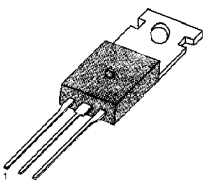
## 3-TERMINAL 1A NEGATIVE VOLTAGE REGULATORS

The LM79XX series of three-terminal negative regulators are available in TO-220 package and with several fixed output voltages, making them useful in a wide range of applications. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible.

TO-220



1: GND 2: Input 3: Output

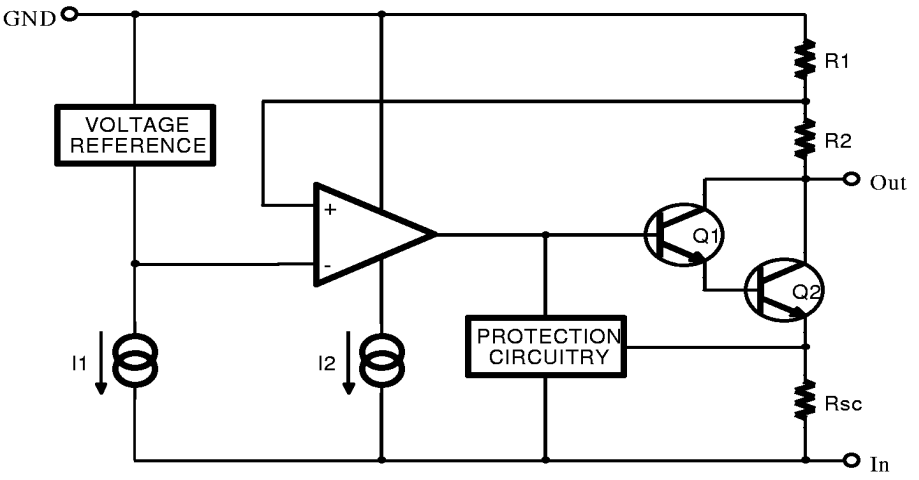
## FEATURES

- 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 | Output Voltage Tolerance | Package | Operating Temperature |
|---|---|---|---|
| LM79XXCT | ± 4% | TO-220 | 0 ~ +125°C |
| LM79XXAT | ± 2% | | |

## BLOCK DIAGRAM

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## ABSOLUTE MAXIMUM RATINGS ($T_A$=+25°C, unless otherwise specified)

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Input Voltage | $V_I$ | -35 | V |
| Thermal Resistance Junction-Cases<br>Junction-Air | $R_{\theta JC}$<br>$R_{\theta JA}$ | 5<br>65 | °C / W<br>°C /W |
| Operating Temperature Range | $T_{OPR}$ | 0 ~ +125 | °C |
| Storage Temperature Range | $T_{STG}$ | - 65 ~ +150 | °C |

## LM7905 ELECTRICAL CHARACTERISTICS

($V_I$ = 10V, $I_O$ = 500mA, 0°C ≤$T_J$ ≤ +125°C, $C_I$ =2.2μF, $C_O$ =1μF, unless otherwise specified.)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ =+25°C | - 4.8 | - 5.0 | - 5.2 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ 15W<br>$V_I$ = -7 to -20V | - 4.75 | -5.0 | - 5.25 | |
| Line Regulation | $\Delta V_O$ | $T_J$ =25°C, $V_I$ = -7 to -20V, $I_O$=1A | | 5 | 50 | mV |
| | | $T_J$ =25°C, $V_I$ = -8 to -12V, $I_O$=1A | | 2 | 25 | |
| | | $V_I$ = -7.5 to -25V | | 7 | 50 | |
| | | $V_I$= -8 to -12V<br>$I_O$=1A | | 7 | 50 | |
| Load Regulation | $\Delta V_O$ | $I_O$ = 5mA to 1.5A | | 10 | 100 | mV |
| | | $T_J$ =+25°C<br>$I_O$ = 250 to 750mA | | 3 | 50 | |
| Quiescent Current | $I_Q$ | $T_J$ =+25°C | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | 0.05 | 0.5 | mA |
| | | $V_I$ = -8 to -25V | | 0.1 | 0.8 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | - 0.4 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100KHz<br>$T_A$ =+25°C | | 40 | | μV |
| Ripple Rejection | RR | f = 120Hz, $I_O$ = -35V<br>$\Delta V_I$ = 10V | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$=+25°C<br>$I_O$ = 1A | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$ =+25°C, $V_I$ = -35V | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$ =+25°C | | 2.2 | | A |

