

## TO-92 Encapsulate Three-terminal Voltage Regulator

### CJ78L05 Three-terminal positive voltage regulator

#### FEATURES

Maximum Output Current  $I_O$ : 0.1 A

Output Voltage  $V_O$ : 5 V

Continuous Total Dissipation

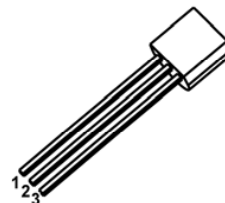
$P_D$ : 0.625W ( $T_a=25^\circ\text{C}$ )

#### TO-92

1. OUT

2. GND

3. IN



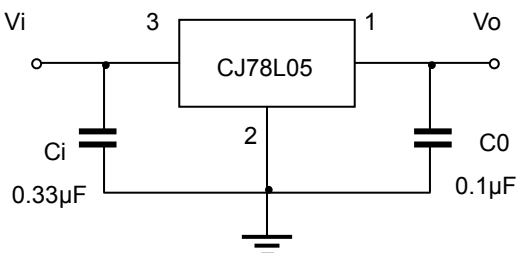
#### ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

| Parameter                            | Symbol    | Value    | Unit             |
|--------------------------------------|-----------|----------|------------------|
| Input Voltage                        | $V_I$     | 30       | V                |
| Operating Junction Temperature Range | $T_{OPR}$ | 0~+150   | $^\circ\text{C}$ |
| Storage Temperature Range            | $T_{STG}$ | -55~+150 | $^\circ\text{C}$ |

#### ELECTRICAL CHARACTERISTICS AT SPECIFIED VIRTUAL JUNCTION TEMPERATURE ( $V_I=10\text{V}$ , $I_O=40\text{mA}$ , $C_i=0.33\mu\text{F}$ , $C_o=0.1\mu\text{F}$ , unless otherwise specified)

| Parameter                | Symbol       | Test conditions                                                   |                        | Min  | Typ | Max  | Unit          |
|--------------------------|--------------|-------------------------------------------------------------------|------------------------|------|-----|------|---------------|
| Output voltage           | $V_O$        |                                                                   | 25 $^\circ\text{C}$    | 4.8  | 5.0 | 5.2  | V             |
|                          |              | 7V $\leq V_I \leq 20\text{V}$ , $I_O=1\text{mA} \sim 40\text{mA}$ | 0-125 $^\circ\text{C}$ | 4.75 | 5.0 | 5.25 | V             |
|                          |              | $I_O=1\text{mA} \sim 70\text{mA}$                                 |                        | 4.75 | 5.0 | 5.25 | V             |
| Load Regulation          | $\Delta V_O$ | $I_O=1\text{mA} \sim 100\text{mA}$                                | 25 $^\circ\text{C}$    |      | 15  | 60   | mV            |
|                          |              | $I_O=1\text{mA} \sim 40\text{mA}$                                 | 25 $^\circ\text{C}$    |      | 8   | 30   | mV            |
| Line regulation          | $\Delta V_O$ | 7V $\leq V_I \leq 20\text{V}$                                     |                        |      | 32  | 150  | mV            |
|                          |              | 8V $\leq V_I \leq 20\text{V}$                                     | 25 $^\circ\text{C}$    |      | 26  | 100  | mV            |
| Quiescent Current        | $I_q$        |                                                                   | 25 $^\circ\text{C}$    |      | 3.8 | 6    | mA            |
| Quiescent Current Change | $\Delta I_q$ | 8V $\leq V_I \leq 20\text{V}$                                     | 0-125 $^\circ\text{C}$ |      |     | 1.5  | mA            |
|                          | $\Delta I_q$ | 1mA $\leq V_I \leq 40\text{mA}$                                   | 0-125 $^\circ\text{C}$ |      |     | 0.1  | mA            |
| Output Noise Voltage     | $V_N$        | 10Hz $\leq f \leq 100\text{KHz}$                                  | 25 $^\circ\text{C}$    |      | 42  |      | $\mu\text{V}$ |
| Ripple Rejection         | RR           | 8V $\leq V_I \leq 20\text{V}$ , $f=120\text{Hz}$                  | 0-125 $^\circ\text{C}$ | 41   | 49  |      | dB            |
| Dropout Voltage          | $V_d$        |                                                                   | 25 $^\circ\text{C}$    |      | 1.7 |      | V             |

#### TYPICAL APPLICATION

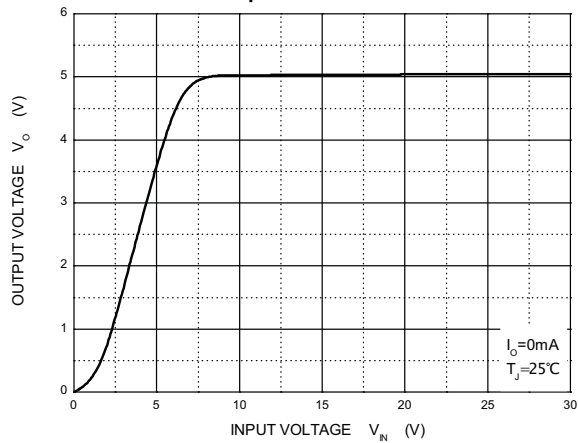


Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as Possible to the regulators.

