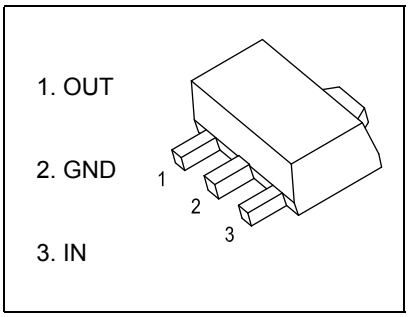
# SOT-89 Plastic-Encapsulate Voltage Regulators

**78L10** Three-terminal positive voltage regulator

**SOT-89-3L**




## FEATURES

- Maximum output current
  $I_{OM}$: 0.1A
- Output voltage
  $V_O$: 10V
- Continuous total dissipation
  $P_D$: 0.6 W ($T_a$= 25 ℃)

**ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)**

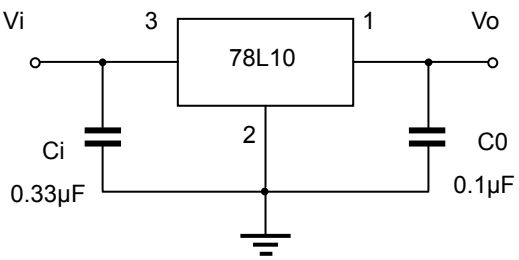
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Input Voltage | $V_i$ | 30 | V |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 166.7 | ℃/W |
| Operating Junction Temperature Range | $T_{OPR}$ | -40~+125 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -65~+150 | ℃ |

**ELECTRICAL CHARACTERISTICS AT SPECIFIED VIRTUAL JUNCTION TEMPERATURE (Vi=16V,Io=40mA,Ci=0.33uF,,Co=0.1uF, unless otherwise specified )**

| Parameter | Symbol | Test conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output voltage | Vo | | 25℃ | 9.60 | 10 | 10.40 | V |
| | | 12.5V≤$V_I$≤25V, Io=1mA-40mA | 0-125℃ | 9.30 | 10 | 10.70 | V |
| | | Io=1mA-70mA | | 9.30 | 10 | 10.70 | V |
| Load Regulation | △Vo | Io=1mA-100mA | 25℃ | | 17 | 90 | mV |
| | | Io=1mA-40mA | 25℃ | | 9 | 45 | mV |
| Line regulation | △Vo | 12.5V≤$V_I$≤25V | 25℃ | | 100 | 210 | mV |
| | | 13V≤$V_I$≤25V | 25℃ | | 90 | 160 | mV |
| Quiescent Current | Iq | | 25℃ | | | 6.5 | mA |
| Quiescent Current Change | △Iq | 13V≤$V_I$≤25V | 0-125℃ | | | 1.5 | mA |
| | △Iq | 1mA≤$I_O$≤40mA | 0-125℃ | | | 0.1 | mA |
| Output Noise Voltage | $V_N$ | 10Hz≤f≤100KHz | 25℃ | 58 | | | μV/Vo |
| Ripple Rejection | RR | 13V≤$V_I$≤24V,f=120Hz | 25℃ | | 43 | | dB |
| Dropout Voltage | Vd | | 25℃ | | 1.7 | | V |

* Pulse test.