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

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## LM7906 ELECTRICAL CHARACTERISTICS

($V_I$ = 11V, $I_O$ = 500mA, 0°C ≤$T_J$≤ +125°C, $C_I$ =2.2µF, $C_O$ = 1µF, unless otherwise specified.)

| Characteristic | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ = +25°C | | - 5.75 | - 6 | - 6.25 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ 15W<br>$V_I$ = - 9 to - 21V | | - 5.7 | - 6 | - 6.3 | |
| Line Regulation | $\Delta V_O$ | $T_J$ = 25°C | $V_I$ = - 8 to - 25V | | 10 | 120 | mV |
| | | | $V_I$= - 9 to -12V | | 5 | 60 | |
| Load Regulation | $\Delta V_O$ | $T_J$ =+ 25°C<br>$I_O$ = 5mA to 1.5A | | | 10 | 120 | mV |
| | | $T_J$ =+ 25°C<br>$I_O$ = 250 to 750mA | | | 3 | 60 | |
| Quiescent Current | $I_Q$ | $T_J$ =+ 25°C | | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | | | 0.5 | mA |
| | | $V_I$ = -9 to -25V | | | | 1.3 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | | -0.5 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100KHz<br>$T_A$ =+ 25°C | | | 130 | | µV |
| Ripple Rejection | RR | f = 120Hz<br>$\Delta V_I$ = 10V | | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$=+ 25°C<br>$I_O$ = 1A | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$= +25°C, $V_I$ = -35V | | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$= +25°C | | | 2.2 | | A |

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

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## LM7908 ELECTRICAL CHARACTERISTICS

($V_I$ = 14V, $I_O$ = 500mA, 0°C ≤$T_J$ ≤ +125°C, $C_I$ =2.2μF, $C_O$ = 1μF, unless otherwise specified.)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ =+ 25°C | - 7.7 | - 8 | - 8.3 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ 15W<br>$V_I$ = -1.5 to -23V | - 7.6 | - 8 | - 8.4 | |
| Line Regulation | $\Delta V_O$ | $T_J$ = 25°C, $V_I$ = -10.5 to -25V | | 10 | 100 | mV |
| | | $T_J$ = 25°C, $V_I$= -11 to -17V | | 5 | 80 | |
| Load Regulation | $\Delta V_O$ | $T_J$ =+ 25°C<br>$I_O$ = 5mA to 1.5A | | 12 | 160 | mV |
| | | $T_J$ =+ 25°C<br>$I_O$ = 250 to 750mA | | 4 | 80 | |
| Quiescent Current | $I_Q$ | $T_J$ =+ 25°C | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | 0.05 | 0.5 | mA |
| | | $V_I$ = -11.5 to -25V | | 0.1 | 1 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | -0.6 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100KHz<br>$T_A$ =+ 25°C | | 175 | | μV |
| Ripple Rejection | RR | f = 120Hz<br>$\Delta V_I$ = 10V | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$=+ 25°C<br>$I_O$ = 1A | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$=+ 25°C, $V_I$ = -35V | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$=+ 25°C | | 2.2 | | A |

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



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## LM7909 ELECTRICAL CHARACTERISTICS

