# 78L05S

Three-terminal positive voltage regulator

## FEATURE

Maximum Output Current $I_{O:}$ 0.1 A

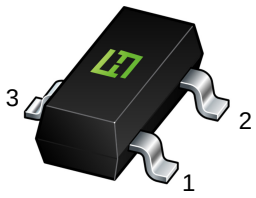
Output Voltage $V_O$: 5 V

Continuous Total Dissipation

$P_D$: 0.25 W ($T_a$= 25 ℃ )

**MARKING: L05**

**SOT-23**




1. OUT
2. IN
3. GND

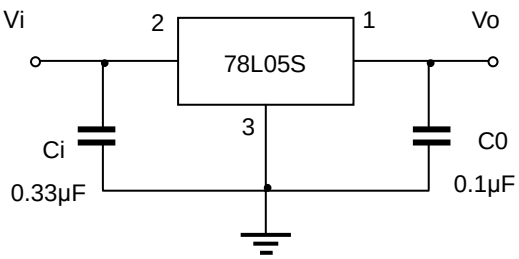
**ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Input Voltage | $V_i$ | 30 | V |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 160 | ℃/W |
| Operating Junction Temperature Range | $T_{OPR}$ | 0~+125 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -55~+150 | ℃ |

**ELECTRICAL CHARACTERISTICS AT SPECIFIED VIRTUAL JUNCTION TEMPERATURE (Vi=10V,Io=40mA,Ci=0.33uF,,Co=0.1uF, unless otherwise specified )**

| Parameter | Symbol | Test conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output voltage | Vo | | 25℃ | 4.80 | 5.0 | 5.20 | V<br>V |
| Output voltage | Vo | 7V≤Vi≤20V, Io=1mA~40mA | 0-125℃ | 4.75 | 5.0 | 5.25 | V |
| | | Io=1mA~70mA | | 4.75 | 5.0 | 5.25 | V |
| Load Regulation | ΔVo | Io=1mA~100mA | 25℃ | | 15 | 60 | mV |
| | | Io=1mA~40mA | 25℃ | | 8 | 30 | mV |
| Line regulation | ΔVo | 7V≤$V_i$≤20V | | | 32 | 150 | mV |
| | | 8V≤Vi≤20V | 25℃ | | 26 | 100 | mV |
| Quiescent Current | Iq | | 25℃ | | 3.8 | 6 | mA |
| Quiescent Current Change | ΔIq | 8V≤Vi≤20V | 0-125℃ | | | 1.5 | mA |
| | ΔIq | 1mA≤$V_i$≤40mA | 0-125℃ | | | 0.1 | mA |
| Output Noise Voltage | $V_N$ | 10Hz≤f≤100KHz | 25℃ | | 42 | | μV/Vo |
| Ripple Rejection | RR | 8V≤Vi≤20V,f=120Hz | 0-125℃ | 41 | 49 | | dB |
| Dropout Voltage | Vd | | 25℃ | | 1.7 | | V |

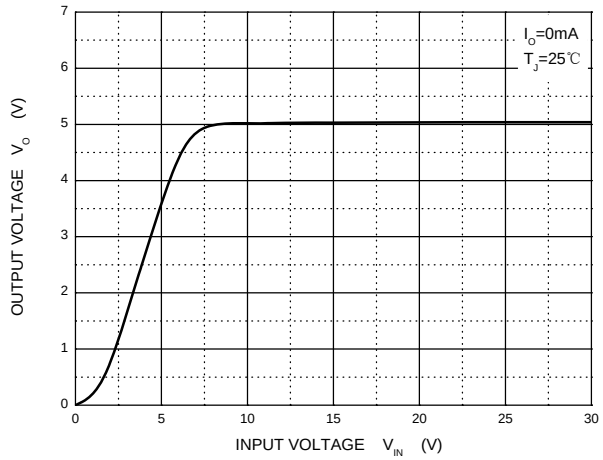
**TYPICAL APPLICATION**



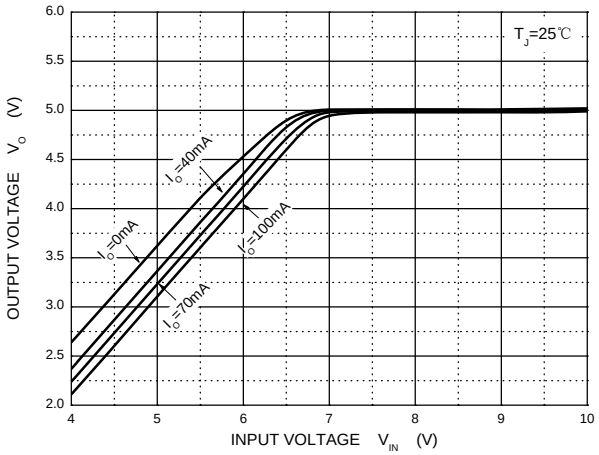

Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as Possible to the regulators.

