# POSITIVE VOLTAGE REGULATORS

- **Output current up to 1.5A**
- **3-Terminal Regulators**
- **Internal Thermal Overload Protection**
- **Internal Short-Circuit Current Limiting**
- **Output Transistor Safe-Area Protection**
- **Wide Range of Output Voltages 5V to 27V**
- **TO-220, TO-252 and TO-263 Packages**
- **High Power Dissipation Capability**
- **Direct replacements for LM78xx**

The GM7800 series are classic regulators useful in a wide range of applications. For example, you can use them for local on-card regulation to eliminate the distribution problems associated with single point regulation.

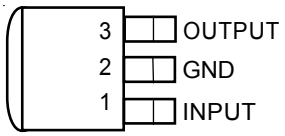
The wide range of output voltages voltages (5V to 27V) make them useful in an endless list of applications. Although designed as fixed voltage regulators, you can add a few external components to make adjustable voltages and currents.

Current limiting prevents the peak output current to a safe value. Safe-area protection for the output transistor limits internal power dissipation. If internal power dissipation becomes too high for the heat sinking provided, the thermal shutdown circuit activates to prevent the regulator from overheating. These versatile workhorses are easy to use. You do not need to bypass the output, although this does improve transient response. Input bypassing is needed only if you place the regulator far from the filter capacitor of the power supply.

The GM7800 series is available in TO-220, TO-252 and TO-263 packages.

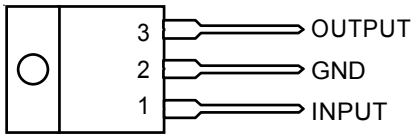
## Connection Diagrams

(Top View)



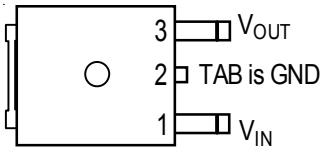

**TO-263 (D2PAK)**

(Top View)




**TO-220 3-LEAD**

(Top View)




**TO-252 (D-PAK)**

## Applications:

- **Post-Regulator Switching DC/DC Converters**
- **Bias Supply for Analog Circuits**
- **Instrumentation and Audio Systems**
- **Logic Systems**
- **Others too numerous to mention**

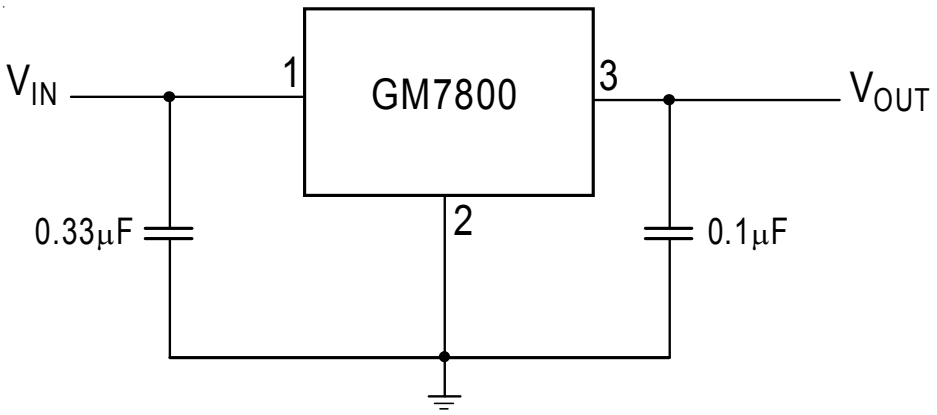
## Absolute Maximum Ratings:

| Rating | | Value | Unit |
|---|---|---|---|
| Input Voltage | GM7824, GM7827 | 40 | V |
| | All others | 35 | |
| Continuous Total Dissipation at 25°C free-air temperature | | 2 | W |
| Continuous Total Dissipation at (or bellow) 25°C case temperature | | 15 | |
| Operating free-air, case, or virtual junctions Temperature Range | | 0 to +150 | °C |
| Storage Temperature Range | | -65 to +150 | |
| Lead Temperature 1.6mm (1/16 inch) from case for 10 seconds | | 260 | |