($V_I$ = 14V, $I_O$ = 500mA, 0°C ≤$T_J$ ≤+ 125°C, $C_I$ =2.2µF, $C_O$ = 1µF, unless otherwise specified)

| Characteristic | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ =+ 25°C | | - 8.7 | - 9.0 | - 9.3 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ 15W<br>$V_I$ = -1.5 to -23V | | - 8.6 | - 9.0 | - 9.4 | |
| Line Regulation | $\Delta V_O$ | $T_J$ = 25°C | $V_I$ = -10.5 to -25V | | 10 | 180 | mV |
| | | | $V_I$= -11 to -17V | | 5 | 90 | |
| Load Regulation | $\Delta V_O$ | $T_J$ =+ 25°C<br>$I_O$ = 5mA to 1.5A | | | 12 | 180 | mV |
| | | $T_J$ =+ 25°C<br>$I_O$ = 250 to 750mA | | | 4 | 90 | |
| Quiescent Current | $I_Q$ | $T_J$ =+ 25°C | | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | | 0.05 | 0.5 | mA |
| | | $V_I$ = -11.5 to -25V | | | 0.1 | 1 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | | -0.6 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100KHz<br>$T_A$ =+ 25°C | | | 175 | | µV |
| Ripple Rejection | RR | f = 120Hz<br>$\Delta V_I$ = 10V | | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$=+ 25°C<br>$I_O$ = 1A | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$= +25°C, $V_I$ = -35V | | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$ =+25°C | | | 2.2 | | A |

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

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## LM7912 ELECTRICAL CHARACTERISTICS

($V_I$= 18V, $I_O$ =500mA, 0°C ≤$T_J$≤ +125°C, $C_I$ =2.2µF, $C_O$ = 1µF, unless otherwise specified.)

| Characteristic | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ = +25°C | | -11.5 | -12 | -12.5 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ 15W<br>$V_I$ = -15.5 to -27V | | -11.4 | -12 | -12.6 | |
| Line Regulation | $\Delta V_O$ | $T_J$ = 25°C | $V_I$ = -14.5 to -30V | | 12 | 240 | mV |
| | | | $V_I$= -16 to -22V | | 6 | 120 | |
| Load Regulation | $\Delta V_O$ | $T_J$ =+ 25°C<br>$I_O$ = 5mA to 1.5A | | | 12 | 240 | mV |
| | | $T_J$ =+ 25°C<br>$I_O$ = 250 to 750mA | | | 4 | 120 | |
| Quiescent Current | $I_Q$ | $T_J$ =+ 25°C | | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | | 0.05 | 0.5 | mA |
| | | $V_I$ = -15 to -30V | | | 0.1 | 1 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | | -0.8 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100KHz<br>$T_A$ =+ 25°C | | | 200 | | µV |
| Ripple Rejection | RR | f = 120Hz<br>$\Delta V_I$ = 10V | | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$= +25°C<br>$I_O$ = 1A | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$=+ 25°C, $V_I$ = -35V | | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$=+ 25°C | | | 2.2 | | A |

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

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## LM7915 ELECTRICAL CHARACTERISTICS

($V_I$ = 23V, $I_O$ = 500mA, 0°C ≤$T_J$ +125°C, $C_I$ =2.2μF, $C_O$ = 1μF, unless otherwise specified.)

| Characteristic | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ =+ 25°C | | -14.4 | -15 | -15.6 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ 15W<br>$V_I$ = -18 to -30V | | -14.25 | -15 | -15.75 | |
| Line Regulation | $\Delta V_O$ | $T_J$ = 25°C | $V_I$ = -17.5 to -30V | | 12 | 300 | mV |
| | | | $V_I$= -20 to -26V | | 6 | 150 | |
| Load Regulation | $\Delta V_O$ | $T_J$ =+ 25°C<br>$I_O$ = 5mA to 1.5A | | | 12 | 300 | mV |
| | | $T_J$ =+ 25°C<br>$I_O$ = 250 to 750mA | | | 4 | 150 | |
| Quiescent Current | $I_Q$ | $T_J$ =+ 25°C | | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | | 0.05 | 0.5 | mA |
| | | $V_I$ = -18.5 to -30V | | | 0.1 | 1 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | | -0.9 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100Khz<br>$T_A$ =+ 25°C | | | 250 | | μV |
| Ripple Rejection | RR | f = 120Hz<br>$\Delta V_I$ = 10V | | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$=+25°C<br>$I_O$ = 1A | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$=+ 25°C, $V_I$ = -35V | | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$=+ 25°C | | | 2.2 | | A |

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

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## LM7918 ELECTRICAL CHARACTERISTICS

