

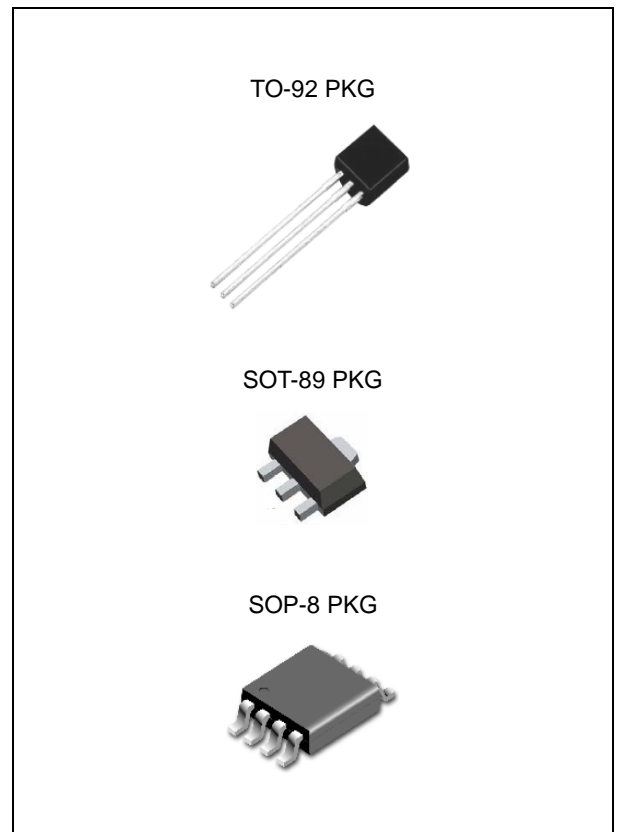
FEATURES

- Output Current Up to 100mA
- No External Components
- Internal Thermal Overload Protection
- Internal Short-Circuit Limiting
- Output Voltage of 5V, 6V, 8V, 9V, 10V, 12V, 15V, 18V and 24V
- Moisture Sensitivity Level 3

DESCRIPTION

This series of fixed-voltage monolithic integrated-circuit voltage regulators is designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. In addition, they can be used with power-pass elements to make high current voltage regulators.

Each of these regulators can deliver up to 100mA of output current. The internal limiting and thermal shutdown features of these regulators make them essentially immune to overload. Current limiting is include to limit the peak output current(250mA ~ 300mA) to a safe value. When used as a replacement for a zener diode-resistor combination, an effective improvement in output impedance can be obtained together with lower-bias current.



ORDERING INFORMATION

| Device | Package |
|-----------|----------------|
| LM78LXX | TO-92 (Bulk) |
| LM78LXXTA | TO-92 (Taping) |
| LM78LXXF | SOT-89 |
| LM78LXXD | SOP-8 |

XX : Output Voltage = 05, 06, 08, 09, 10, 12, 15, 18, 24

Absolute Maximum Ratings

| CHARACTERISTIC | | SYMBOL | MIN. | MAX. | UNIT |
|---|-------------------|---------------|------|-------|---------------------------|
| Input Voltage | LM78L05 ~ LM78L10 | V_{IN} | - | 30 | V |
| | LM78L12 ~ LM78L18 | | - | 35 | |
| | LM78L24 | | - | 40 | |
| Maximum Power Dissipation at $T_A = 25^\circ\text{C}$ / TO-92 | | P_{DMax} | - | 0.770 | W |
| Thermal Resistance Junction-To-Ambient / TO-92 | | θ_{JA} | - | 162 | $^\circ\text{C}/\text{W}$ |
| Lead Temperature (Soldering, 10 sec) | | T_{SOL} | - | 260 | $^\circ\text{C}$ |
| Storage Temperature Range | | T_{STG} | -65 | 150 | $^\circ\text{C}$ |
| Operating Junction Temperature Range | | T_{JOPR} | -40 | 150 | $^\circ\text{C}$ |

3-TERMINAL 0.1A POSITIVE VOLTAGE REGULATOR

LM78LXX

Recommended Operating Conditions

| CHARACTERISTIC | | SYMBOL | MIN. | MAX. | UNIT |
|--|-------------|----------|------|------|------|
| Input Voltage | LM78L05 / A | V_{IN} | 7 | 20 | V |
| | LM78L06 | | 8 | 20 | |
| | LM78L08 | | 10.5 | 23 | |
| | LM78L09 | | 11.5 | 24 | |
| | LM78L10 | | 12.5 | 25 | |
| | LM78L12 | | 14.5 | 27 | |
| | LM78L15 | | 17.5 | 30 | |
| | LM78L18 | | 20.5 | 33 | |
| | LM78L24 | | 26.5 | 39 | |
| Output Current | | I_o | 100 | 100 | mA |
| Operating Virtual Junction Temperature | | T_J | -40 | 125 | °C |

