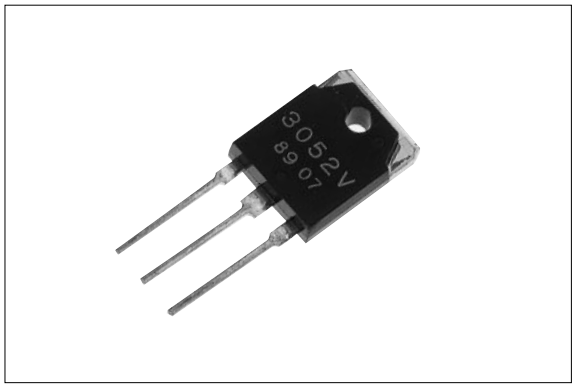
# SI-3000V Series

# 3-Terminal, Low Dropout Voltage Dropper Type

## ■Features

- TO-3P package 3-terminal regulator
- Output current: 2.0A
- Low dropout voltage: $V_{DIF} \leq 1V$ (at $I_O$=2.0A)
- Built-in foldback overcurrent protection circuit




## ■Applications

- For stabilization of the secondary stage of switching power supplies
- Electronic equipment

## ■Absolute Maximum Ratings

($T_a$=25°C)

| Parameter | Symbol | Ratings | | Unit |
|---|---|---|---|---|
| | | SI-3052V | SI-3122V/3152V | |
| DC Input Voltage | $V_{IN}$ | 25 | 30 | V |
| DC Output Current | $I_O$ | 2.0 | | A |
| Power Dissipation | $P_{D1}$ | 50($T_C$=25°C) | | W |
| | $P_{D2}$ | 1.6(Without heatsink, stand-alone operation) | | W |
| Junction Temperature | $T_j$ | –30 to +125 | | °C |
| Ambient Operating Temperature | $T_{op}$ | –20 to +100 | | °C |
| Storage Temperature | $T_{stg}$ | –30 to +125 | | °C |
| Thermal Resistance (junction to case) | $R_{th(j-c)}$ | 2.0 | | °C/W |

## ■Electrical Characteristics

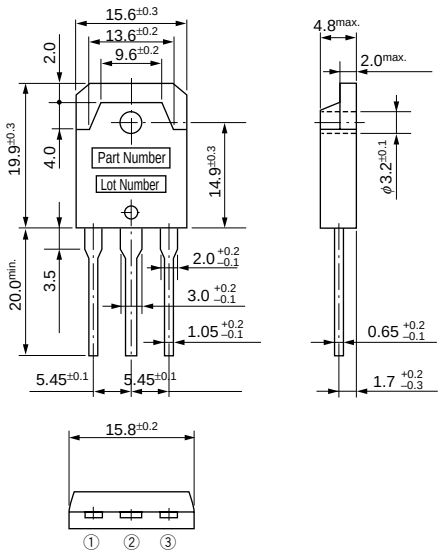
($T_a$=25°C)

| Parameter | Symbol | Ratings | | | | | | | | | unit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SI-3052V | | | SI-3122V | | | SI-3152V | | | |
| | | min. | typ. | max. | min. | typ. | max. | min. | typ. | max. | |
| Input Voltage | $V_{IN}$ | 6 | | 15 | 13 | | 25 | 16 | | 25 | V |
| Output Voltage | $V_O$ | 4.9 | 5.0 | 5.1 | 11.8 | 12.0 | 12.2 | 14.8 | 15.0 | 15.2 | V |
| | Conditions | $V_{IN}$=8V, $I_O$=1.0A | | | $V_{IN}$=16V, $I_O$=1.0A | | | $V_{IN}$=20V, $I_O$=1.0A | | | |
| Dropout Voltage | $V_{DIF}$ | | | 0.5 | | | 0.5 | | | 0.5 | V |
| | Conditions | $I_O$=1.0A | | | | | | | | | |
| | | | | 1.0 | | | 1.0 | | | 1.0 | |
| | Conditions | $I_O$=2.0A | | | | | | | | | |
| Line Regulation | $\Delta V_{OLINE}$ | | 10 | 30 | | 20 | 60 | | 20 | 60 | mV |
| | Conditions | $V_{IN}$=6 to 15V, $I_O$=1.0A | | | $V_{IN}$=13 to 25V, $I_O$=1.0A | | | $V_{IN}$=16 to 25V, $I_O$=1.0A | | | |
| Load Regulation | $\Delta V_{OLOAD}$ | | 40 | 100 | | 80 | 200 | | 80 | 200 | mV |
| | Conditions | $V_{IN}$=8V, $I_O$=0 to 2.0A | | | $V_{IN}$=16V, $I_O$=0 to 2.0A | | | $V_{IN}$=20V, $I_O$=0 to 2.0A | | | |
| Temperature Coefficient of Output Voltage | $\Delta V_O/\Delta T_a$ | | ±0.5 | | | +1.5 | | | ±1.5 | | mV/°C |
| Ripple Rejection | $R_{REJ}$ | | 54 | | | 54 | | | 54 | | dB |
| | Conditions | f=100 to 120Hz | | | | | | | | | |
| Overcurrent Protection Starting Current | $I_{S1}$ | 2.4 | | | 2.4 | | | 2.4 | | | A |
| | Conditions | $V_{IN}$=8V | | | $V_{IN}$=16V | | | $V_{IN}$=20V | | | |

