## DESCRIPTION

The A78L05B-Q is fix 5V monolithic integrated circuit voltage regulators are suitable for applications that required supply current up to 100mA.

The A78L05B-Q is available in SOT89-3 package.

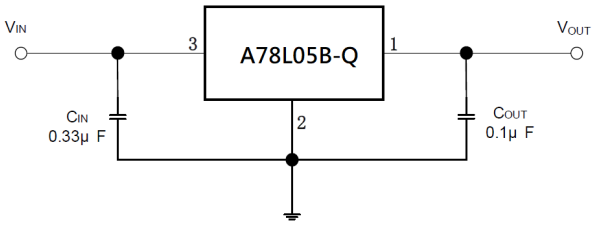
## FEATURES

- Maximum Output current: 0.1A
- Output Voltage: 5V
- Thermal Overload Protection
- 2% Output Voltage Accuracy

## ORDERING INFORMATION

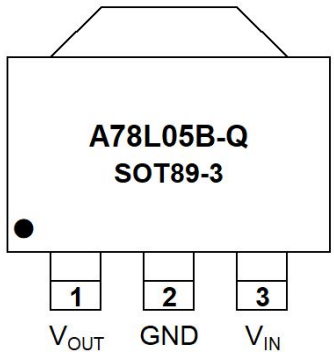
| Package Type | Part Number | |
|---|---|---|
| SOT89-3<br>SPQ: 1,000pcs/Reel | K3 | A78L05B-K3RQ |
| | | A78L05B-K3VRQ |
| Note | V: Halogen free Package<br>R: Tape & Reel<br>Q: AEC-Q | |
| AiT provides all RoHS products | | |

## APPLICATION CIRCUIT




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

## PIN DESCRIPTION




SOT89-3, K3

Top View

| Pin # SOT89-3 | Symbol | Function |
|---|---|---|
| 1 | $V_{OUT}$ | Output |
| 2 | GND | Ground |
| 3 | $V_{IN}$ | Power Input |

## ABSOLUTE MAXIMUM RATINGS

$T_A$=25°C

| | |
|---|---|
| $V_I$, Input Voltage | 42V |
| $T_J$, Operating Junction Temperature Range | +150°C |
| $P_D$, Power Dissipation | 750mW |
| $T_{OPR}$, Operating Temperature Range | -40°C ~ +125°C |
| $T_{STG}$, Storage Temperature Range | -40°C ~ +150°C |

Stresses above may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## ELECTRICAL CHARACTERISTICS

$V_I$=10V, $I_O$=40mA, -30<$T_J$<85℃, C1=0.33μF, $C_O$=0.1μF, unless otherwise noted

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$=25℃ | 4.9 | 5 | 5.1 | V |
| | | 7V≤$V_I$≤20V; $I_O$=1mA~40mA | 4.8 | - | 5.2 | V |
| | | 7V≤$V_I$≤Vmax; $I_O$=1mA~70mA | 4.8 | - | 5.2 | V |
| Load Regulation | $\Delta V_O$ | $T_J$=25℃; $I_O$=1mA~100mA | - | 11 | 60 | mV |
| | | $T_J$=25℃; $I_O$=1mA~40mA | - | 5 | 6 | |
| Line Regulation | $\Delta V_O$ | $T_J$=25℃; 7V≤$V_I$≤20V | - | 8 | 150 | mV |
| | | $T_J$=25℃; 8V≤$V_I$≤20V | - | 6 | 100 | |
| Quiescent Current | $I_Q$ | | - | 3 | 5.5 | mA |
| Quiescent Current Change | $\Delta I_Q$ | 8V≤$V_I$≤20V | - | - | 1.5 | mA |
| | | 1mA≤$I_O$≤40mA | - | - | 0.2 | |
| Output Noise Voltage | VN | 10Hz≤f≤100kHz | - | 63 | - | μV |
| Temperature Coefficient | $\Delta V_O/\Delta T$ | $I_O$=5mA | - | 0.65 | - | mV/°C |
| Ripple Rejection | RR | 10V≤$V_I$≤20V; f=120Hz; $T_J$=25°C | 41 | 60 | - | dB |
| Dropout Voltage | Vd | $T_J$=25°C | - | 1.7 | - | V |