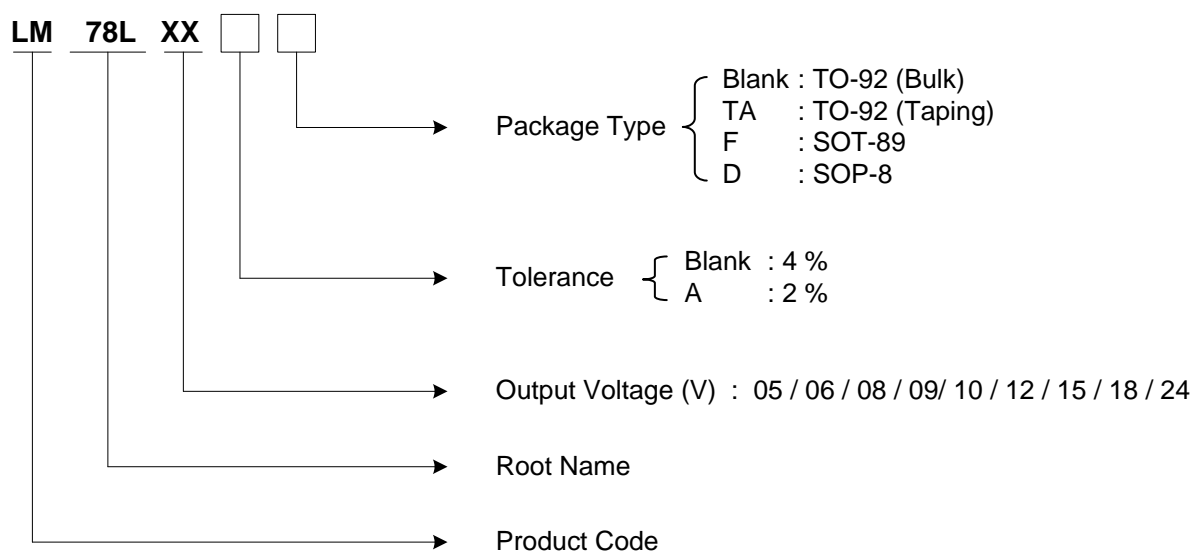
Ordering Information

| V_{OUT} | Package | Order No. | Description | Supplied As | Status |
|-----------|---------|------------|----------------|-------------|--------|
| 5.0V | TO-92 | LM78L05 | 0.1A, Positive | Bulk | Active |
| | | LM78L05A | 0.1A, Positive | Bulk | Active |
| | | LM78L05TA | 0.1A, Positive | Taping | Active |
| | | LM78L05ATA | 0.1A, Positive | Taping | Active |
| | SOT-89 | LM78L05F | 0.1A, Positive | Reel | Active |
| | SOP-8 | LM78L05D | 0.1A, Positive | Reel | Active |
| 6.0V | TO-92 | LM78L06 | 0.1A, Positive | Bulk | Active |
| | | LM78L06TA | 0.1A, Positive | Taping | Active |
| | SOT-89 | LM78L06F | 0.1A, Positive | Reel | Active |
| 8.0V | TO-92 | LM78L08 | 0.1A, Positive | Bulk | Active |
| | | LM78L08TA | 0.1A, Positive | Taping | Active |
| | SOT-89 | LM78L08F | 0.1A, Positive | Reel | Active |
| 9.0V | TO-92 | LM78L09 | 0.1A, Positive | Bulk | Active |
| | | LM78L09TA | 0.1A, Positive | Taping | Active |
| | SOT-89 | LM78L09F | 0.1A, Positive | Reel | Active |

3-TERMINAL 0.1A POSITIVE VOLTAGE REGULATOR LM78LXX

Ordering Information (Continued)

