	6.86
V	1.00	-
Z	-	2.04