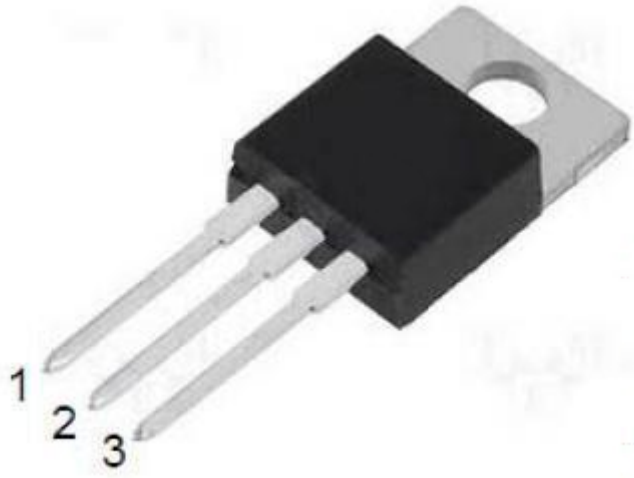
## Features

- Output Current of 1.0 A
- Thermal Overload Protection
- Short Circuit Protection
- Output transistor safe area protection
- No external components
- Package：TO220
- Output voltage accuracy: tolerance ±5%

## General Description

HL78xxis three-terminal positive regulators. One of these regulators can deliver up to 1.0 A of output current. The internal limiting and thermal-shutdown features of the regulator make them essentially immune to overload. When used as a replacement for a zener diode-resistor Combination, an effective improvement in output impedance can be obtained, together with lower quiescent current.

## Pin Configuration




1.Input

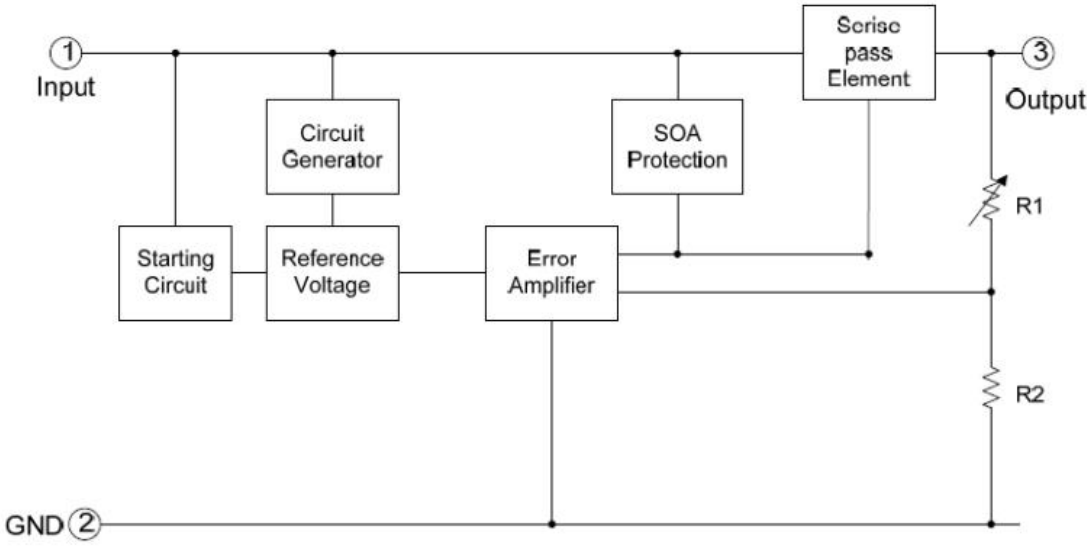
2.GND

3.Output

## Selection Table

| Part No. | Output Voltage | Package | Marking |
|---|---|---|---|
| HL7805 | 5.0V | TO220 | |
| HL7806 | 6.0V | | |
| HL7808 | 8.0V | | |
| HL7809 | 9.0V | | |
| HL7812 | 12V | | |

## Block Diagram




## Absolute Maximum Ratings（Ta=25℃）

| Parameter | Rating | Unit |
|---|---|---|
| Input supply voltage: VIN | 40 | V |
| MAX. Output current:Iout | 1200 | mA |
| MAX Power:Pmax | 1.5 | W |
| Maximum junction temperature:Tj | -25~125 | ℃ |
| Storage temperature:Tstr | -55~125 | ℃ |
| Soldering temperature and time | +260(Recommended 10S) | ℃ |

Note: The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.