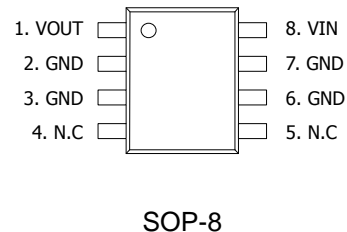
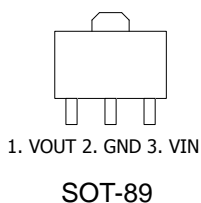
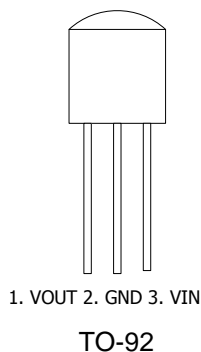
| V _{OUT} | Package | Order No. | Description | Supplied As | Status |
|------------------|---------|-----------|----------------|-------------|--------|
| 10V | TO-92 | LM78L10 | 0.1A, Positive | Bulk | Active |
| | | LM78L10TA | 0.1A, Positive | Taping | Active |
| | SOT-89 | LM78L10F | 0.1A, Positive | Reel | Active |
| 12V | TO-92 | LM78L12 | 0.1A, Positive | Bulk | Active |
| | | LM78L12TA | 0.1A, Positive | Taping | Active |
| | SOT-89 | LM78L12F | 0.1A, Positive | Reel | Active |
| 15V | TO-92 | LM78L15 | 0.1A, Positive | Bulk | Active |
| | | LM78L15TA | 0.1A, Positive | Taping | Active |
| | SOT-89 | LM78L15F | 0.1A, Positive | Reel | Active |
| 18V | TO-92 | LM78L18 | 0.1A, Positive | Bulk | Active |
| | | LM78L18TA | 0.1A, Positive | Taping | Active |
| | SOT-89 | LM78L18F | 0.1A, Positive | Reel | Active |
| 24V | TO-92 | LM78L24 | 0.1A, Positive | Bulk | Active |
| | | LM78L24TA | 0.1A, Positive | Taping | Active |
| | SOT-89 | LM78L24F | 0.1A, Positive | Reel | Active |



3-TERMINAL 0.1A POSITIVE VOLTAGE REGULATOR

LM78LXX

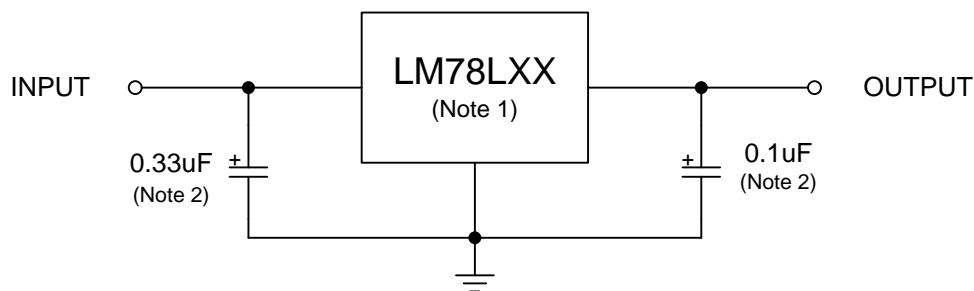
PIN CONFIGURATION



PIN DESCRIPTION

| Pin No. | TO-92 / SOT-89 3 LEAD | | SOP-8 8 LEAD | |
|---------|-----------------------|----------------|------------------|----------------|
| | Name | Function | Name | Function |
| 1 | V _{OUT} | Output Voltage | V _{OUT} | Output Voltage |
| 2 | GND | Ground | GND | Ground |
| 3 | V _{IN} | Input Voltage | GND | Ground |
| 4 / 5 | - | - | N.C | Not Connected |
| 6 / 7 | - | - | GND | Ground |
| 8 | - | - | V _{IN} | Input Voltage |

TYPICAL APPLICATION



Note)

1. To specify an output voltage, substitute voltage for "XX".
2. Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

ELECTRICAL CHARACTERISTICS

LM78L05 (At specified virtual junction temperature, $V_{IN} = 10V$, $I_o = 40mA$ (Unless otherwise noted))

| PARAMETER | SYMBOL | TEST CONDITION ^(Note 1) | | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|-------------------|---|------------------|------|------|------|------|
| Output Voltage ^(Note 2) | V_{OUT} | | 25°C | 4.8 | 5 | 5.2 | V |
| | | $1mA \leq I_o \leq 40mA$ $7V \leq V_{IN} \leq 20V$ | -30°C ~ 125°C | 4.75 | 5 | 5.25 | |
| | | $1mA \leq I_o \leq 70mA$ | | 4.75 | 5 | 5.25 | |
| Line Regulation | ΔV_{LINE} | $7V \leq V_{IN} \leq 20V$ | 25°C | | 32 | 150 | mV |
| | | $8V \leq V_{IN} \leq 20V$ | | | 26 | 100 | |
| Load Regulation | ΔV_{LOAD} | $1mA \leq I_o \leq 100mA$ | 25°C | | 15 | 60 | mV |
| | | $1mA \leq I_o \leq 40mA$ | | | 8 | 30 | |
| Bias Current | I_B | | 25°C | | 3.8 | 6 | mA |
| | | | 125°C | | | 5.5 | |
| Bias Current Change | ΔI_B | $9V \leq V_{IN} \leq 20V$ | -30°C ~ 125°C | | | 1.5 | mA |
| | | $1mA \leq I_o \leq 40mA$ | | | | 0.1 | |
| Output Noise Voltage | V_N | $10Hz \leq f \leq 100kHz$ | 25°C | | 42 | | µV |
| Ripple Rejection | RR | $8V \leq V_{IN} \leq 18V$, $f=120Hz$ | 25°C | 41 | 49 | | dB |
| Dropout Voltage | V_D | | 25°C | | 1.7 | | V |