## ■ Recommended Operating Conditions

| PARAMETER | | SYMBOL | MIN | MAX | UNIT |
|---|---|---|---|---|---|
| Input Voltage | GM7805 | $V_I$ | 7.0 | 25.0 | V |
| | GM7806 | | 8.0 | 25.0 | |
| | GM7808 | | 10.5 | 25.0 | |
| | GM7885 | | 10.5 | 25.0 | |
| | GM7809 | | 11.5 | 27.0 | |
| | GM7810 | | 12.5 | 28.0 | |
| | GM7812 | | 14.5 | 30.0 | |
| | GM7815 | | 17.5 | 30.0 | |
| | GM7818 | | 21.0 | 33.0 | |
| | GM7820 | | 23.0 | 36.0 | |
| | GM7824 | | 27.0 | 38.0 | |
| | GM7827 | | 30.0 | 40.0 | |
| Ouput Current | | $I_O$ | - | 1.5 | A |
| Operating Virtual Junction Temperature | | $T_J$ | 0 | 125 | °C |

**TYPICAL APPLICATION**



## ■ GM7805 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=10V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 4.8 | 5 | 5.2 | V |
| | $I_O$=5mA to 1A, $V_I$=7V to 20V, P≤15W | 0°C to 125°C | 4.75 | 5 | 5.25 | |
| Input Regulation | $V_I$=7V to 25V | 25°C | | 3 | 100 | mV |
| | $V_I$=8V to 12V | | | 1 | 50 | |
| Ripple Rejection | $V_I$=8V to 12V, f=120Hz | 0°C to 125°C | 62 | 78 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 15 | 100 | mV |
| | $I_O$=250mA to 750mA | | | 5 | 50 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.017 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -1.1 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 40 | | μV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.2 | 8 | mA |
| Bias Current change | $V_I$=7V to 25V | 0°C to 125°C | | | 1.3 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 750 | | mA |
| Peak Output Current | | 25°C | | 2.2 | | A |

## ■ GM7806 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=11V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 5.75 | 6 | 6.25 | V |
| | $I_O$=5mA to 1A, $V_I$=8V to 21V, P≤15W | 0°C to 125°C | 5.7 | 6 | 6.3 | |
| Input Regulation | $V_I$=8V to 25V | 25°C | | 5 | 120 | mV |
| | $V_I$=9V to 13V | | | 1.5 | 60 | |
| Ripple Rejection | $V_I$=9V to 19V, f=120Hz | 0°C to 125°C | 59 | 75 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 14 | 120 | mV |
| | $I_O$=250mA to 750mA | | | 4 | 60 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.019 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -0.8 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 45 | | μV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.3 | 8 | mA |
| Bias Current change | $V_I$=8V to 25V | 0°C to 125°C | | | 1.3 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 550 | | mA |
| Peak Output Current | | 25°C | | 2.2 | | A |

*Pulse testing tehniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account.
** The specification applies only for DC power dissipation permitted by absolute maximum ratings

## ■ GM7808 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=14V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 7.7 | 8 | 8.3 | V |
| | $I_O$=5mA to 1A, $V_I$=10.5V to 23V, P≤15W | 0°C to 125°C | 7.6 | 8 | 8.4 | |
| Input Regulation | $V_I$=10.5V to 25V | 25°C | | 6 | 160 | mV |
| | $V_I$=11V to 17V | | | 2 | 80 | |
| Ripple Rejection | $V_I$=11.5V to 21.5V, f=120Hz | 0°C to 125°C | 55 | 72 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 12 | 160 | mV |
| | $I_O$=250mA to 750mA | | | 4 | 80 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.016 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -0.8 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 52 | | µV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.3 | 8 | mA |
| Bias Current change | $V_I$=10.5V to 25V | 0°C to 125°C | | | 1.0 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 450 | | mA |
| Peak Output Current | | 25°C | | 2.2 | | A |

## ■ GM7885 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=15V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 8.15 | 8.5 | 8.85 | V |
| | $I_O$=5mA to 1A, $V_I$=11V to 23.5V, P≤15W | 0°C to 125°C | 8.1 | 8.5 | 8.9 | |
| Input Regulation | $V_I$=10.5V to 25V | 25°C | | 6 | 170 | mV |
| | $V_I$=11V to 17V | | | 2 | 85 | |
| Ripple Rejection | $V_I$=11.5V to 21.5V, f=120Hz | 0°C to 125°C | 54 | 70 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 12 | 170 | mV |
| | $I_O$=250mA to 750mA | | | 4 | 85 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.016 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -0.8 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 55 | | µV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.3 | 8 | mA |
| Bias Current change | $V_I$=10.5V to 25V | 0°C to 125°C | | | 1 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 450 | | mA |
| Peak Output Current | | 25°C | | 2.2 | | A |

*Pulse testing tehniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account.
** The specification applies only for DC power dissipation permitted by absolute maximum ratings

## ■ GM7809 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=16V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 8.65 | 9 | 9.35 | V |
| | $I_O$=5mA to 1A, $V_I$=11.5V to 24V, P≤15W | 0°C to 125°C | 8.55 | 9 | 9.45 | |
| Input Regulation | $V_I$=11.5V to 27V | 25°C | | 7 | 180 | mV |
| | $V_I$=13V to 19V | | | 2 | 90 | |
| Ripple Rejection | $V_I$=12V to 22V, f=120Hz | 0°C to 125°C | 55 | 70 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 12 | 180 | mV |
| | $I_O$=250mA to 750mA | | | 4 | 90 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.018 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -1.0 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 60 | | µV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.3 | 8 | mA |
| Bias Current change | $V_I$=11.5V to 27V | 0°C to 125°C | | | 1.0 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 400 | | mA |
| Peak Output Current | | 25°C | | 2.2 | | A |

## ■ GM7810 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=17V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 9.6 | 10 | 10.4 | V |
| | $I_O$=5mA to 1A, $V_I$=12.5V to 25V, P≤15W | 0°C to 125°C | 9.5 | 10 | 10.5 | |
| Input Regulation | $V_I$=12.5V to 28V | 25°C | | 7 | 200 | mV |
| | $V_I$=14V to 20V | | | 2 | 100 | |
| Ripple Rejection | $V_I$=13V to 23V, f=120Hz | 0°C to 125°C | 55 | 71 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 12 | 200 | mV |
| | $I_O$=250mA to 750mA | | | 4 | 100 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.018 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -1.0 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 70 | | µV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.3 | 8 | mA |
| Bias Current change | $V_I$=12.5V to 28V | 0°C to 125°C | | | 1.0 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 400 | | mA |
| Peak Output Current | | 25°C | | 2.2 | | A |

*Pulse testing tehniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account.
** The specification applies only for DC power dissipation permitted by absolute maximum ratings

## ■ GM7812 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=19V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 11.5 | 12 | 12.5 | V |
| | $I_O$=5mA to 1A, $V_I$=14.5V to 27V, P≤15W | 0°C to 125°C | 11.4 | 12 | 12.6 | |
| Input Regulation | $V_I$=14.5V to 30V | 25°C | | 10 | 240 | mV |
| | $V_I$=16V to 22V | | | 3 | 120 | |
| Ripple Rejection | $V_I$=15V to 25V, f=120Hz | 0°C to 125°C | 55 | 71 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 12 | 240 | mV |
| | $I_O$=250mA to 750mA | | | 4 | 120 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.018 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -1.0 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 75 | | µV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.3 | 8 | mA |
| Bias Current change | $V_I$=14.5V to 30V | 0°C to 125°C | | | 1.0 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 350 | | mA |
| Peak Output Current | | 25°C | | 2.2 | | A |