## Electrical Characteristics

(Cin=0.33uF, Co=0.1uF, 0≤Tj≤125℃，unless otherwise noted)

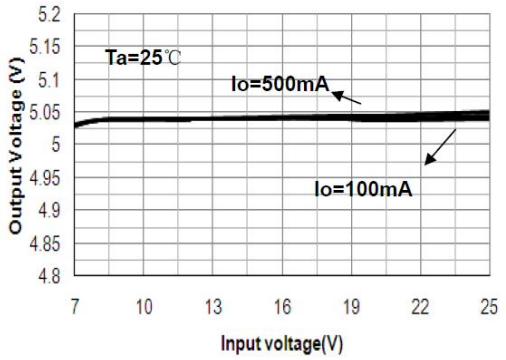
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Output Voltage | Vout | Io=40mA, VIN=10V | 0.964vout | vout | 1.036vout | V |
| | | Io=1mA~40mA VIN=7V~18V | 0.96vout | vout | 1.04vout | |
| | | Io=1mA~10mA VIN=10V | 0.95vout | vout | 1.05vout | |
| Line Regulation | LNR | VIN=7V~18V, Io=40mA | -150 | - | 150 | mV |
| | | VIN=8V~18V, Io=40mA | -100 | - | 100 | |
| Load Regulation | LDR | VIN=10V, Io=1mA~100mA | -60 | - | 60 | mV |
| | | VIN=10V, Io=1mA~40mA | -30 | - | 30 | |
| Dropout Voltage | $V_{DIF}$ | Tj=25℃，Io=100mA | - | 2 | - | V |
| Output noise Voltage | $V_N$ | F=10Hz to 100KHz | - | 60 | - | uV/Vo |
| Ripple Rejection | PSRR | Tj=25℃，f=120Hz, Io=40mA, VIN=8V~20V | - | 60 | - | dB |
| Quiescent Current | $I_Q$ | VIN=10V, IOUT=40mA | - | 3 | - | mA |
| Quiescent Current Change | $\triangle I_Q$ | VIN=8V~18V, $I_O$=40mA | -1.5 | - | 1.5 | mA |
| | | VIN=10V, IOUT=1mA~40mA, | -0.1 | - | 0.1 | |

LNR: Line Regulation. The change in output voltage for a change in the input voltage. The measurement is made under conditions of low dissipation or by using pulse techniques such that the average chip temperature is not significantly affected.

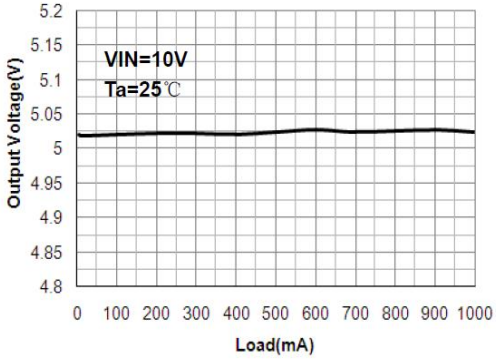
LDR: Load Regulation.The change in output voltage for a change in load current at constant chip temperature.

## Typical Performance Characteristics

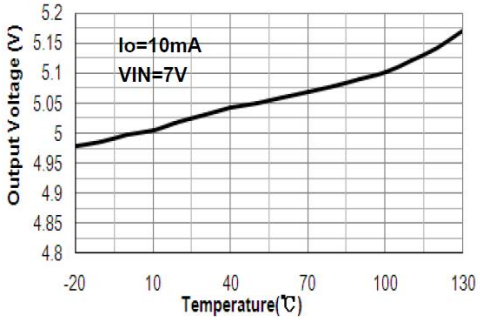
Output Voltage vs. Input voltage



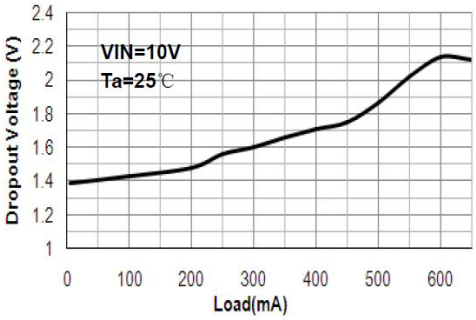

Output Voltage vs. Load



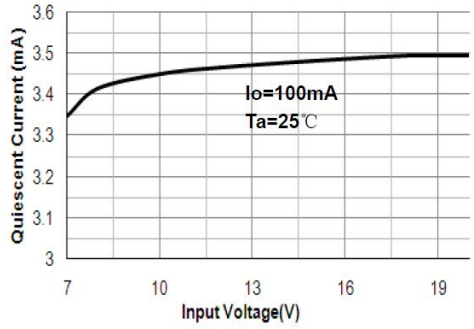

Output Voltage vs. Temperature



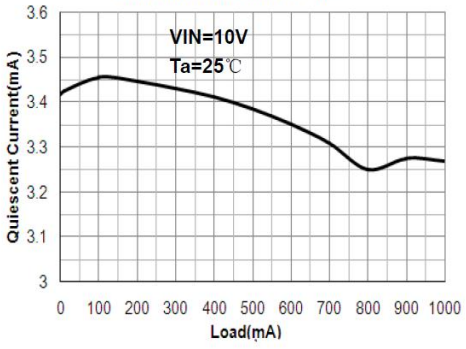

Dropout Voltage vs. Load




Quiescent Current vs. Input Voltage




Quiescent Current vs. Load




## Typical Application

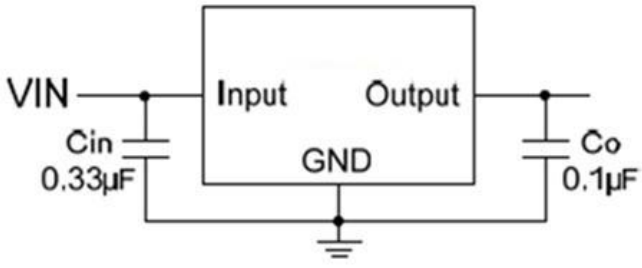
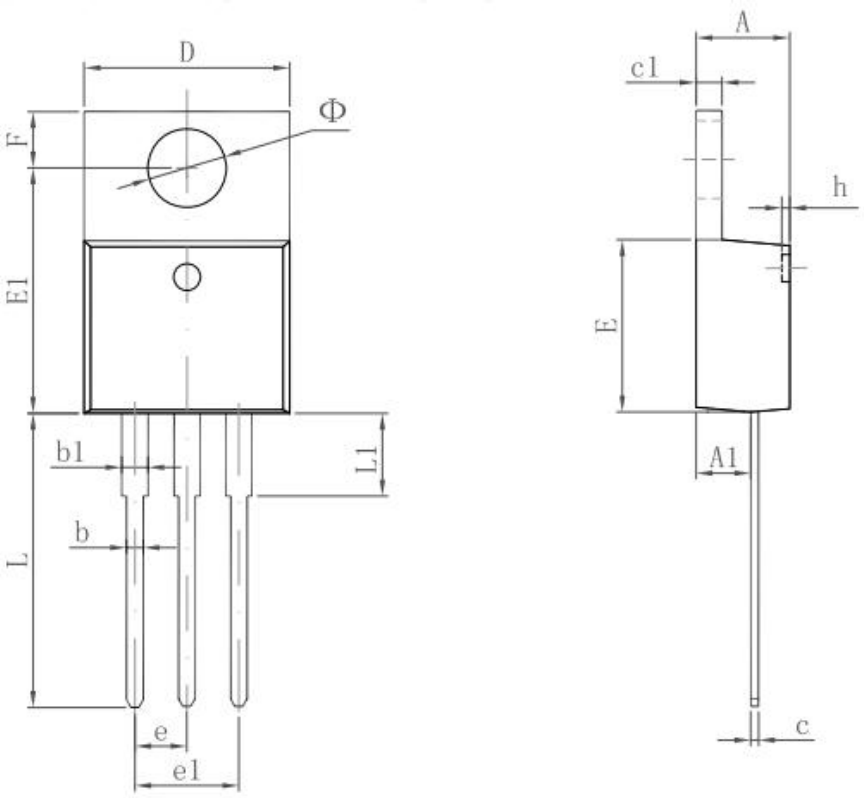



Fig.1 Fixed Output Regulator

## Package Information

### 3-pin TO220 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 | 2.540 TYP | | 0.100 TYP | |
| e1 | 4.980 | 5.180 | 0.196 | 0.204 |
| F | 2.590 | 2.890 | 0.102 | 0.114 |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| L | 13.400 | 13.800 | 0.528 | 0.543 |
| L1 | 3.560 | 3.960 | 0.140 | 0.156 |
| Φ | 3.735 | 3.935 | 0.147 | 0.155 |