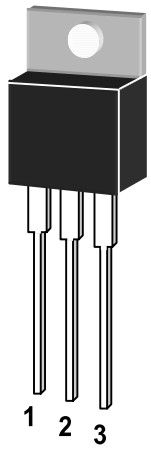
# LM7805

## 3-terminal 1A positive voltage regulator

### DESCRIPTION

The LM7805 series of three terminal positive regulators are available in the TO-220/D-PAK 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 operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.




1. Output 2. Common 3. Input

TO-220 Plastic Package

### Features

- Output Current up to 1A.
- Thermal Overload Protection.
- Short Circuit Protection.
- Output Transistor Safe Operating area Protection.

**Absolute Maximum Ratings (Ta=25 °C)**

| Parameter | Symbol | Value | Units |
|---|---|---|---|
| Thermal Resistance Junction-Cases | $R_{\upsilon JC}$ | 5 | °C /W |
| Thermal Resistance Junction-Air | $R_{\upsilon JA}$ | 65 | °C /W |
| Operating Temperature Range(LM78XXCT/MC78XXCT/MC78XXCDT) | $T_{OPR}$ | 0 to +125 | °C |
| Storage Temperature Range | $T_S$ | -65 to +150 | °C |

## Electrical Characteristics (LM7805)

(Refer to test circuit, 0°C′$T_J$′125°C, $I_O$=500mA, $V_I$=10V, $C_I$=0.33μF, $C_O$=0.1μF, unless otherwise specified)

| Parameter | Symbol | Conditions | | LM7805 | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Output Voltage | $V_O$ | $T_J$=+25°C | | 4.8 | 5 | 5.2 | V |
| | | 5.0mA≤$I_O$≤1.0A,$P_O$≤15W<br>$V_I$=7V to 20V<br>$V_I$=8V to 20V | | 4.75 | 5 | 5.25 | |
| Line Regulation | $\Delta V_O$ | $T_J$=+25°C | $V_O$=7V to 20V | - | 4 | 100 | mV |
| | | | $V_I$=8V to 12V | - | 1.6 | 50 | |
| Load Regulation | $\Delta V_O$ | $T_J$=+25°C | $I_O$=5.0mA to 1.5A | - | 9 | 100 | mV |
| | | | $I_O$=250mA to 750mA | - | 4 | 50 | |
| Quiescent Current | $I_Q$ | $T_J$=+25°C | | - | 5 | 8 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$=5.0mA to 1.0A | | - | 0.03 | 0.5 | mA |
| | | $V_I$=7V to 25V | | - | 0.3 | 1.3 | |
| Output Voltage Drift | $\Delta V_O/\Delta T$ | $I_O$=5.0mA | | - | -0.8 | - | mV/°C |
| Output Noise Voltage | $V_N$ | f=10Hz to100KHz,$T_A$=+25°C | | - | 42 | - | μV |
| Ripple Rejection | RR | f=120Hz,$V_O$=8V to18V | | 62 | 73 | - | dB |
| Dropout Voltage | $V_O$ | $I_O$=1A, $T_J$=+25°C | | - | 2 | - | V |
| Output Resistance | $R_O$ | f=1KHz | | - | 15 | - | mς |
| Short Circuit Current | $I_{SC}$ | $V_I$=35V, $T_A$=+25°C | | - | 230 | - | mA |
| Peak Current | $I_{PK}$ | $T_J$=+25°C | | - | 2.2 | - | A |

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

**G S P FORM A IS AVAILABLE**