## ■ GM7815 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=23V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 14.4 | 15 | 15.6 | V |
| | $I_O$=5mA to 1A, $V_I$=17.5V to 30V, P≤15W | 0°C to 125°C | 14.25 | 15 | 15.75 | |
| Input Regulation | $V_I$=17.5V to 30V | 25°C | | 12 | 300 | mV |
| | $V_I$=20V to 26V | | | 3 | 150 | |
| Ripple Rejection | $V_I$=18.5V to 28.5V, f=120Hz | 0°C to 125°C | 54 | 70 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 12 | 300 | mV |
| | $I_O$=250mA to 750mA | | | 4 | 150 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.019 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -1.0 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 90 | | µV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.3 | 8 | mA |
| Bias Current change | $V_I$=17.5V to 30V | 0°C to 125°C | | | 1.0 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 230 | | mA |
| Peak Output Current | | 25°C | | 2.1 | | A |

*Pulse testing tehniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account.
** The specification applies only for DC power dissipation permitted by absolute maximum ratings

## ■ GM7818 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=27V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 17.3 | 18 | 18.7 | V |
| | $I_O$=5mA to 1A, $V_I$=21V to 33V, P≤15W | 0°C to 125°C | 17.1 | 18 | 18.9 | |
| Input Regulation | $V_I$=21V to 33V | 25°C | | 15 | 360 | mV |
| | $V_I$=24V to 30V | | | 5 | 180 | |
| Ripple Rejection | $V_I$=22V to 32V, f=120Hz | 0°C to 125°C | 53 | 69 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 12 | 360 | mV |
| | $I_O$=250mA to 750mA | | | 4 | 180 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.022 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -1.0 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 110 | | μV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.5 | 8 | mA |
| Bias Current change | $V_I$=21V to 33V | 0°C to 125°C | | | 1.0 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 200 | | mA |
| Peak Output Current | | 25°C | | 2.1 | | A |

## ■ GM7820 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=29V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 19.2 | 20 | 20.8 | V |
| | $I_O$=5mA to 1A, $V_I$=23V to 35V, P≤15W | 0°C to 125°C | 19 | 20 | 21 | |
| Input Regulation | $V_I$=23V to 35V | 25°C | | 18 | 400 | mV |
| | $V_I$=26V to 32V | | | 7 | 200 | |
| Ripple Rejection | $V_I$=24V to 34V, f=120Hz | 0°C to 125°C | 51 | 66 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 15 | 400 | mV |
| | $I_O$=250mA to 750mA | | | 7 | 200 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.027 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -1.3 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 150 | | μV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.5 | 8 | mA |
| Bias Current change | $V_I$=23V to 35V | 0°C to 125°C | | | 1.0 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 180 | | mA |
| Peak Output Current | | 25°C | | 2.1 | | A |

*Pulse testing tehniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account.
** The specification applies only for DC power dissipation permitted by absolute maximum ratings

## ■ GM7824 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=33V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 23 | 24 | 25 | V |
| | $I_O$=5mA to 1A, $V_I$=27V to 38V, P≤15W | 0°C to 125°C | 22.8 | 24 | 25.2 | |
| Input Regulation | $V_I$=27V to 38V | 25°C | | 18 | 480 | mV |
| | $V_I$=30V to 36V | | | 6 | 240 | |
| Ripple Rejection | $V_I$=28V to 38V, f=120Hz | 0°C to 125°C | 50 | 66 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 12 | 480 | mV |
| | $I_O$=250mA to 750mA | | | 4 | 240 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.028 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -1.5 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 170 | | μV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.6 | 8 | mA |
| Bias Current change | $V_I$=27V to 38V | 0°C to 125°C | | | 1.0 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 150 | | mA |
| Peak Output Current | | 25°C | | 2.1 | | A |

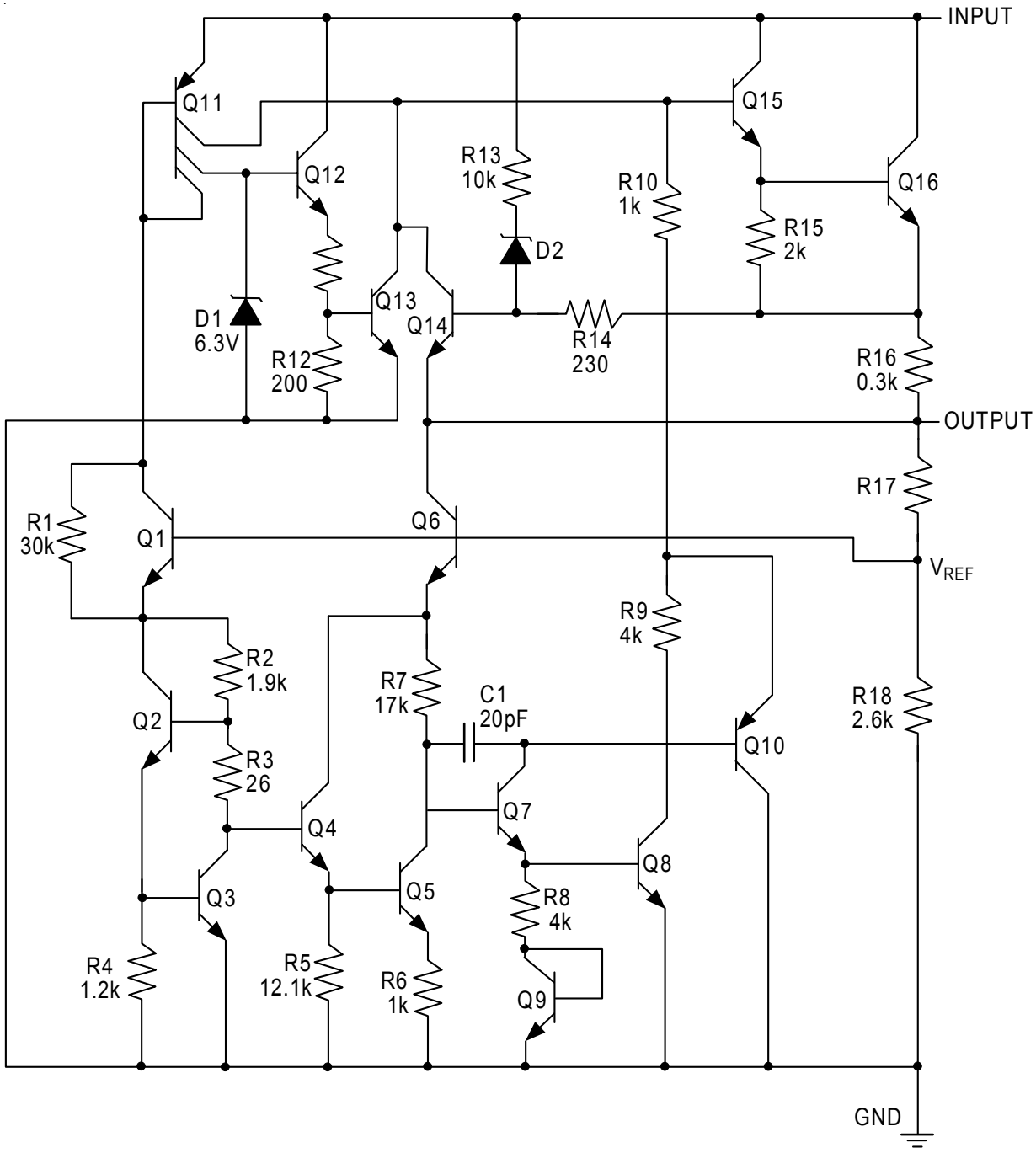
## ■ GM7827 ELECTRICAL CHARACTERISTICS at specified Junction Temperature