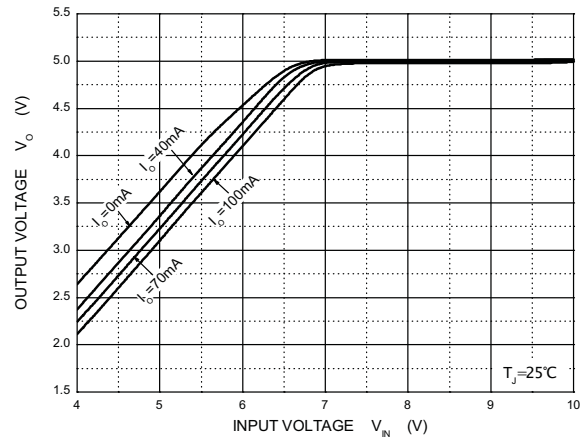
# Typical Characteristics

# CJ78L05

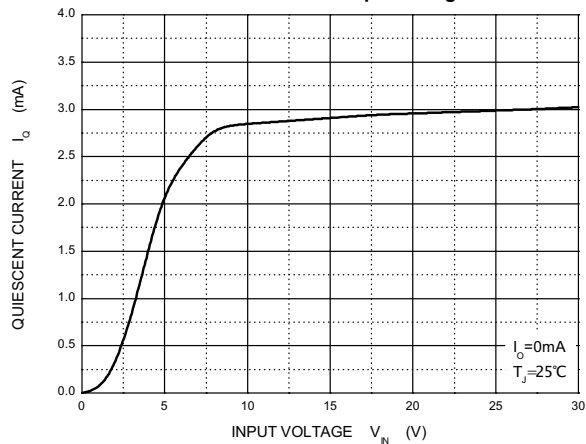
Output Characteristics



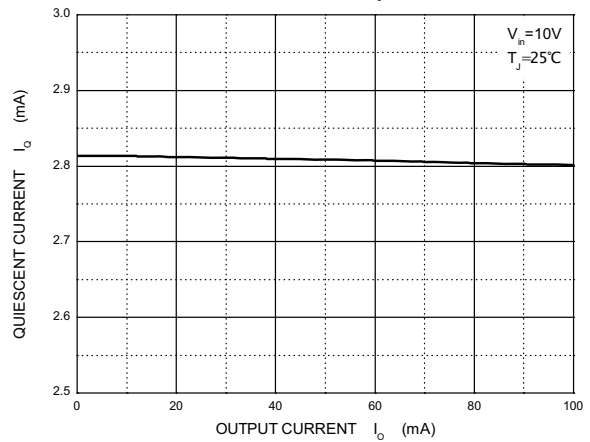
Dropout Characteristics



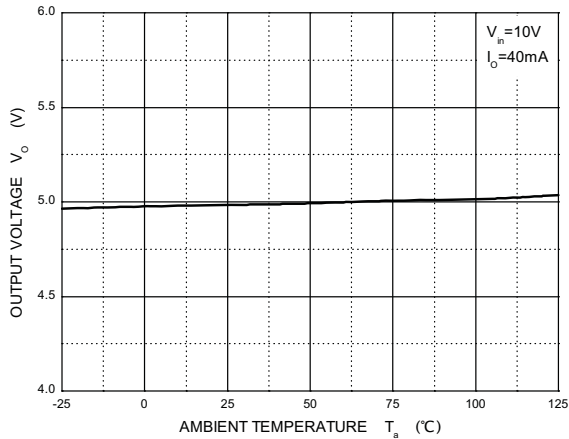
Quiescent Current vs Input Voltage



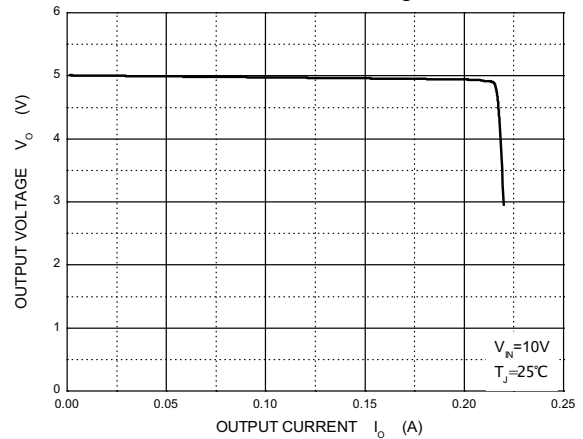
Quiescent Current vs Output Current



Output Voltage vs Ambient Temperature



Current Cut-off Grid Voltage



Power Derating Curve