## TYPICAL PERFORMANCE CHARACTERISTICS

Fig1. Output Characteristics

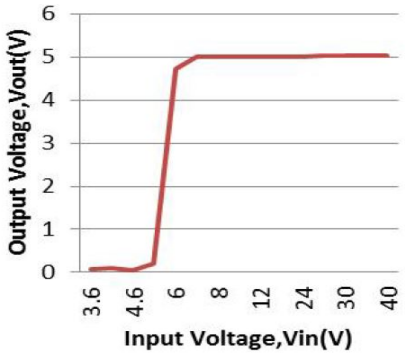



Fig2. Quiescent Current vs. Input Voltage

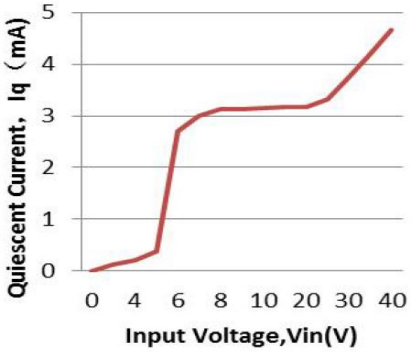



Fig3. Input Voltage vs. Bias Current

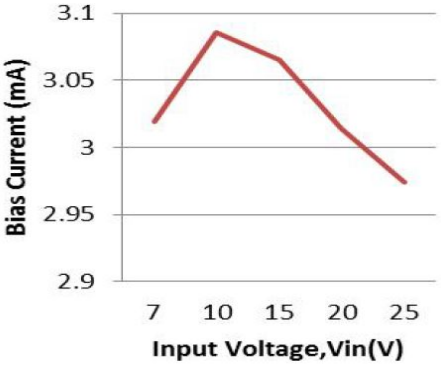



Fig4. Load Current vs. Bias Current

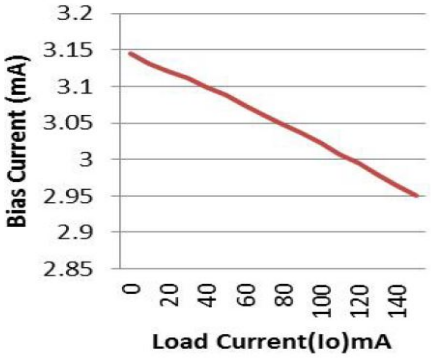



Fig5. Output fluctuation

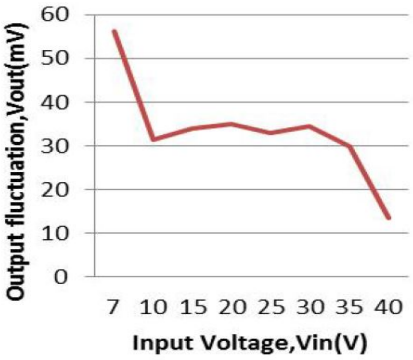
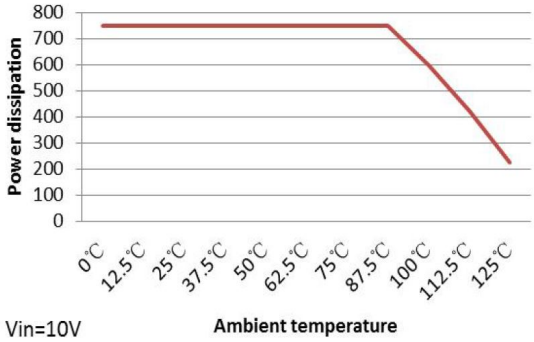