$V_I$=36V, $I_O$=500mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage** | | 25°C | 25.9 | 27 | 28.1 | V |
| | $I_O$=5mA to 1A, $V_I$=30V to 40V, P≤15W | 0°C to 125°C | 25.7 | 27 | 28.3 | |
| Input Regulation | $V_I$=30V to 40V | 25°C | | 25 | 540 | mV |
| | $V_I$=33V to 39V | | | 10 | 270 | |
| Ripple Rejection | $V_I$=30V to 40V, f=120Hz | 0°C to 125°C | 50 | 64 | | dB |
| Output Regulation | $I_O$=5mA to 1.5A | 25°C | | 20 | 540 | mV |
| | $I_O$=250mA to 750mA | | | 9 | 270 | |
| Output Resistance | f = 1kHz | 0°C to 125°C | | 0.03 | | Ω |
| Temperature Coefficient of Ouput Voltage | $I_O$=5mA | 0°C to 125°C | | -1.6 | | mV/°C |
| Output Noise Voltage | f = 10Hz to 100kHz | 25°C | | 200 | | μV |
| Dropout Voltage | $I_O$= 1A | 25°C | | 2.0 | | V |
| Bias Current | | 25°C | | 4.8 | 8 | mA |
| Bias Current change | $V_I$=30V to 40V | 0°C to 125°C | | | 1.0 | mA |
| | $I_O$=5mA to 1A | | | | 0.5 | |
| Short-Circuit Output Current | | 25°C | | 120 | | mA |
| Peak Output Current | | 25°C | | 2.1 | | A |

*Pulse testing tehniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account.
** The specification applies only for DC power dissipation permitted by absolute maximum ratings

