



September 2014

KA79XX / KA79XXA / LM79XX

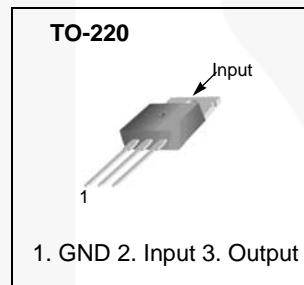
3-Terminal 1 A Negative Voltage Regulator

Features

- Output Current in Excess of 1 A
- Output Voltages of: -5 V, -6 V, -8 V, -9 V, -12 V, -15 V, -18 V, -24 V
- Internal Thermal Overload Protection
- Short-Circuit Protection
- Output Transistor Safe Operating Area Compensation

Description

The KA79XX / KA79XXA / LM79XX series of three-terminal negative regulators are available in a TO-220 package with several fixed output voltages, making them useful in a wide range of applications. Each type employs internal current limiting, thermal shutdown, and safe operating area protection.



Ordering Information

| Product Number | Output Voltage Tolerance | Package | Packing Method | Operating Temperature |
|----------------|--------------------------|--------------------------|----------------|-----------------------|
| KA7905TU | ±4% | TO-220 (Dual Gauge) | Rail | 0 to +125°C |
| KA7906TU | | | | |
| KA7908TU | | | | |
| KA7909TU | | | | |
| KA7912TU | | | | |
| KA7915TU | | | | |
| KA7918TU | | | | |
| KA7924TU | | | | |
| KA7912ATU | ±2% | | | |
| KA7915ATU | | | | |
| LM7905CT | ±4% | TO-220 (Single Gauge) | | |
| LM7908CT | | | | |
| LM7909CT | | | | |
| LM7910CT | | | | |
| LM7912CT | | | | |
| LM7915CT | | | | |
| LM7918CT | | | | |

KA79XX / KA79XXA / LM79XX — 3-Terminal 1 A Negative Voltage Regulator

Block Diagram

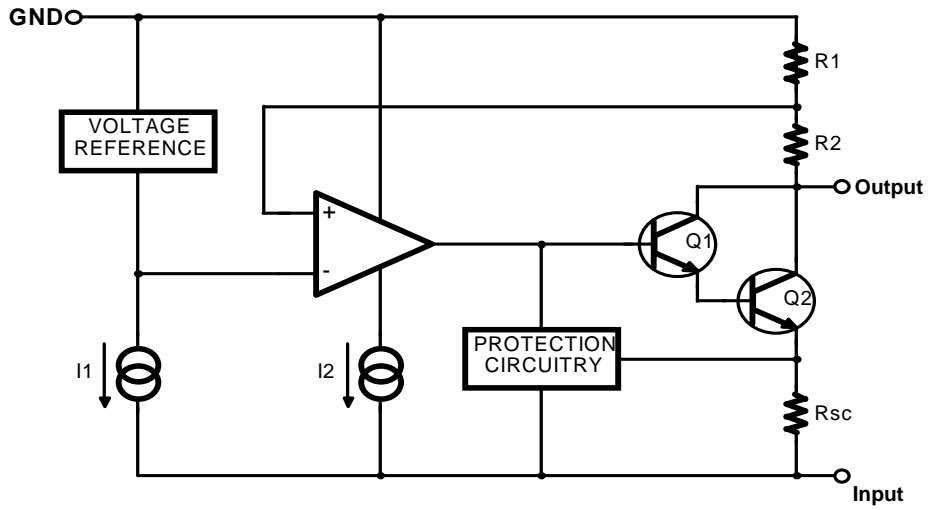


Figure 1. Block Diagram

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Value | Unit |
|-----------------|----------------------------------------------------|--------------|--------------------|
| V_I | Input Voltage | -35 | V |
| $R_{\theta JC}$ | Thermal Resistance, Junction-Case ⁽¹⁾ | 5 | $^\circ\text{C/W}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction-Air ^(1, 2) | 65 | $^\circ\text{C/W}$ |
| T_{OPR} | Operating Temperature Range | 0 to +125 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature Range | - 65 to +150 | $^\circ\text{C}$ |

Notes:

1. Thermal resistance test board, size: 76.2 mm x 114.3 mm x 1.6 mm(1S0P), JEDEC standard: JESD51-3, JESD51-7.
2. Assume no ambient airflow.