## Typical Characteristics

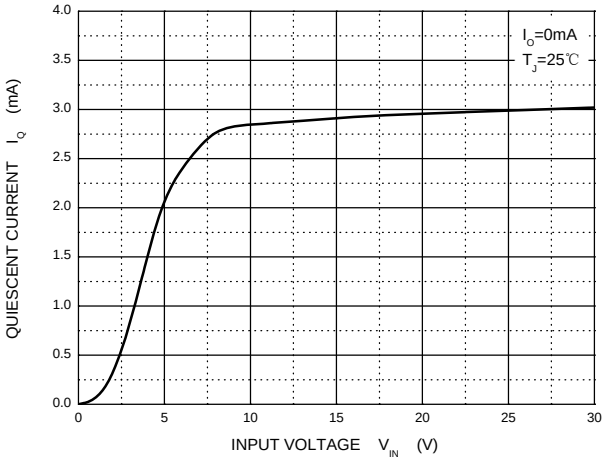
**Output Characteristics**



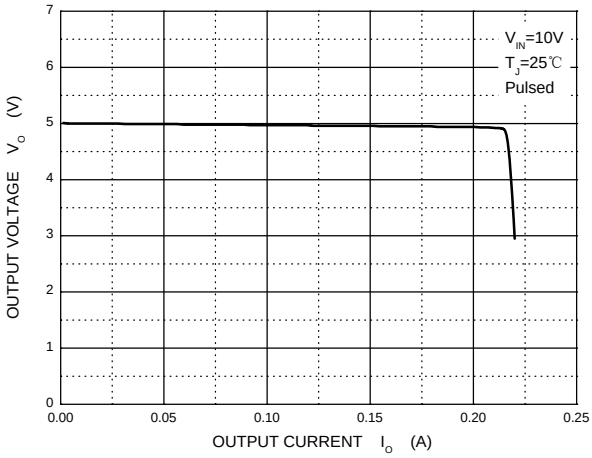

**Dropout Characteristics**



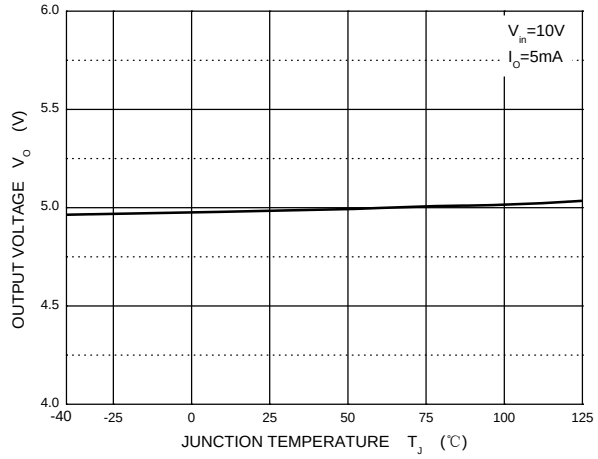

**Quiescent Current vs Input Voltage**



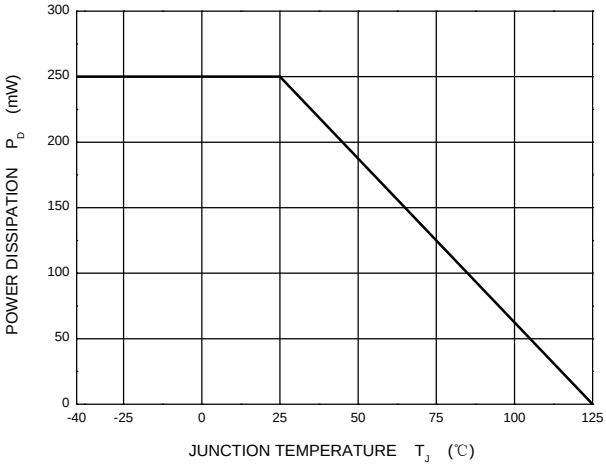

**Current Cut-off Grid Voltage**



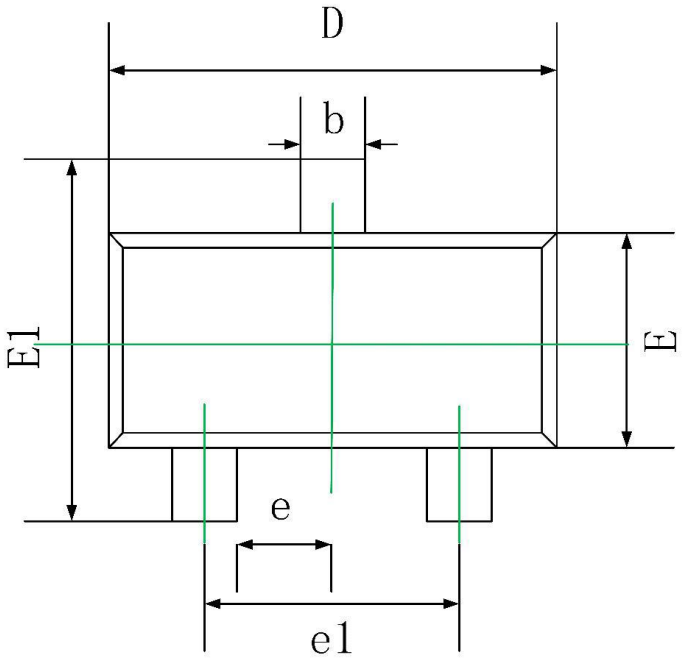

**Output Voltage vs Junction Temperature**

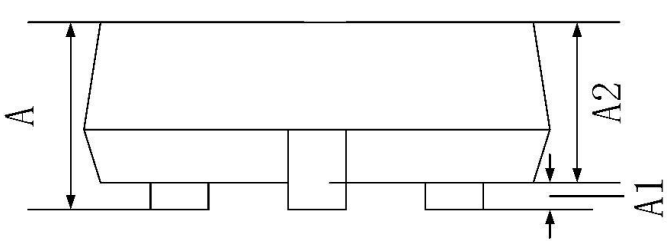


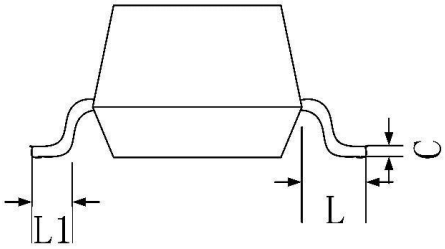

**Power Derating Curve**



## SOT-23 Package Information




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP. | | 0.037 TYP. | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF. | | 0.022 REF. | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |