# Three-terminal positive voltage regulator

**TO-220L**

Dimensions in inches and (millimeters)

## FEATURES

● Maximum output current IOM: 0.5A

● Output voltage VO: 12V

● Continuous total dissipation

PD: 1.5W ( T a = 25 ℃ )

## MECHANICAL DATA

● Case: TO-220 Small Outline Plastic Package

● Polarity: Color band denotes cathode end

● Mounting Position: Any

## MAXIMUM RATINGS AND CHARACTERISTICS

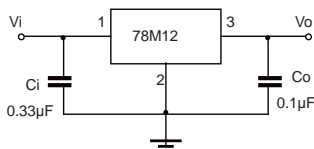@ 25°C Ambient Temperature (unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Input Voltage | $V_i$ | 35 | V |
| Thermal  Resistance from Junction to Ambient | $R_{\theta JA}$ | 66.7 | ℃/W |
| Operating Junction Temperature Range | $T_{OPR}$ | -25~+125 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -65~+150 | ℃ |

## ELECTRICAL CHARACTERISTICS (Vi=19V,Io=350mA, Ci=0.33μF,Co=0.1μF, unless otherwise specified )

| Parameter | Symbol | Test  conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **Output Voltage** | Vo | | 25℃ | 11.5 | 12 | 12.5 | V |
| | | 14.5≤Vi≤27V, Io=5mA-350mA | -25-125℃ | 11.4 | 12 | 12.6 | V |
| **Load Regulation** | ΔVo | Io=5mA-500mA | 25℃ | | 25 | 240 | mV |
| | | Io=5mA-200mA | 25℃ | | 10 | 120 | mV |
| **Line Regulation** | ΔVo | 14.5V≤Vi≤30V, Io=200mA | 25℃ | | 10 | 100 | mV |
| | | 16V≤Vi≤30V, Io=200mA | 25℃ | | 3 | 50 | mV |
| **Quiescent Current** | Iq | | 25℃ | | 4.6 | 6 | mA |
| **Quiescent Current Change** | ΔIq | 14.5V≤Vi≤30V, Io=200mA | -25-125℃ | | | 0.8 | mA |
| | ΔIq | 5mA≤Io≤350mA | -25-125℃ | | | 0.5 | mA |
| **Output Noise Voltage** | $V_N$ | 10Hz≤f≤100KHz | 25℃ | | 75 | | μV/Vo |
| **Ripple Rejection** | RR | 15≤Vi≤25V,f=120Hz,Io=300mA | -25-125℃ | 55 | 80 | | dB |
| **Dropout Voltage** | Vd | Io=350mA | 25℃ | | 2 | | V |
| **Short Circuit Current** | Isc | Vi=19V | 25℃ | | 240 | | mA |
| **Peak Current** | Ipk | | 25℃ | | 0.7 | | A |

* Pulse test.

## TYPICAL APPLICATION

```
Vi o----1[ 78M12 ]3----o Vo
        |          |
    Ci ===    2   === Co
   0.33μF     |    0.1μF
              ⏚
```
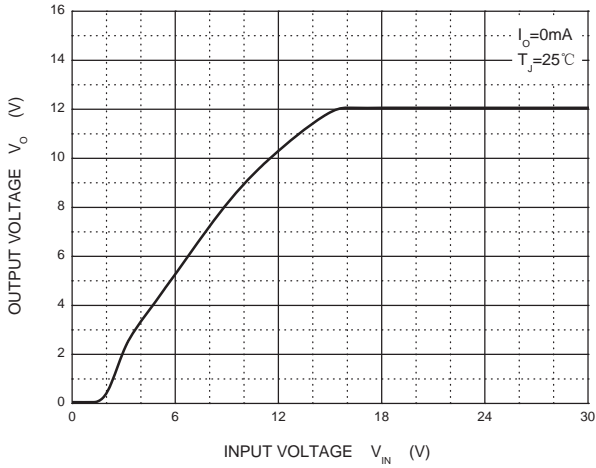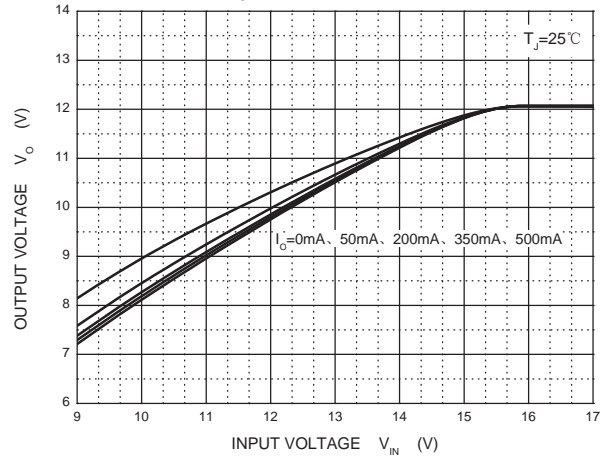
Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as
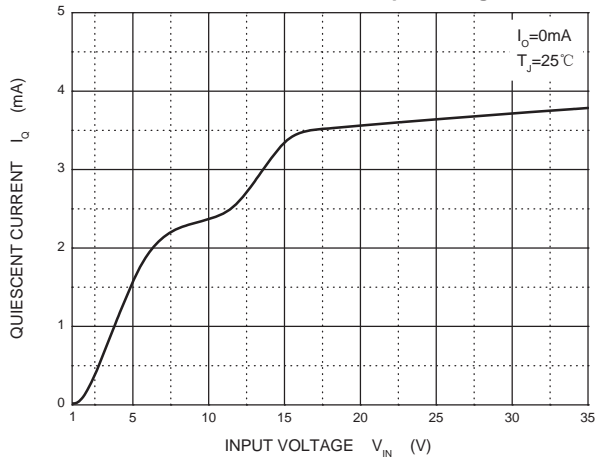possible to the regulators.
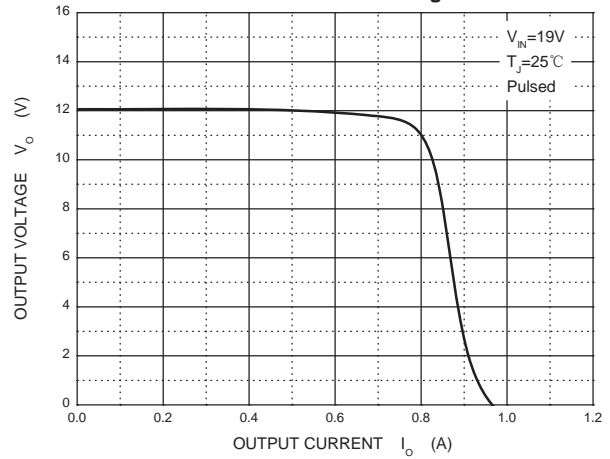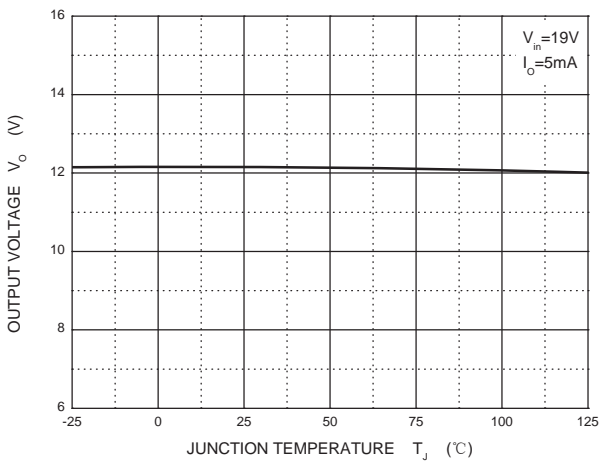
**TYPICAL APPLICATION**

**Output Characteristics**

$I_O$=0mA
$T_J$=25℃

OUTPUT VOLTAGE $V_O$ (V)

INPUT VOLTAGE $V_{IN}$ (V)

**Dropout Characteristics**

$T_J$=25℃

OUTPUT VOLTAGE $V_O$ (V)

$I_O$=0mA、50mA、200mA、350mA、500mA

INPUT VOLTAGE $V_{IN}$ (V)

**Quiescent Current vs Input Voltage**

$I_O$=0mA
$T_J$=25℃

QUIESCENT CURRENT $I_Q$ (mA)

INPUT VOLTAGE $V_{IN}$ (V)

**Current Cut-off Grid Voltage**

$V_{IN}$=19V
$T_J$=25℃
Pulsed

OUTPUT VOLTAGE $V_O$ (V)

OUTPUT CURRENT $I_O$ (A)

**Output Voltage vs Junction Temperature**

$V_{in}$=19V
$I_O$=5mA

OUTPUT VOLTAGE $V_O$ (V)

JUNCTION TEMPERATURE $T_J$ (℃)

**Power Derating Curve**

POWER DISSIPATION $P_D$ (W)

JUNCTION TEMPERATURE $T_J$ (℃)