Electrical Characteristics (KA7905 / LM7905)(V_I = -10 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF; unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit | |
|---------------------|-------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------|-------|-------|------|-------|
| V _O | Output Voltage | T _J = +25°C | -4.80 | -5.00 | -5.20 | V | |
| | | I _O = 5 mA to 1 A, P _O ≤ 15 W, V _I = -7 V to -20 V | -4.75 | -5.00 | -5.25 | | |
| ΔV _O | Line Regulation ⁽³⁾ | T _J = +25°C | V _I = -7 V to -25 V | | 35 | 100 | mV |
| | | | V _I = -8 V to -12 V | | 8 | 50 | |
| ΔV _O | Load Regulation ⁽³⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | | 10 | 100 | mV |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | | 3 | 50 | |
| I _Q | Quiescent Current | T _J = +25°C | | | 3 | 6 | mA |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | | 0.05 | 0.50 | mA |
| | | V _I = -8 V to -25 V | | | 0.10 | 0.80 | |
| ΔV _O /ΔT | Temperature Coefficient of V _D | I _O = 5 mA | | | -0.4 | | mV/°C |
| V _N | Output Noise Voltage | f = 10 Hz to 100 kHz, T _A = +25°C | | | 40 | | μV |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | | 54 | 60 | | dB |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | | 2 | | V |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | | 300 | | mA |
| I _{PK} | Peak Current | T _J = +25°C | | | 2.2 | | A |

Note:

3. 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.

Electrical Characteristics (KA7906)(V_I = -11 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF; unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit | |
|---------------------|-------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------|-------|-------|------|-------|
| V _O | Output Voltage | T _J = +25°C | -5.75 | -6.00 | -6.25 | V | |
| | | I _O = 5 mA to 1 A, P _O ≤ 15 W, V _I = -9 V to -21 V | -5.70 | -6.00 | -6.30 | | |
| ΔV _O | Line Regulation ⁽⁴⁾ | T _J = +25°C | V _I = -8 V to -25 V | | 10 | 120 | mV |
| | | | V _I = -9 V to -13 V | | 5 | 60 | |
| ΔV _O | Load Regulation ⁽⁴⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | | 10 | 120 | mV |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | | 3 | 60 | |
| I _Q | Quiescent Current | T _J = +25°C | | 3 | 6 | mA | |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | | 0.05 | 0.50 | mA |
| | | V _I = -8 V to -25 V | | | 0.10 | 1.30 | |
| ΔV _O /ΔT | Temperature Coefficient of V _D | I _O = 5 mA | | | -0.5 | | mV/°C |
| V _N | Output Noise Voltage | f = 10 Hz to 100 kHz, T _A = +25°C | | | 130 | | μV |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | | 54 | 60 | | dB |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | | 2 | | V |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | | 300 | | mA |
| I _{PK} | Peak Current | T _J = +25°C | | | 2.2 | | A |

Note:

4. 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.

Electrical Characteristics (KA7908 / LM7908)(V_I = -14 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF; unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------------|-------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------|------|------|-------|
| V _O | Output Voltage | T _J = +25°C | -7.7 | -8.0 | -8.3 | V |
| | | I _O = 5 mA to 1 A, P _O ≤ 15 W, V _I = -10 V to -23 V | -7.6 | -8.0 | -8.4 | |
| ΔV _O | Line Regulation ⁽⁵⁾ | T _J = +25°C | V _I = -10.5 V to -25 V | 10 | 160 | mV |
| | | | V _I = -11 V to -17 V | 5 | 80 | |
| ΔV _O | Load Regulation ⁽⁵⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | 12 | 160 | mV |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | 4 | 80 | |
| I _Q | Quiescent Current | T _J = +25°C | | 3 | 6 | mA |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | 0.05 | 0.50 | mA |
| | | V _I = -10.5 V to -25 V | | 0.10 | 1.00 | |
| ΔV _O /ΔT | Temperature Coefficient of V _D | I _O = 5 mA | | -0.6 | | mV/°C |
| V _N | Output Noise Voltage | f = 10 Hz to 100 kHz, T _A = +25°C | | 175 | | μV |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | | 54 | 60 | dB |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | 2 | | V |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | 300 | | mA |
| I _{PK} | Peak Current | T _J = +25°C | | 2.2 | | A |

Note:

5. 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.