LM78L05A (At specified virtual junction temperature, $V_{IN} = 10V$, $I_o = 40mA$ (Unless otherwise noted))

| PARAMETER | SYMBOL | TEST CONDITION ^(Note 1) | | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|-------------------|---|------------------|-------|------|-------|------|
| Output Voltage ^(Note 2) | V_{OUT} | | 25°C | 4.9 | 5 | 5.1 | V |
| | | $1mA \leq I_o \leq 40mA$ $7V \leq V_{IN} \leq 20V$ | -30°C ~ 125°C | 4.875 | 5 | 5.125 | |
| | | $1mA \leq I_o \leq 70mA$ | | 4.875 | 5 | 5.125 | |
| Line Regulation | ΔV_{LINE} | $7V \leq V_{IN} \leq 20V$ | 25°C | | 32 | 150 | mV |
| | | $8V \leq V_{IN} \leq 20V$ | | | 26 | 100 | |
| Load Regulation | ΔV_{LOAD} | $1mA \leq I_o \leq 100mA$ | 25°C | | 15 | 60 | mV |
| | | $1mA \leq I_o \leq 40mA$ | | | 8 | 30 | |
| Bias Current | I_B | | 25°C | | 3.8 | 6 | mA |
| | | | 125°C | | | 5.5 | |
| Bias Current Change | ΔI_B | $9V \leq V_{IN} \leq 20V$ | -30°C ~ 125°C | | | 1.5 | mA |
| | | $1mA \leq I_o \leq 40mA$ | | | | 0.1 | |
| Output Noise Voltage | V_N | $10Hz \leq f \leq 100kHz$ | 25°C | | 42 | | µV |
| Ripple Rejection | RR | $8V \leq V_{IN} \leq 18V$, $f=120Hz$ | 25°C | 41 | 49 | | dB |
| Dropout Voltage | V_D | | 25°C | | 1.7 | | V |

3-TERMINAL 0.1A POSITIVE VOLTAGE REGULATOR

LM78LXX

LM78L06 (At specified virtual junction temperature, $V_{IN} = 11V$, $I_o = 40mA$ (Unless otherwise noted))

| PARAMETER | SYMBOL | TEST CONDITION ^(Note 1) | | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|-------------------|---|------------------|------|------|------|------|
| Output Voltage ^(Note 2) | V_{OUT} | | 25°C | 5.75 | 6 | 6.25 | V |
| | | $1mA \leq I_o \leq 40mA$ $8V \leq V_{IN} \leq 20V$ | -30°C ~ 125°C | 5.7 | 6 | 6.3 | |
| | | $1mA \leq I_o \leq 70mA$ | | 5.7 | 6 | 6.3 | |
| Line Regulation | ΔV_{LINE} | $8V \leq V_{IN} \leq 20V$ | 25°C | | 35 | 175 | mV |
| | | $9V \leq V_{IN} \leq 20V$ | | | 29 | 125 | |
| Load Regulation | ΔV_{LOAD} | $1mA \leq I_o \leq 100mA$ | 25°C | | 16 | 80 | mV |
| | | $1mA \leq I_o \leq 40mA$ | | | 9 | 40 | |
| Bias Current | I_B | | 25°C | | 3.9 | 6 | mA |
| | | | 125°C | | | 5.5 | |
| Bias Current Change | ΔI_B | $9V \leq V_{IN} \leq 20V$ | -30°C ~ 125°C | | | 1.5 | mA |
| | | $1mA \leq I_o \leq 40mA$ | | | | 0.1 | |
| Output Noise Voltage | V_N | $10Hz \leq f \leq 100kHz$ | 25°C | | 46 | | uV |
| Ripple Rejection | RR | $8V \leq V_{IN} \leq 18V$, $f=120Hz$ | 25°C | 40 | 48 | | dB |
| Dropout Voltage | V_D | | 25°C | | 1.7 | | V |