Fig6. Ambient temperature vs. Power dissipation




Vin=10V

Fig7. Load current temperature vs. Minimum voltage difference

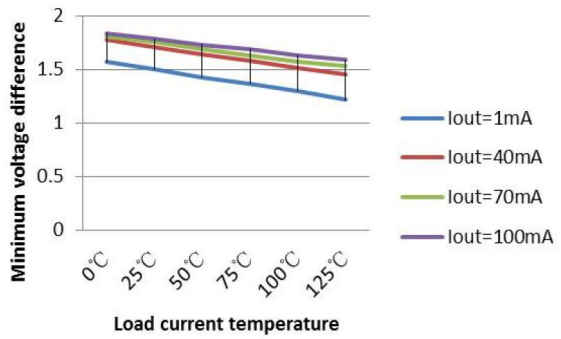
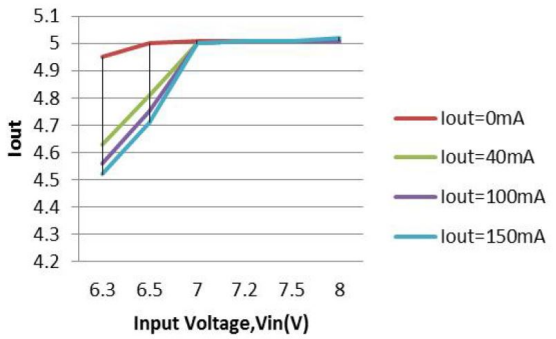
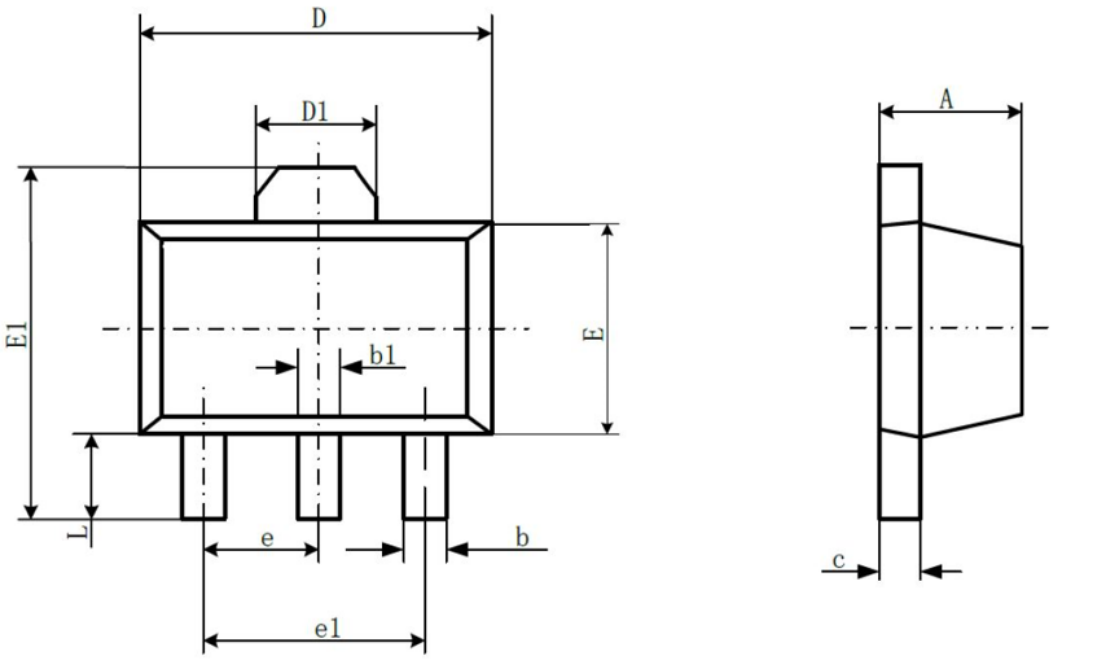



Fig8. Dropout Characteristics



## PACKAGE INFORMATION

Dimension in SOT89-3 (Unit: mm)




| Symbol | MILLIMETERS | |
|---|---|---|
| | Min. | Max. |
| A | 1.400 | 1.600 |
| b | 0.380 | 0.460 |
| b1 | 0.460 | 0.560 |
| c | 0.380 | 0.420 |
| D | 4.400 | 4.600 |
| D1 | 1.620 | 1.830 |
| E | 2.400 | 2.600 |
| E1 | 3.950 | 4.250 |
| e | 1.500 BSC | |
| e1 | 3.000 BSC | |
| L | 0.890 | 1.200 |

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