Electrical Characteristics (KA7909 / LM7909)(V_I = -15 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF; unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------------|-------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------|------|------|-------|
| V _O | Output Voltage | T _J = +25°C | -8.7 | -9.0 | -9.3 | V |
| | | I _O = 5 mA to 1 A, P _O ≤ 15 W, V _I = -1.5 V to -23 V | -8.6 | -9.0 | -9.4 | |
| ΔV _O | Line Regulation ⁽⁶⁾ | T _J = +25°C | V _I = -11.5 V to -26 V | 10 | 180 | mV |
| | | | V _I = -12 V to -18 V | 5 | 90 | |
| ΔV _O | Load Regulation ⁽⁶⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | 12 | 180 | mV |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | 4 | 90 | |
| I _Q | Quiescent Current | T _J = +25°C | | 3 | 6 | mA |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | 0.05 | 0.50 | mA |
| | | V _I = -11.5 V to -26 V | | 0.10 | 1.00 | |
| ΔV _O /ΔT | Temperature Coefficient of V _D | I _O = 5 mA | | -0.6 | | mV/°C |
| V _N | Output Noise Voltage | f = 10 Hz to 100 kHz, T _A = +25°C | | 175 | | μV |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | | 54 | 60 | dB |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | 2 | | V |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | 300 | | mA |
| I _{PK} | Peak Current | T _J = +25°C | | 2.2 | | A |

Note:

6. 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.

Electrical Characteristics (LM7910)(V_I = -17 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF; unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------------|-------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------|-------|-------|-------|
| V _O | Output Voltage | T _J = +25°C | -9.6 | -10.0 | -10.4 | V |
| | | I _O = 5 mA to 1A, P _d ≤ 15 W, V _I = -12 V to -28 V | -9.5 | -10.0 | -10.5 | |
| ΔV _O | Line Regulation ⁽⁷⁾ | T _J = +25°C | V _I = -12.5 V to -28 V | 12 | 200 | mV |
| | | | V _I = -14 V to -20 V | 6 | 100 | |
| ΔV _O | Load Regulation ⁽⁷⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | 12 | 200 | mV |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | 4 | 100 | |
| I _Q | Quiescent Current | T _J = +25°C | | 3 | 6 | mA |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | 0.05 | 0.50 | mA |
| | | V _I = -12.5 V to -28 V | | 0.10 | 1.00 | |
| ΔV _O /ΔT | Temperature Coefficient of V _O | I _O = 5 mA | | -1 | | mV/°C |
| V _N | Output Noise Voltage | 10 Hz ≤ f ≤ 100 kHz, T _A = +25°C | | 280 | | μV |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | 54 | 60 | | dB |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | 2 | | V |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | 300 | | mA |
| I _{PK} | Peak Current | T _J = +25°C | | 2.2 | | A |

Note:

7. 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.

Electrical Characteristics (KA7912 / LM7912)(V_I = -19 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF; unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------------|-------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------|-------|-------|-------|
| V _O | Output Voltage | T _J = +25°C | -11.5 | -12.0 | -12.5 | V |
| | | I _O = 5 mA to 1 A, P _O ≤ 15 W V _I = -15.5 V to -27 V | -11.4 | -12.0 | -12.6 | |
| ΔV _O | Line Regulation ⁽⁸⁾ | T _J = +25°C | V _I = -14.5 V to -30 V | 12 | 240 | mV |
| | | | V _I = -16 V to -22 V | 6 | 120 | |
| ΔV _O | Load Regulation ⁽⁸⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | 12 | 240 | mV |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | 4 | 120 | |
| I _Q | Quiescent Current | T _J = +25°C | | 3 | 6 | mA |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | 0.05 | 0.50 | mA |
| | | V _I = -14.5 V to -30 V | | 0.10 | 1.00 | |
| ΔV _O /ΔT | Temperature Coefficient of V _D | I _O = 5 mA | | -0.8 | | mV/°C |
| V _N | Output Noise Voltage | f = 10 Hz to 100 kHz, T _A = +25°C | | 200 | | μV |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | 54 | 60 | | dB |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | 2 | | V |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | 300 | | mA |
| I _{PK} | Peak Current | T _J = +25°C | | 2.2 | | A |

Note:

8. 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.

Electrical Characteristics (KA7915 / LM7915)(V_I = -23 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF; unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------------|-------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------|--------|--------|-------|
| V _O | Output Voltage | T _J = +25°C | -14.40 | -15.00 | -15.60 | V |
| | | I _O = 5 mA to 1 A, P _O ≤ 15 W V _I = -18 V to -30 V | -14.25 | -15.00 | -15.75 | |
| ΔV _O | Line Regulation ⁽⁹⁾ | T _J = +25°C | V _I = -17.5 V to -30 V | 12 | 300 | mV |
| | | | V _I = -20 V to -26 V | 6 | 150 | |
| ΔV _O | Load Regulation ⁽⁹⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | 12 | 300 | mV |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | 4 | 150 | |
| I _Q | Quiescent Current | T _J = +25°C | | 3 | 6 | mA |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | 0.05 | 0.50 | mA |
| | | V _I = -17.5 V to -30 V | | 0.10 | 1.00 | |
| ΔV _O /ΔT | Temperature Coefficient of V _D | I _O = 5 mA | | -0.9 | | mV/°C |
| V _N | Output Noise Voltage | f = 10 Hz to 100 kHz, T _A = +25°C | | 250 | | μV |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | 54 | 60 | | dB |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | 2 | | V |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | 300 | | mA |
| I _{PK} | Peak Current | T _J = +25°C | | 2.2 | | A |

Note:

9. 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.

Electrical Characteristics (KA7918 / LM7918)(V_I = -27 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF, unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit | |
|---------------------|-------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------|-------|-------|------|-------|
| V _O | Output Voltage | T _J = +25°C | -17.3 | -18.0 | -18.7 | V | |
| | | I _O = 5 mA to 1 A, P _O ≤ 15 W V _I = -22.5 V to -33 V | -17.1 | -18.0 | -18.9 | | |
| ΔV _O | Line Regulation ⁽¹⁰⁾ | T _J = +25°C | V _I = -21 V to -33 V | | 15 | 360 | mV |
| | | | V _I = -24 V to -30 V | | 8 | 180 | |
| ΔV _O | Load Regulation ⁽¹⁰⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | | 15 | 360 | mV |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | | 5 | 180 | |
| I _Q | Quiescent Current | T _J = +25°C | | 3 | 6 | mA | |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | | 0.05 | 0.50 | mA |
| | | V _I = -21 V to -33 V | | | 0.10 | 1.00 | |
| ΔV _O /ΔT | Temperature Coefficient of V _D | I _O = 5 mA | | | -1 | | mV/°C |
| V _N | Output Noise Voltage | f = 10 Hz to 100 kHz, T _A = +25°C | | | 300 | | μV |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | | 54 | 60 | | dB |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | | 2 | | V |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | | 300 | | mA |
| I _{PK} | Peak Current | T _J = +25°C | | | 2.2 | | A |

Note:

10. 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.

Electrical Characteristics (KA7924)(V_I = -33 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF; unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------------|-------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------|-------|-------|-------|
| V _O | Output Voltage | T _J = +25°C | -23.0 | -24.0 | -25.0 | V |
| | | I _O = 5 mA to 1 A, P _O ≤ 15 W, V _I = -27 V to -38 V | -22.8 | -24.0 | -25.2 | |
| ΔV _O | Line Regulation ⁽¹¹⁾ | T _J = +25°C | V _I = -27 V to -38 V | 15 | 480 | mV |
| | | | V _I = -30 V to -36 V | 8 | 180 | |
| ΔV _O | Load Regulation ⁽¹¹⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | 15 | 480 | mV |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | 5 | 240 | |
| I _Q | Quiescent Current | T _J = +25°C | | 3 | 6 | mA |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | 0.05 | 0.50 | mA |
| | | V _I = -27 V to -38 V | | 0.10 | 1.00 | |
| ΔV _O /ΔT | Temperature Coefficient of V _D | I _O = 5 mA | | -1 | | mV/°C |
| V _N | Output Noise Voltage | f = 10 Hz to 100 kHz, T _A = +25°C | | 400 | | μV |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | | 54 | 60 | dB |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | 2 | | V |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | 300 | | mA |
| I _{PK} | Peak Current | T _J = +25°C | | 2.2 | | A |

Note:

11. 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.