The following are also available: SI-3522V(5.2V), SI-3062V(6V), SI-3082V(8V), SI-3922V(9.2V), SI-3102V(10V), SI-3132V(13.1V), SI-3182V(18V), SI-3202V(20V).

## ■Outline Drawing

(unit:mm)

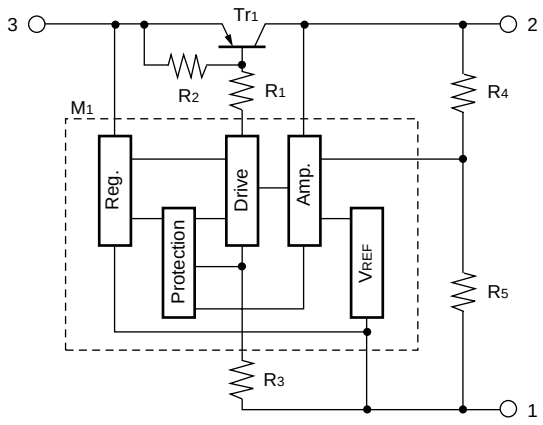



Plastic Mold Package Type (TO-3P)
Flammability: UL94V-0
Weight: Approx. 6g

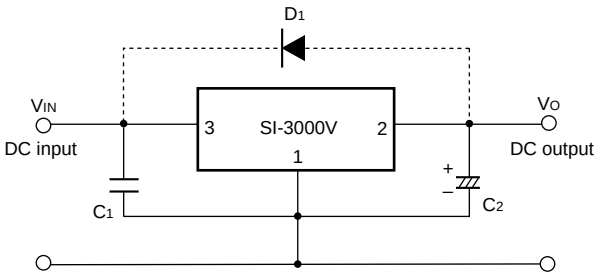
Terminal Connections

① Output
② Input (backside of case)
③ Ground

## ■Block Diagram



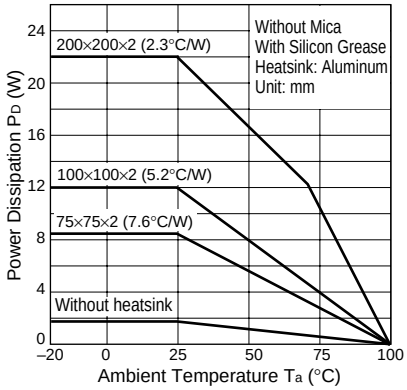
## ■Standard External Circuit




$C_1$: Oscillation prevention capacitor (approx. 0.33µF)
Connection to terminal No.3 must be made as short as possible.
$C_2$: Output capacitor (47 to 100µF)
Connection to terminal No.2 must be made as short as possible.
$D_1$: Protection diode (RM1Z)
Required for protection against reverse biasing of input and output.

Note 1: Prevention of oscillation at low temperatures
At low temperatures, oscillation may occur unless an output capacitor with good tanδ is used. Be sure to connect a tantalum capacitor (approx. 10µF) in parallel with output capacitor $C_2$.
Note 2: An isolation type diode is provided from input to ground and also from output to ground. These may be destroyed if the device is reverse biased. In this case, use a diode with low $V_F$ to protect them.
Note 3: The output voltage may not be adjusted by raising the ground voltage (using a diode or resistor).