LM78L08 (At specified virtual junction temperature, $V_{IN} = 14V$, $I_o = 40mA$ (Unless otherwise noted))

| PARAMETER | SYMBOL | TEST CONDITION ^(Note 1) | | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|-------------------|--|------------------|------|------|------|------|
| Output Voltage ^(Note 2) | V_{OUT} | | 25°C | 7.7 | 8 | 8.3 | V |
| | | $1mA \leq I_o \leq 40mA$ $10.5V \leq V_{IN} \leq 23V$ | -30°C ~ 125°C | 7.6 | 8 | 8.4 | |
| | | $1mA \leq I_o \leq 70mA$ | | 7.6 | 8 | 8.4 | |
| Line Regulation | ΔV_{LINE} | $10.5V \leq V_{IN} \leq 23V$ | 25°C | | 42 | 175 | mV |
| | | $11V \leq V_{IN} \leq 23V$ | | | 36 | 125 | |
| Load Regulation | ΔV_{LOAD} | $1mA \leq I_o \leq 100mA$ | 25°C | | 18 | 80 | mV |
| | | $1mA \leq I_o \leq 40mA$ | | | 10 | 40 | |
| Bias Current | I_B | | 25°C | | 4 | 6 | mA |
| | | | 125°C | | | 5.5 | |
| Bias Current Change | ΔI_B | $11V \leq V_{IN} \leq 23V$ | -30°C ~ 125°C | | | 1.5 | mA |
| | | $1mA \leq I_o \leq 40mA$ | | | | 0.1 | |
| Output Noise Voltage | V_N | $10Hz \leq f \leq 100kHz$ | 25°C | | 54 | | uV |
| Ripple Rejection | RR | $13V \leq V_{IN} \leq 23V$, $f=120Hz$ | 25°C | 37 | 46 | | dB |
| Dropout Voltage | V_D | | 25°C | | 1.7 | | V |

3-TERMINAL 0.1A POSITIVE VOLTAGE REGULATOR

LM78LXX

LM78L09 (At specified virtual junction temperature, $V_{IN} = 16V$, $I_o = 40mA$ (Unless otherwise noted))

| PARAMETER | SYMBOL | TEST CONDITION ^(Note 1) | | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|-------------------|--|------------------|------|------|------|------|
| Output Voltage ^(Note 2) | V_{OUT} | | 25°C | 8.6 | 9 | 9.4 | V |
| | | $1mA \leq I_o \leq 40mA$ $12V \leq V_{IN} \leq 24V$ | -30°C ~ 125°C | 8.55 | 9 | 9.45 | |
| | | $1mA \leq I_o \leq 70mA$ | | 8.55 | 9 | 9.45 | |
| Line Regulation | ΔV_{LINE} | $12V \leq V_{IN} \leq 24V$ | 25°C | | 45 | 175 | mV |
| | | $13V \leq V_{IN} \leq 24V$ | | | 40 | 125 | |
| Load Regulation | ΔV_{LOAD} | $1mA \leq I_o \leq 100mA$ | 25°C | | 19 | 90 | mV |
| | | $1mA \leq I_o \leq 40mA$ | | | 11 | 40 | |
| Bias Current | I_B | | 25°C | | 4.1 | 6 | mA |
| | | | 125°C | | | 5.5 | |
| Bias Current Change | ΔI_B | $13V \leq V_{IN} \leq 24V$ | -30°C ~ 125°C | | | 1.5 | mA |
| | | $1mA \leq I_o \leq 40mA$ | | | | 0.1 | |
| Output Noise Voltage | V_N | $10Hz \leq f \leq 100kHz$ | 25°C | | 58 | | uV |
| Ripple Rejection | RR | $15V \leq V_{IN} \leq 25V$, $f=120Hz$ | 25°C | 38 | 45 | | dB |
| Dropout Voltage | V_D | | 25°C | | 1.7 | | V |

LM78L10 (At specified virtual junction temperature, $V_{IN} = 17V$, $I_o = 40mA$ (Unless otherwise noted))

| PARAMETER | SYMBOL | TEST CONDITION ^(Note 1) | | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|-------------------|--|------------------|------|------|------|------|
| Output Voltage ^(Note 2) | V_{OUT} | | 25°C | 9.6 | 10 | 10.4 | V |
| | | $1mA \leq I_o \leq 40mA$ $13V \leq V_{IN} \leq 25V$ | -30°C ~ 125°C | 9.5 | 10 | 10.5 | |
| | | $1mA \leq I_o \leq 70mA$ | | 9.5 | 10 | 10.5 | |
| Line Regulation | ΔV_{LINE} | $13V \leq V_{IN} \leq 25V$ | 25°C | | 51 | 175 | mV |
| | | $14V \leq V_{IN} \leq 25V$ | | | 42 | 125 | |
| Load Regulation | ΔV_{LOAD} | $1mA \leq I_o \leq 100mA$ | 25°C | | 20 | 90 | mV |
| | | $1mA \leq I_o \leq 40mA$ | | | 11 | 40 | |
| Bias Current | I_B | | 25°C | | 4.2 | 6 | mA |
| | | | 125°C | | | 5.5 | |
| Bias Current Change | ΔI_B | $14V \leq V_{IN} \leq 25V$ | -30°C ~ 125°C | | | 1.5 | mA |
| | | $1mA \leq I_o \leq 40mA$ | | | | 0.1 | |
| Output Noise Voltage | V_N | $10Hz \leq f \leq 100kHz$ | 25°C | | 62 | | uV |
| Ripple Rejection | RR | $15V \leq V_{IN} \leq 25V$, $f=120Hz$ | 25°C | 37 | 44 | | dB |
| Dropout Voltage | V_D | | 25°C | | 1.7 | | V |