($V_I$ = 27V, $I_O$ = 500mA, 0°C ≤$T_J$ ≤+125°C, $C_I$ =2.2μF, $C_O$ = 1μF, unless otherwise specified.)

| Characteristic | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ =+ 25°C | | -17.3 | -18 | -18.7 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ 15W<br>$V_I$ = -22.5 to -33V | | -17.1 | -18 | -18.9 | |
| Line Regulation | $\Delta V_O$ | $T_J$ = 25°C | $V_I$= -21 to -33V | | 15 | 360 | mV |
| | | | $V_I$= -24 to -30V | | 8 | 180 | |
| Load Regulation | $\Delta V_O$ | $T_J$ =+ 25°C<br>$I_O$ = 5mA to 1.5A | | | 15 | 360 | mV |
| | | $T_J$ =+ 25°C<br>$I_O$ = 250 to 750mA | | | 5 | 180 | |
| Quiescent Current | $I_Q$ | $T_J$ =+ 25°C | | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | | | 0.5 | mA |
| | | $V_I$ = -22 to -33V | | | | 1 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | | -1 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100KHz<br>$T_A$ =+ 25°C | | | 300 | | μV |
| Ripple Rejection | RR | f = 120Hz<br>$\Delta V_I$ = 10V | | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$=+ 25°C<br>$I_O$ = 1A | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$=+ 25°C, $V_I$ = -35V | | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$=+ 25°C | | | 2.2 | | A |

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

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## LM7924 ELECTRICAL CHARACTERISTICS

($V_I$ = 33V, $I_O$ = 500mA, 0°C ≤$T_J$ ≤+125°C, $C_I$ =2.2μF, $C_O$ = 1μF, unless otherwise specified.)

| Characteristic | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ =+25°C | | - 23 | - 24 | - 25 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ ≤15W<br>$V_I$ = -27 to -38V | | - 22.8 | - 24 | - 25.2 | |
| Line Regulation | $\Delta V_O$ | $T_J$ = 25°C | $V_I$ = - 27 to - 38V | | 15 | 480 | mV |
| | | | $V_I$= - 30 to - 36V | | 8 | 180 | |
| Load Regulation | $\Delta V_O$ | $T_J$ = +25°C<br>$I_O$ = 5mA to 1.5A | | | 15 | 480 | mV |
| | | $T_J$ =+ 25°C<br>$I_O$ = 250 to 750mA | | | 5 | 240 | |
| Quiescent Current | $I_Q$ | $T_J$ =+ 25°C | | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | | | 0.5 | mA |
| | | $V_I$ = -27 to -38V | | | | 1 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | | -1 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100KHz<br>$T_A$ =+ 25°C | | | 400 | | μV |
| Ripple Rejection | RR | f = 120Hz<br>$\Delta V_I$ = 10V | | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$= +25°C<br>$I_O$ = 1A | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$=+ 25°C, $V_I$ = -35V | | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$=+25°C | | | 2.2 | | A |

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

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## LM7905A ELECTRICAL CHARACTERISTICS

($V_I$ = 10V, $I_O$ = 500mA, 0°C ≤$T_J$ ≤ +125°C, $C_I$ =2.2µF, $C_O$ =1µF, unless otherwise specified.)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ =+ 25°C | - 4.9 | - 5.0 | - 5.1 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ 15W<br>$V_I$ = -7 to -20V | - 4.8 | -5.0 | - 5.2 | |
| Line Regulation | $\Delta V_O$ | $T_J$ =+25°C, $V_I$ = -7 to -20V, $I_O$=1A | | 5 | 50 | mV |
| | | $T_J$ =+25°C, $V_I$ = -8 to -12V, $I_O$=1A | | 2 | 25 | |
| | | $V_I$ = -7.5 to -25V | | 7 | 50 | |
| | | $V_I$= -8 to -12V<br>$I_O$=1A | | 7 | 50 | |
| Load Regulation | $\Delta V_O$ | $I_O$ = 5mA to 1.5A | | 10 | 100 | mV |
| | | $T_J$ =+ 25°C<br>$I_O$ = 250 to 750mA | | 3 | 50 | |
| Quiescent Current | $I_Q$ | $T_J$ = +25°C | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | 0.05 | 0.5 | mA |
| | | $V_I$ = -8 to -25V | | 0.1 | 0.8 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | - 0.4 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100KHz<br>$T_A$ =+ 25°C | | 40 | | µV |
| Ripple Rejection | RR | f = 120Hz, $I_O$ = -35V<br>$\Delta V_I$ = 10V | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$=+ 25°C<br>$I_O$ = 1A | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$ =+ 25°C, $V_I$ = -35V | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$ =+ 25°C | | 2.2 | | A |