Electrical Characteristics (KA7912A)(V_I = -19 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF; unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit | |
|---------------------|-------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------|--------|--------|-------|----|
| V _O | Output Voltage | T _J = +25°C | -11.75 | -12.00 | -12.25 | V | |
| | | I _O = 5 mA to 1 A, P _O ≤ 15 W, V _I = -15.5 V to -27 V | -11.50 | -12.00 | -12.50 | | |
| ΔV _O | Line Regulation ⁽¹²⁾ | T _J = +25°C | V _I = -14.5 V to -27 V, I _O = 1 A | | 12 | 120 | mV |
| | | | V _I = -16 V to -22 V, I _O = 1 A | | 6 | 60 | |
| | | V _I = -14.8 V to -30 V | | 12 | 120 | | |
| | | V _I = -16 V to -22 V, I _O = 1 A | | 12 | 120 | | |
| ΔV _O | Load Regulation ⁽¹²⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | 12 | 150 | mV | |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | 4 | 75 | | |
| I _Q | Quiescent Current | T _J = +25°C | | 3 | 6 | mA | |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | 0.05 | 0.50 | mA | |
| | | V _I = -15 V to -30 V | | 0.10 | 1.00 | | |
| ΔV _O /ΔT | Temperature Coefficient of V _D | I _O = 5 mA | | -0.8 | | mV/°C | |
| V _N | Output Noise Voltage | f = 10 Hz to 100 kHz, T _A = +25°C | | 200 | | μV | |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | 54 | 60 | | dB | |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | 2 | | V | |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | 300 | | mA | |
| I _{PK} | Peak Current | T _J = +25°C | | 2.2 | | A | |

Note:

12. 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.

Electrical Characteristics (KA7915A)(V_I = -23 V, I_O = 500 mA, 0°C ≤ T_J ≤ +125°C, C_I = 2.2 μF, C_O = 1 μF; unless otherwise specified.)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit | |
|---------------------|-------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------|-------|-------|-------|----|
| V _O | Output Voltage | T _J = +25°C | -14.7 | -15.0 | -15.3 | V | |
| | | I _O = 5 mA to 1 A, P _O ≤ 15 W, V _I = -18 V to -30 V | -14.4 | -15.0 | -15.6 | | |
| ΔV _O | Line Regulation ⁽¹³⁾ | T _J = +25°C | V _I = -17.5 V to -30 V, I _O = 1 A | | 12 | 150 | mV |
| | | | V _I = -20 V to -26 V, I _O = 1 A | | 6 | 75 | |
| | | V _I = -17.9 V to -30 V | | 12 | 150 | | |
| | | V _I = -20 V to -26 V, I _O = 1 A | | 6 | 150 | | |
| ΔV _O | Load Regulation ⁽¹³⁾ | T _J = +25°C, I _O = 5 mA to 1.5 A | | 12 | 150 | mV | |
| | | T _J = +25°C, I _O = 250 mA to 750 mA | | 4 | 75 | | |
| I _Q | Quiescent Current | T _J = +25°C | | 3 | 6 | mA | |
| ΔI _Q | Quiescent Current Change | I _O = 5 mA to 1 A | | 0.05 | 0.50 | mA | |
| | | V _I = -18.5 V to -30 V | | 0.10 | 1.00 | | |
| ΔV _O /ΔT | Temperature Coefficient of V _D | I _O = 5 mA | | -0.9 | | mV/°C | |
| V _N | Output Noise Voltage | f = 10 Hz to 100 kHz, T _A = +25°C | | 250 | | μV | |
| RR | Ripple Rejection | f = 120 Hz, ΔV _I = 10 V | 54 | 60 | | dB | |
| V _D | Dropout Voltage | T _J = +25°C, I _O = 1 A | | 2 | | V | |
| I _{SC} | Short-Circuit Current | T _J = +25°C, V _I = -35 V | | 300 | | mA | |
| I _{PK} | Peak Current | T _J = +25°C | | 2.2 | | A | |

Note:

13. 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.