3-TERMINAL 0.1A POSITIVE VOLTAGE REGULATOR

LM78LXX

LM78L12 (At specified virtual junction temperature, $V_{IN} = 19V$, $I_o = 40mA$ (Unless otherwise noted))

| PARAMETER | SYMBOL | TEST CONDITION ^(Note 1) | | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|-------------------|--|------------------|------|------|------|------|
| Output Voltage ^(Note 2) | V_{OUT} | | 25°C | 11.5 | 12 | 12.5 | V |
| | | $1mA \leq I_o \leq 40mA$ $14V \leq V_{IN} \leq 27V$ | -30°C ~ 125°C | 11.4 | 12 | 12.6 | |
| | | $1mA \leq I_o \leq 70mA$ | | 11.4 | 12 | 12.6 | |
| Line Regulation | ΔV_{LINE} | $14.5V \leq V_{IN} \leq 27V$ | 25°C | | 55 | 250 | mV |
| | | $16V \leq V_{IN} \leq 27V$ | | | 49 | 200 | |
| Load Regulation | ΔV_{LOAD} | $1mA \leq I_o \leq 100mA$ | 25°C | | 22 | 100 | mV |
| | | $1mA \leq I_o \leq 40mA$ | | | 13 | 50 | |
| Bias Current | I_B | | 25°C | | 4.3 | 6.5 | mA |
| | | | 125°C | | | 6 | |
| Bias Current Change | ΔI_B | $16V \leq V_{IN} \leq 27V$ | -30°C ~ 125°C | | | 1.5 | mA |
| | | $1mA \leq I_o \leq 40mA$ | | | | 0.1 | |
| Output Noise Voltage | V_N | $10Hz \leq f \leq 100kHz$ | 25°C | | 70 | | uV |
| Ripple Rejection | RR | $15V \leq V_{IN} \leq 25V$, $f=120Hz$ | 25°C | 37 | 42 | | dB |
| Dropout Voltage | V_D | | 25°C | | 1.7 | | V |

LM78L15 (At specified virtual junction temperature, $V_{IN} = 23V$, $I_o = 40mA$ (Unless otherwise noted))

| PARAMETER | SYMBOL | TEST CONDITION ^(Note 1) | | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|-------------------|--|------------------|-------|------|-------|------|
| Output Voltage ^(Note 2) | V_{OUT} | | 25°C | 14.4 | 15 | 15.6 | V |
| | | $1mA \leq I_o \leq 40mA$ $17.5V \leq V_{IN} \leq 30V$ | -30°C ~ 125°C | 14.25 | 15 | 15.75 | |
| | | $1mA \leq I_o \leq 70mA$ | | 14.25 | 15 | 15.75 | |
| Line Regulation | ΔV_{LINE} | $17.5V \leq V_{IN} \leq 30V$ | 25°C | | 65 | 300 | mV |
| | | $19V \leq V_{IN} \leq 30V$ | | | 58 | 250 | |
| Load Regulation | ΔV_{LOAD} | $1mA \leq I_o \leq 100mA$ | 25°C | | 25 | 150 | mV |
| | | $1mA \leq I_o \leq 40mA$ | | | 15 | 75 | |
| Bias Current | I_B | | 25°C | | 4.2 | 6.5 | mA |
| | | | 125°C | | | 6 | |
| Bias Current Change | ΔI_B | $19V \leq V_{IN} \leq 30V$ | -30°C ~ 125°C | | | 1.5 | mA |
| | | $1mA \leq I_o \leq 40mA$ | | | | 0.1 | |
| Output Noise Voltage | V_N | $10Hz \leq f \leq 100kHz$ | 25°C | | 82 | | uV |
| Ripple Rejection | RR | $18.5V \leq V_{IN} \leq 28.5V$, $f=120Hz$ | 25°C | 37 | 44 | | dB |
| Dropout Voltage | V_D | | 25°C | | 1.7 | | V |