**TYPICAL APPLICATION**




Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as

## Typical Characteristics

Figure 1. Dropout Characteristics

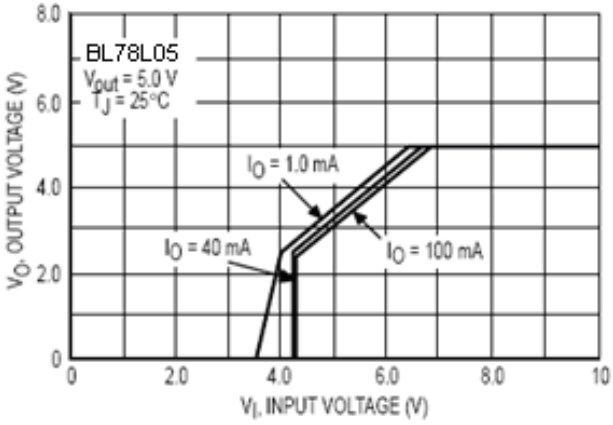



Figure 2. Dropout Voltage versus Junction Temperature

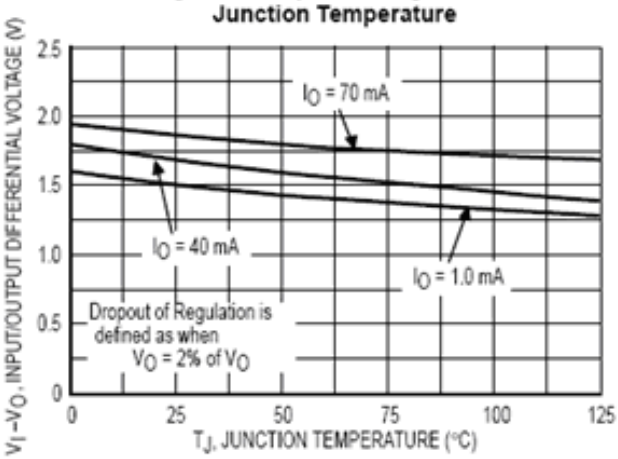



Figure 3. Input Bias Current versus Ambient Temperature

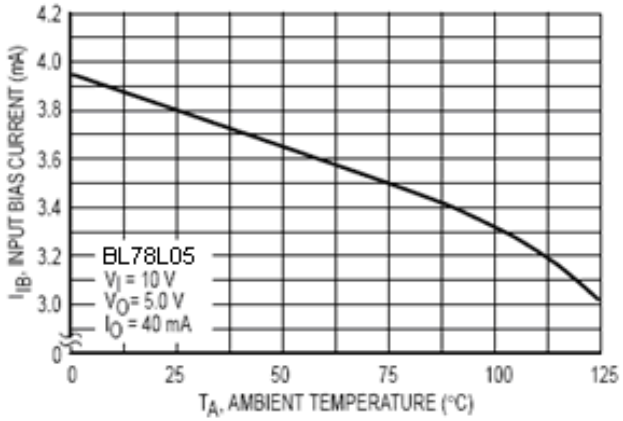
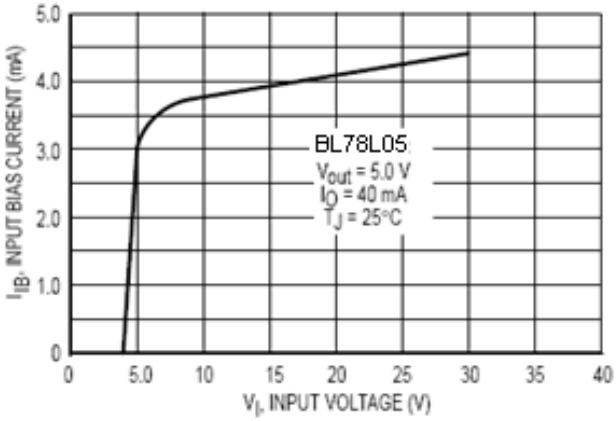
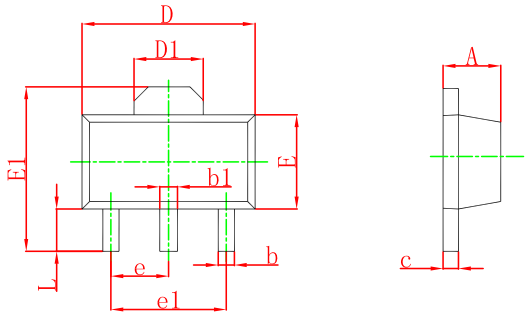



Figure 4. Input Bias Current versus Input Voltage



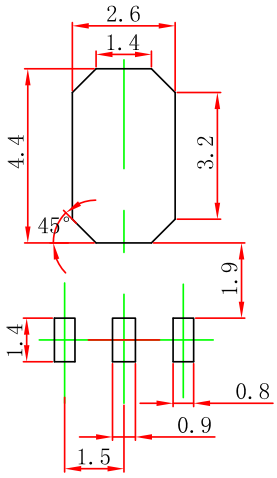
## Outlitne Drawing

SOT-89-3L Package Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |

## SOT-89-3L Suggested Pad Layout




Note:
1.Controlling dimension:in/millimeters.
2.General tolerance: ±0.05mm.
3.The pad layout is for reference purposes only.

## PACKAGE SPECIFICATIONS

| Package | Reel Size | Reel DIA. (mm) | Q'TY/Reel (pcs) | Box Size (mm) | QTY/Box (pcs) | Carton Size (mm) | G.W.(Kg) |
|---|---|---|---|---|---|---|---|
| SOT-89-3L | 7' | 330 | 1000 | 203×203×195 | 40000 | 438×438×220 | 180000 |