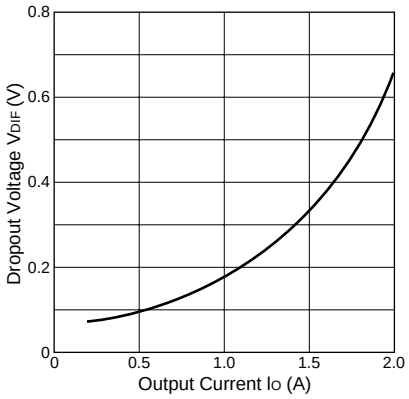
## ■$T_a$-$P_D$ Characteristics



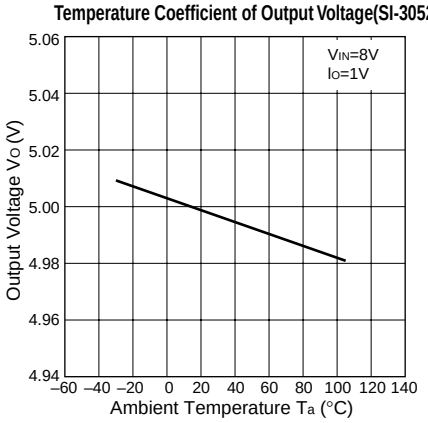
## ■Typical Characteristics

($T_a$=25°C)

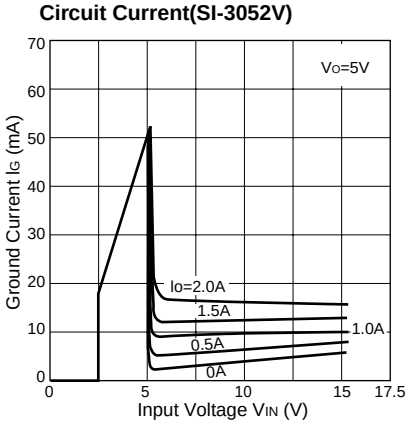
**Io vs. VDIF Characteristics**



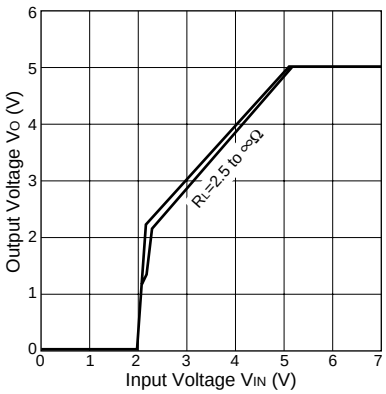

**Temperature Coefficient of Output Voltage(SI-3052V)**



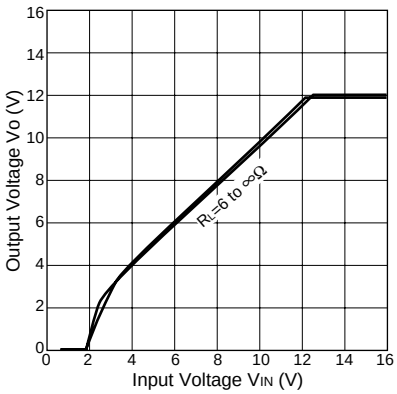

**Circuit Current(SI-3052V)**



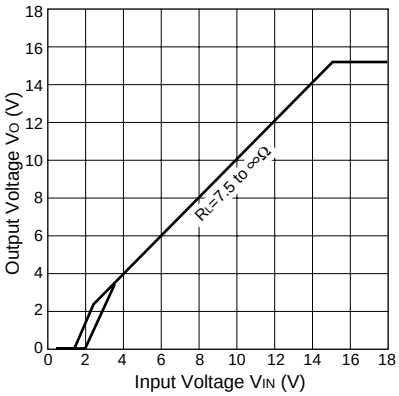

**Rise Characteristics(SI-3052V)**



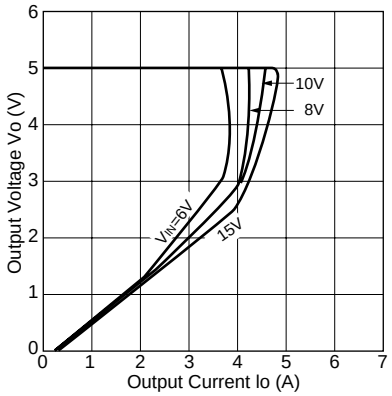

**Rise Characteristics(SI-3122V)**



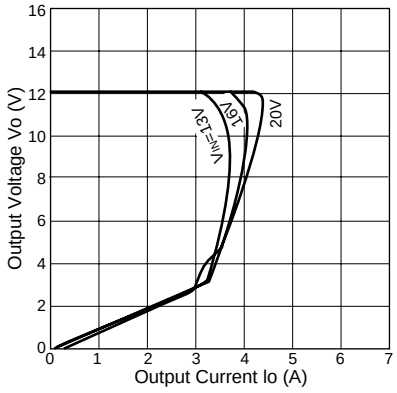

**Rise Characteristics(SI-3152V)**




**Overcurrent Protection Characteristics(SI-3052V)**




**Overcurrent Protection Characteristics(SI-3122V)**




**Overcurrent Protection Characteristics(SI-3152V)**