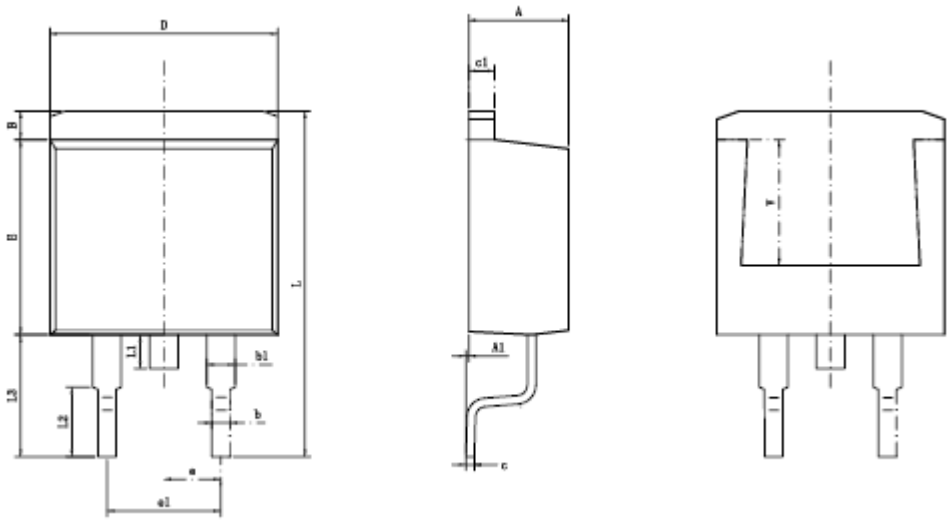
## SCHEMATIC BLOCK DIAGRAM



## ■ ORDERING INFORMATION

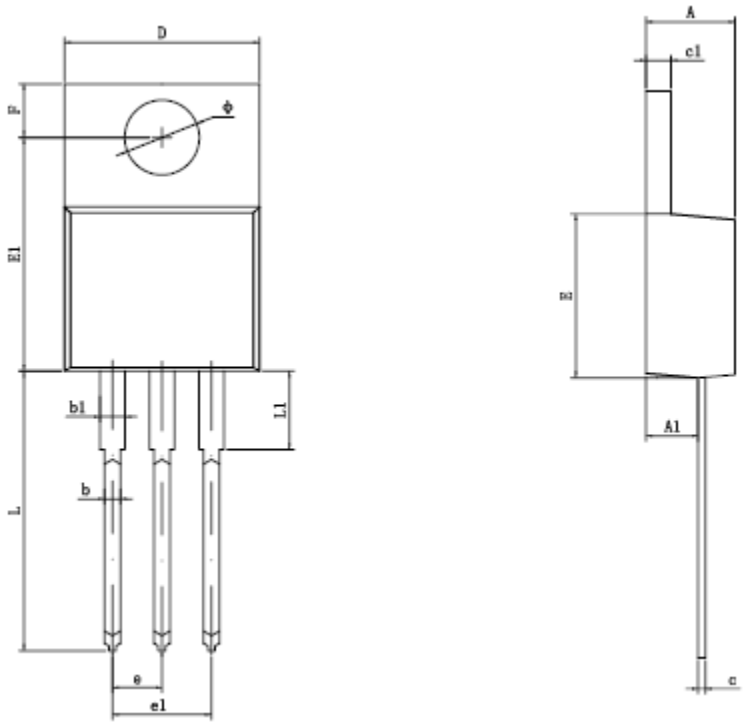
| | OUTPUT VOLTAGE | PACKAGE | | |
|---|---|---|---|---|
| | | TO-263-3 | TO-220-3 | TO-252-3 |
| GM7800 | 5V | GM7805-TA3 | GM7805-TB3 | GM7805-TC3 |
| | 6V | GM7806-TA3 | GM7806-TB3 | GM7806-TC3 |
| | 8V | GM7808-TA3 | GM7808-TB3 | GM7808-TC3 |
| | 8.5V | GM7885-TA3 | GM7885-TB3 | GM7885-TC3 |
| | 9V | GM7809-TA3 | GM7809-TB3 | GM7809-TC3 |
| | 10V | GM7810-TA3 | GM7810-TB3 | GM7810-TC3 |
| | 12V | GM7812-TA3 | GM7812-TB3 | GM7812-TC3 |
| | 15V | GM7815-TA3 | GM7815-TB3 | GM7815-TC3 |
| | 18V | GM7818-TA3 | GM7818-TB3 | GM7818-TC3 |
| | 20V | GM7820-TA3 | GM7820-TB3 | GM7820-TC3 |
| | 24V | GM7824-TA3 | GM7824-TB3 | GM7824-TC3 |
| | 27V | GM7827-TA3 | GM7827-TB3 | GM7827-TC3 |