3-TERMINAL 0.1A POSITIVE VOLTAGE REGULATOR

LM78LXX

LM78L18 (At specified virtual junction temperature, $V_{IN} = 26V$, $I_o = 40mA$ (Unless otherwise noted))

| PARAMETER | SYMBOL | TEST CONDITION ^(Note 1) | | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|-------------------|--|------------------|------|------|------|------|
| Output Voltage ^(Note 2) | V_{OUT} | | 25°C | 17.3 | 18 | 18.7 | V |
| | | $1mA \leq I_o \leq 40mA$ $20.5V \leq V_{IN} \leq 33V$ | -30°C ~ 125°C | 17.1 | 18 | 18.9 | |
| | | $1mA \leq I_o \leq 70mA$ | | 17.1 | 18 | 18.9 | |
| Line Regulation | ΔV_{LINE} | $20.5V \leq V_{IN} \leq 33V$ | 25°C | | 70 | 360 | mV |
| | | $22V \leq V_{IN} \leq 33V$ | | | 64 | 300 | |
| Load Regulation | ΔV_{LOAD} | $1mA \leq I_o \leq 100mA$ | 25°C | | 27 | 180 | mV |
| | | $1mA \leq I_o \leq 40mA$ | | | 19 | 90 | |
| Bias Current | I_B | | 25°C | | 4.7 | 6.5 | mA |
| | | | 125°C | | | 6 | |
| Bias Current Change | ΔI_B | $22V \leq V_{IN} \leq 33V$ | -30°C ~ 125°C | | | 1.5 | mA |
| | | $1mA \leq I_o \leq 40mA$ | | | | 0.1 | |
| Output Noise Voltage | V_N | $10Hz \leq f \leq 100kHz$ | 25°C | | 82 | | uV |
| Ripple Rejection | RR | $21.5V \leq V_{IN} \leq 31.5V$, $f=120Hz$ | 25°C | 32 | 36 | | dB |
| Dropout Voltage | V_D | | 25°C | | 1.7 | | V |

LM78L24 (At specified virtual junction temperature, $V_{IN} = 32V$, $I_o = 40mA$ (Unless otherwise noted))

| PARAMETER | SYMBOL | TEST CONDITION ^(Note 1) | | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|-------------------|--|------------------|------|------|------|------|
| Output Voltage ^(Note 2) | V_{OUT} | | 25°C | 23 | 24 | 25 | V |
| | | $1mA \leq I_o \leq 40mA$ $26.5V \leq V_{IN} \leq 39V$ | -30°C ~ 125°C | 22.8 | 24 | 25.2 | |
| | | $1mA \leq I_o \leq 70mA$ | | 22.8 | 24 | 25.2 | |
| Line Regulation | ΔV_{LINE} | $26.5V \leq V_{IN} \leq 39V$ | 25°C | | 95 | 480 | mV |
| | | $29V \leq V_{IN} \leq 39V$ | | | 78 | 400 | |
| Load Regulation | ΔV_{LOAD} | $1mA \leq I_o \leq 100mA$ | 25°C | | 41 | 240 | mV |
| | | $1mA \leq I_o \leq 40mA$ | | | 28 | 120 | |
| Bias Current | I_B | | 25°C | | 4.8 | 6.5 | mA |
| | | | 125°C | | | 6 | |
| Bias Current Change | ΔI_B | $28V \leq V_{IN} \leq 39V$ | -30°C ~ 125°C | | | 1.5 | mA |
| | | $1mA \leq I_o \leq 40mA$ | | | | 0.1 | |
| Output Noise Voltage | V_N | $10Hz \leq f \leq 100kHz$ | 25°C | | 82 | | uV |
| Ripple Rejection | RR | $27.5V \leq V_{IN} \leq 37.5V$, $f=120Hz$ | 25°C | 30 | 33 | | dB |
| Dropout Voltage | V_D | | 25°C | | 1.7 | | V |

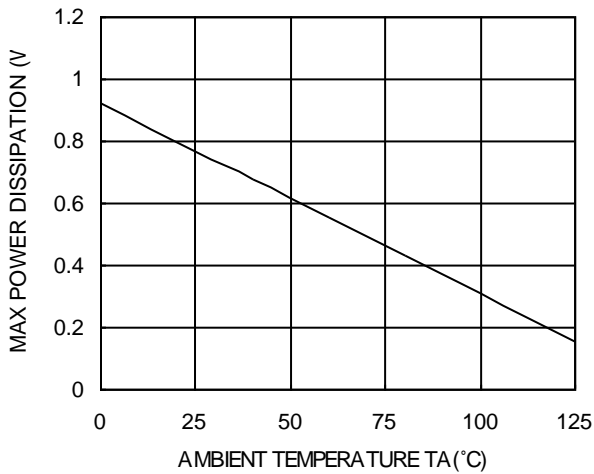
3-TERMINAL 0.1A POSITIVE VOLTAGE REGULATOR LM78LXX