Typical Performance Characteristics

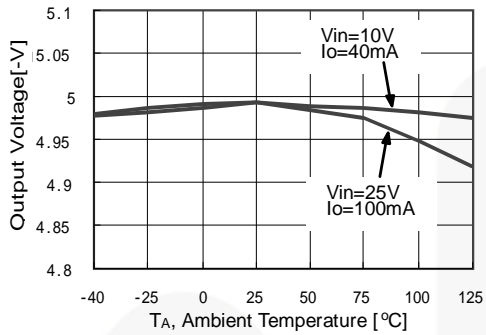


Figure 2. Output Voltage

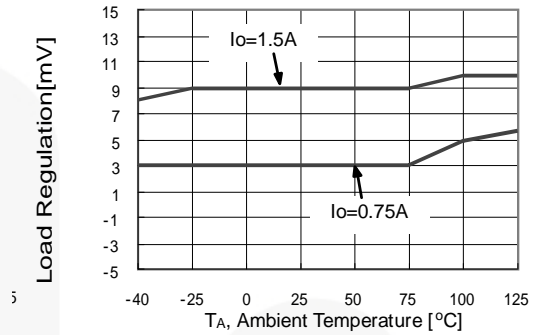


Figure 3. Load Regulation

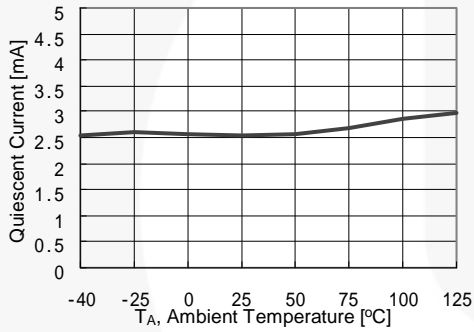


Figure 4. Quiescent Current

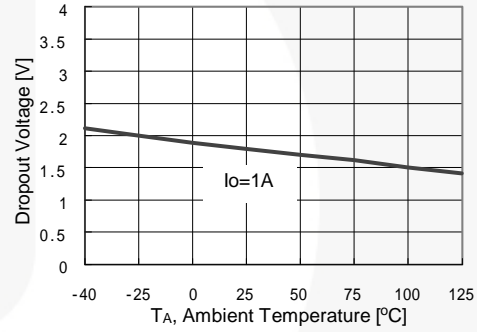


Figure 5. Dropout Voltage

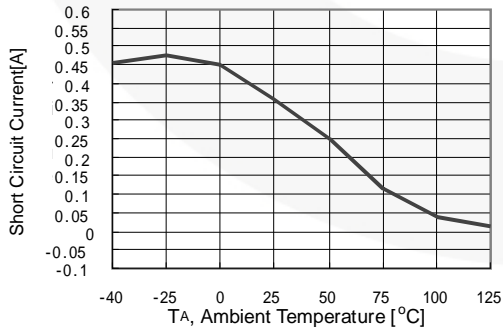


Figure 6. Short-Circuit Current

Typical Applications

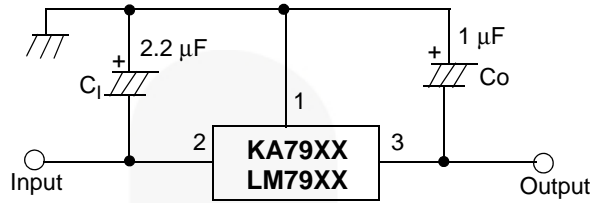


Figure 7. Negative Fixed Output Regulator

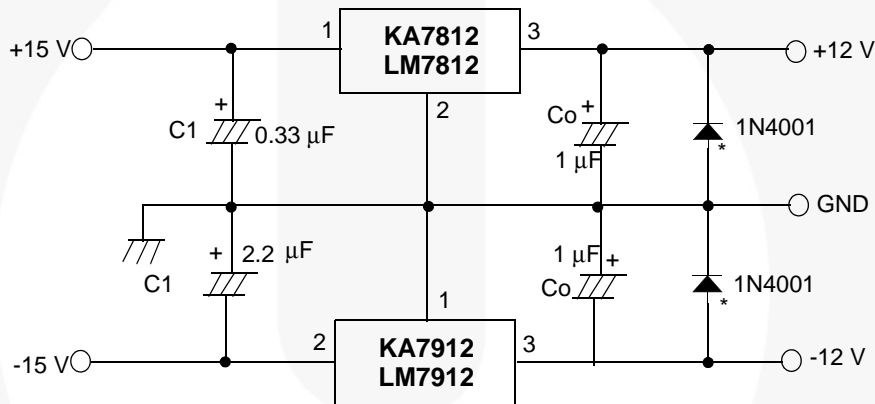


Figure 8. Split Power Supply ($\pm 12\text{ V} / 1\text{ A}$)

Notes:

14. To specify an output voltage, substitute voltage value for "XX".
15. C_1 is required if the regulator is located an appreciable distance from the power supply filter. For value given, capacitor must be solid tantalum. If aluminium electronics are used, at least ten times the value shown should be selected.
16. C_O improves stability and transient response. If large capacitors are used, a high-current diode from input to output (1N4001 or similar) should be introduced to protect the device from momentary input short circuit.