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

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## LM7912A ELECTRICAL CHARACTERISTICS

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($V_I$= 18V, $I_O$=500mA, 0°C ≤$T_J$≤ +125°C, $C_I$=2.2µF, $C_O$ = 1µF, unless otherwise specified.)

| Characteristic | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ =+ 25°C | | -11.75 | -12 | -12.25 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ 15W<br>$V_I$ = -15.5 to -27V | | -11.5 | -12 | -12.5 | |
| Line Regulation | $\Delta V_O$ | $T_J$ =+25°C | $V_I$ = -14.5 to -30V | | 12 | 240 | mV |
| | | | $V_I$= -16 to -22V | | 6 | 120 | |
| Load Regulation | $\Delta V_O$ | $T_J$ = +25°C<br>$I_O$ = 5mA to 1.5A | | | 12 | 240 | mV |
| | | $T_J$ =+ 25°C<br>$I_O$ = 250 to 750mA | | | 4 | 120 | |
| Quiescent Current | $I_Q$ | $T_J$ =+ 25°C | | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | | 0.05 | 0.5 | mA |
| | | $V_I$ = -15 to -30V | | | 0.1 | 1 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | | -0.8 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100Khz<br>$T_A$ =+ 25°C | | | 200 | | µV |
| Ripple Rejection | RR | f = 120Hz<br>$\Delta V_I$ = 10V | | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$=+ 25°C<br>$I_O$ = 1A | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$=+ 25°C, $V_I$ = -35V | | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$=+ 25°C | | | 2.2 | | A |

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

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LM7915A ELECTRICAL CHARACTERISTICS

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($V_I$ = 23V, $I_O$ = 500mA, 0°C ≤$T_J$≤ +125°C, $C_I$ =2.2μF, $C_O$ = 1μF, unless otherwise specified.)

| Characteristic | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ = +25°C | | -14.7 | -15 | -15.3 | V |
| | | $I_O$ = 5mA to 1A, $P_O$ 15W<br>$V_I$ = -18 to -30V | | -14.4 | -15 | -15.6 | |
| Line Regulation | $\Delta V_O$ | $T_J$ =+25°C | $V_I$ = -17.5 to -30V | | 12 | 300 | mV |
| | | | $V_I$= -20 to -26V | | 6 | 150 | |
| Load Regulation | $\Delta V_O$ | $T_J$ =+ 25°C<br>$I_O$ = 5mA to 1.5A | | | 12 | 300 | mV |
| | | $T_J$ =+ 25°C<br>$I_O$ = 250 to 750mA | | | 4 | 150 | |
| Quiescent Current | $I_Q$ | $T_J$ =+ 25°C | | | 3 | 6 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$ = 5mA to 1A | | | 0.05 | 0.5 | mA |
| | | $V_I$ = -18.5 to -30V | | | 0.1 | 1 | |
| Temperature Coefficient of $V_D$ | $\Delta V_O/\Delta T$ | $I_O$ = 5mA | | | -0.9 | | mV/°C |
| Output Noise Voltage | $V_N$ | f = 10Hz to 100KHz<br>$T_A$ =+25°C | | | 250 | | μV |
| Ripple Rejection | RR | f = 120Hz<br>$\Delta V_I$ = 10V | | 54 | 60 | | dB |
| Dropout Voltage | $V_D$ | $T_J$= +25°C<br>$I_O$ = 1A | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | $T_J$=+ 25°C, $V_I$ = -35V | | | 300 | | mA |
| Peak Current | $I_{PK}$ | $T_J$=+ 25°C | | | 2.2 | | A |