## ■ TO-263-2L PACKAGE OUTLINE DIMENSIONS



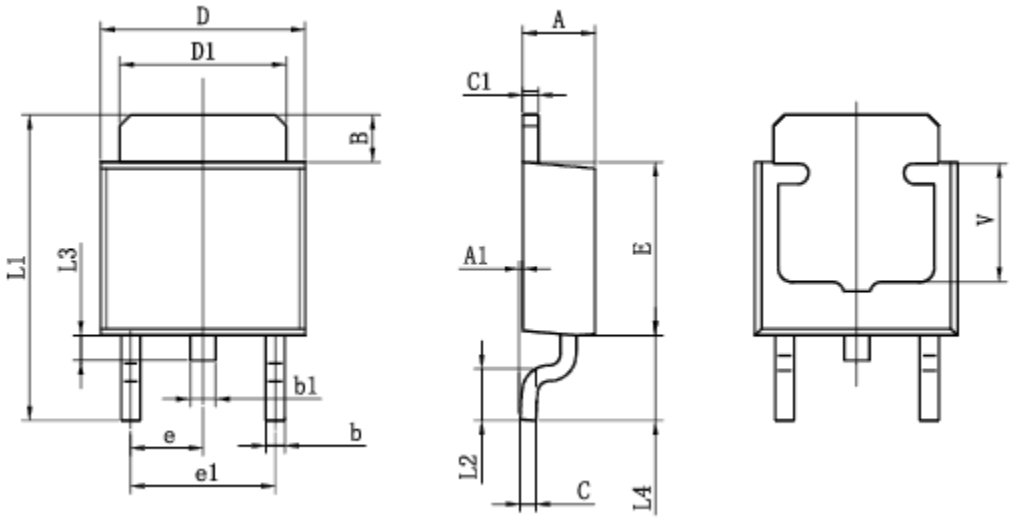
| SYMBOL | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 4.470 | 4.670 | 0.176 | 0.184 |
| A1 | 0.000 | 0.150 | 0.000 | 0.006 |
| B | 1.170 | 1.370 | 0.046 | 0.054 |
| b | 0.710 | 0.910 | 0.028 | 0.036 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 |
| c | 0.310 | 0.530 | 0.012 | 0.021 |
| c1 | 1.170 | 1.370 | 0.046 | 0.054 |
| D | 10.010 | 10.310 | 0.394 | 0.406 |
| E | 8.500 | 8.900 | 0.335 | 0.350 |
| e | 2.540TYP | | 0.100TYP | |
| e1 | 4.980 | 5.180 | 0.196 | 0.204 |
| L | 15.050 | 15.450 | 0.593 | 0.608 |
| L1 | 1.300 | 1.700 | 0.051 | 0.067 |
| L2 | 2.340 | 2.740 | 0.092 | 0.108 |
| L3 | 5.080 | 5.480 | 0.200 | 0.216 |
| V | 5.600REF | | 0.220REF | |

## ■ TO-220-3L PACKAGE OUTLINE DIMENSIONS




| SYMBOL | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 4.470 | 4.670 | 0.176 | 0.184 |
| A1 | 2.520 | 2.820 | 0.099 | 0.111 |
| b | 0.710 | 0.910 | 0.028 | 0.036 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 |
| c | 0.310 | 0.530 | 0.012 | 0.021 |
| c1 | 1.170 | 1.370 | 0.046 | 0.054 |
| D | 10.010 | 10.310 | 0.394 | 0.406 |
| E | 8.500 | 8.900 | 0.335 | 0.350 |
| E1 | 12.060 | 12.460 | 0.475 | 0.491 |
| e | 2.540TYP | | 0.100TYP | |
| e1 | 4.980 | 5.180 | 0.196 | 0.204 |
| F | 2.590 | 2.890 | 0.102 | 0.114 |
| L | 13.400 | 13.800 | 0.528 | 0.543 |
| L1 | 3.560 | 3.960 | 0.140 | 0.156 |
| Φ | 3.790 | 3.890 | 0.149 | 0.153 |

## ■ TO-252-3L PACKAGE OUTLINE DIMENSIONS




| SYMBOL | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 2.200 | 2.400 | 0.087 | 0.094 |
| A1 | 0.000 | 0.127 | 0.000 | 0.005 |
| B | 1.350 | 1.650 | 0.053 | 0.065 |
| b | 0.500 | 0.700 | 0.020 | 0.028 |
| b1 | 0.700 | 0.900 | 0.028 | 0.035 |
| c | 0.430 | 0.580 | 0.017 | 0.023 |
| c1 | 0.430 | 0.580 | 0.017 | 0.023 |
| D | 6.350 | 6.650 | 0.250 | 0.262 |
| D1 | 5.200 | 5.400 | 0.205 | 0.213 |
| E | 5.400 | 5.700 | 0.213 | 0.224 |
| e | 2.300TYP | | 0.091TYP | |
| e1 | 4.500 | 4.700 | 0.177 | 0.185 |
| L1 | 9.500 | 9.900 | 0.374 | 0.390 |
| L2 | 1.400 | 1.780 | 0.055 | 0.070 |
| L3 | 0.650 | 0.950 | 0.026 | 0.037 |
| L4 | 2.550 | 2.900 | 0.100 | 0.114 |
| V | 3.800REF | | 0.150REF | |