Note 1. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

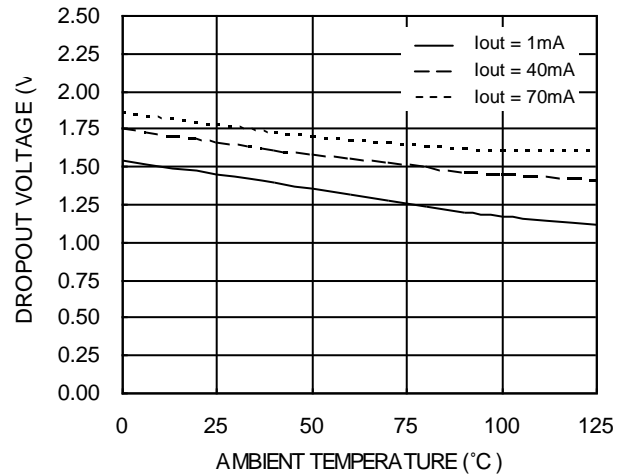
All characteristics are measured with a 0.33 μ F capacitor across the input and a 0.1 μ F capacitor across the output.

Note 2. This specification applies only for DC power dissipation permitted by absolute maximum ratings.

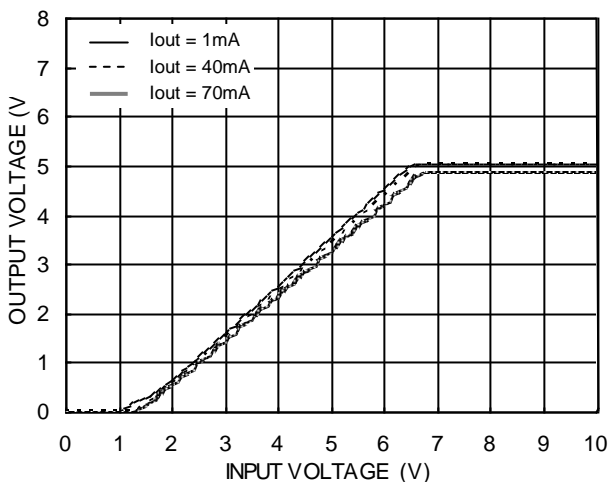
TYPICAL OPERATING CHARACTERISTICS



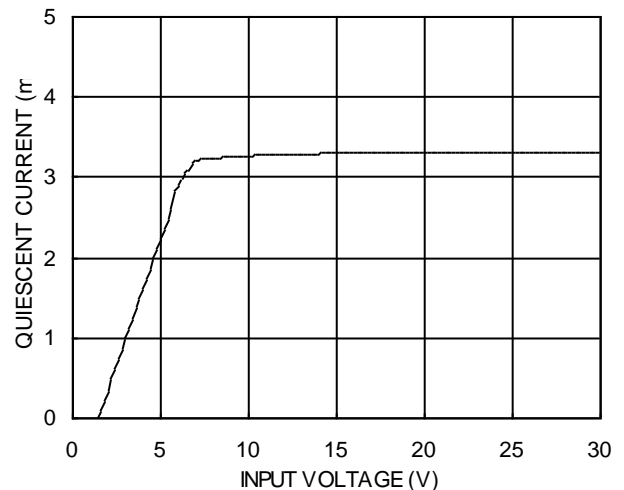
Power Dissipation vs. Ambient Temperature, TO-92



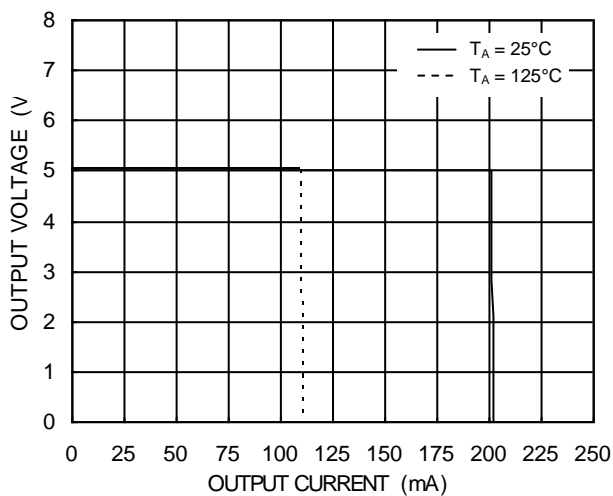
Dropout Voltage vs. Ambient Temperature



Output Voltage vs. Input Voltage



Quiescent Current vs. Input Voltage



Output Voltage vs. Output Current

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