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

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TYPICAL PERFORMANCE CHARACTERISTICS

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Fig.1 Output Voltage

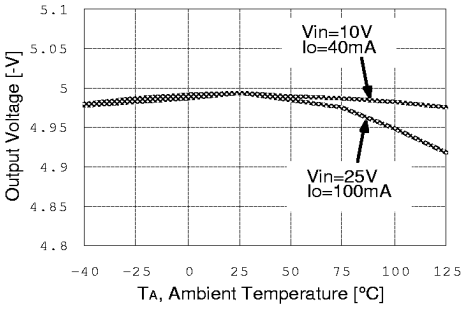



Fig. 2 Load Regulation

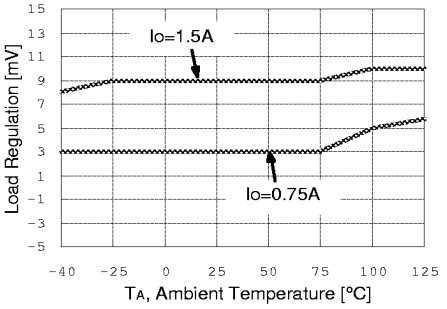



Fig.3 Quiescent Current

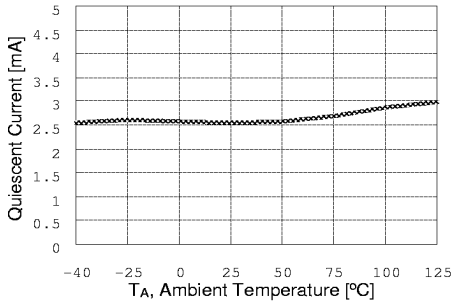



Fig. 4 Dropout Voltage

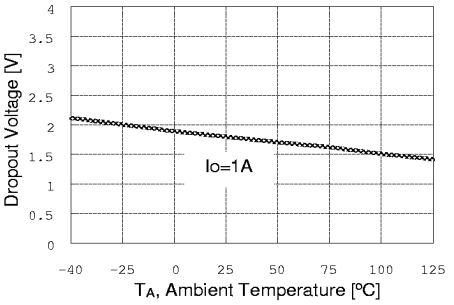
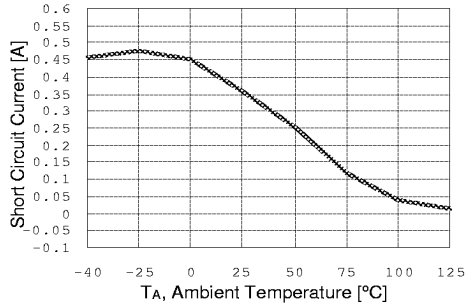



Fig.5 Short Circuit Current

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TYPICAL APPLICATIONS

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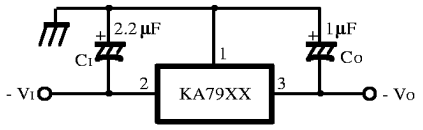
Fig. 6 Negative Fixed output regulator



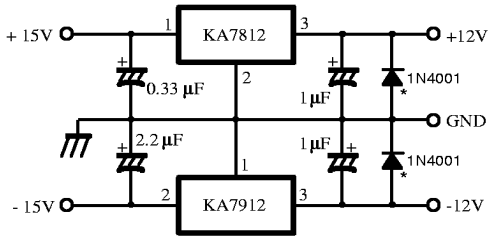

Notes:

(1) To specify an output voltage, substitute voltage value for "XX "

(2) Required for stability. For value given, capacitor must be solid tantalum. If aluminum electronics are used, at least ten times value shown should be selected. $C_I$ is required if regulator is located an appreciable distance from power supply filter.

(3) To improve transient response. If large capacitors are used, a high current diode from input to output (1N400l or similar) should be introduced to protect the device from momentary input short circuit.

Fig. 7 Split power supply ( ±12V/1A)




*: Against potential latch-up problems.

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