Physical Dimensions

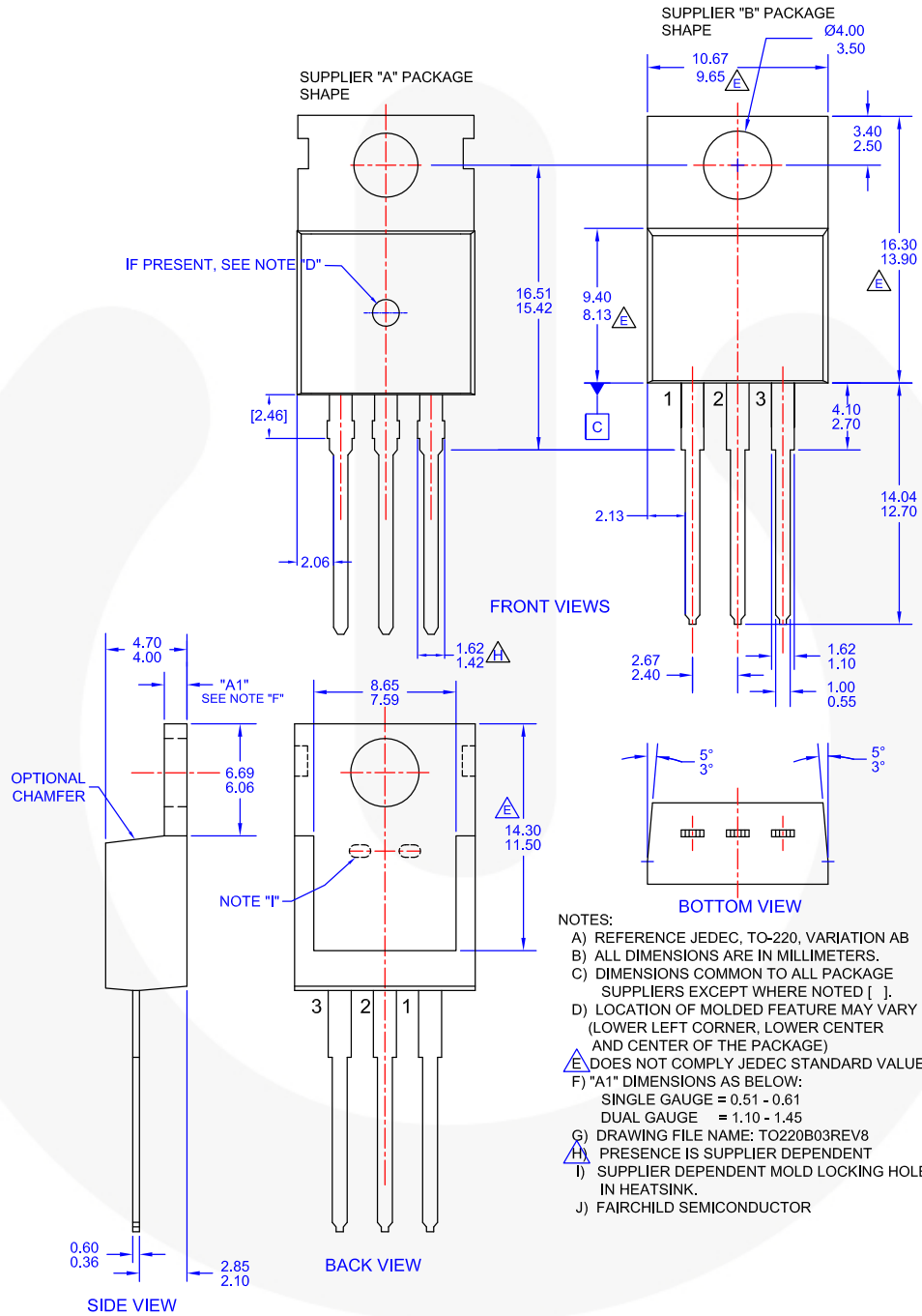


Figure 9. TO-220, MOLDED, 3-LEAD, JEDEC VARIATION AB (ACTIVE)



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