

# SI-3000V Series

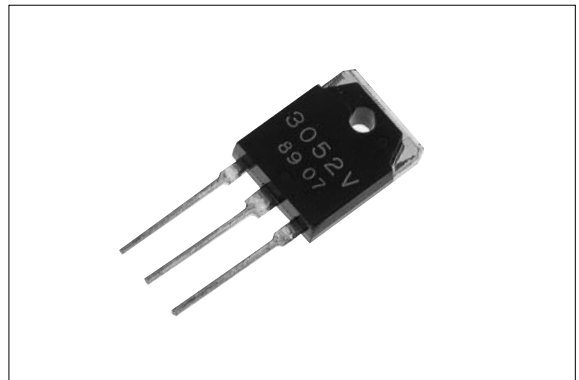
## 3-Terminal, Low Dropout Voltage Dropper Type

### ■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

( $T_a = 25^\circ C$ )

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( $T_c = 25^\circ C$ )		W
	$P_{D2}$	1.6(Without heatsink, stand-alone operation)		W
Junction Temperature	$T_j$	-30 to +125		$^\circ C$
Ambient Operating Temperature	$T_{op}$	-20 to +100		$^\circ C$
Storage Temperature	$T_{stg}$	-30 to +125		$^\circ C$
Thermal Resistance (junction to case)	$R_{th(j-c)}$	2.0		$^\circ C/W$

### ■Electrical Characteristics

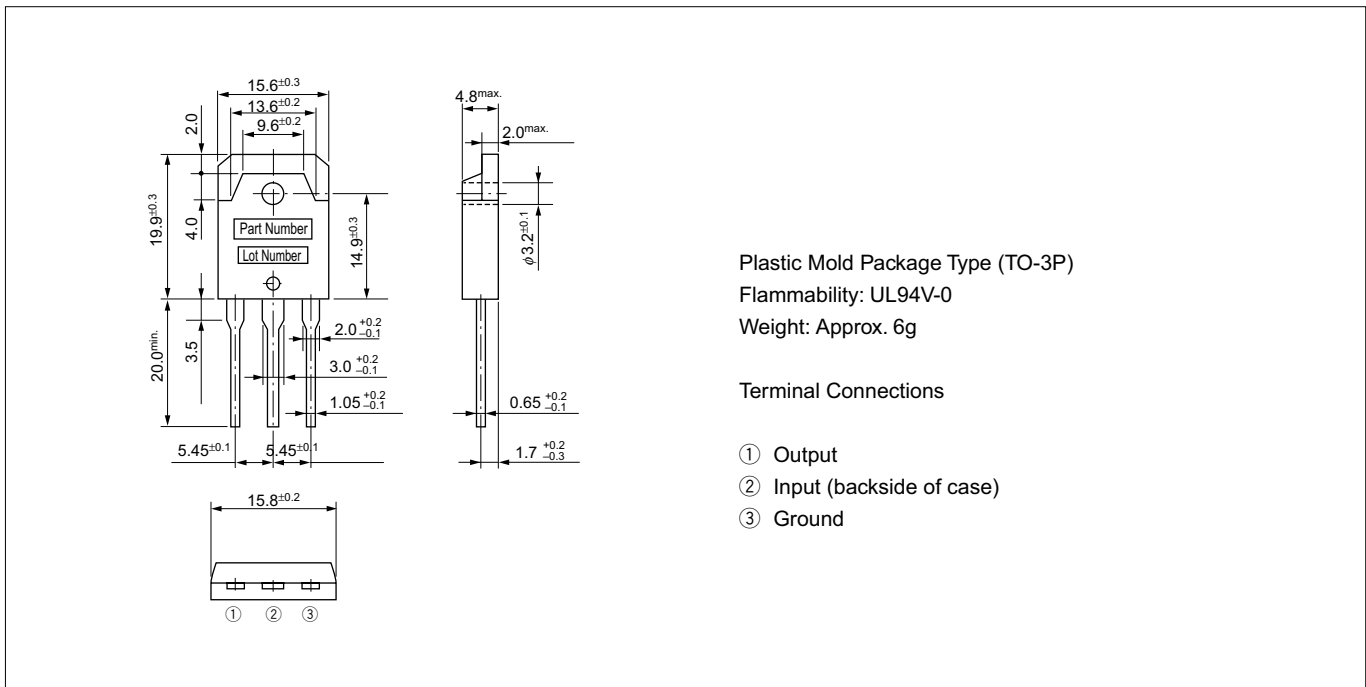
( $T_a = 25^\circ C$ )

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	
Line Regulation	$\Delta V_{OLINE}$		10	30		20	60		20	60	mV
	Conditions	$V_{IN} = 6 \text{ to } 15V, I_o = 1.0A$			$V_{IN} = 13 \text{ to } 25V, I_o = 1.0A$			$V_{IN} = 16 \text{ to } 25V, I_o = 1.0A$			
			40	100		80	200		80	200	
Load Regulation	$\Delta V_{OLOAD}$										mV
Conditions	$V_{IN} = 8V, I_o = 0 \text{ to } 2.0A$			$V_{IN} = 16V, I_o = 0 \text{ to } 2.0A$			$V_{IN} = 20V, I_o = 0 \text{ to } 2.0A$				
Temperature Coefficient of Output Voltage	$\Delta V_o / \Delta T_a$		$\pm 0.5$			$+1.5$			$\pm 1.5$		mV/ $^\circ C$
Ripple Rejection	RREJ		54			54			54		dB
	Conditions	$f = 100 \text{ to } 120Hz$									
Overcurrent Protection Starting Current	$I_{s1}$	2.4			2.4			2.4			A
	Conditions	$V_{IN} = 8V$			$V_{IN} = 16V$			$V_{IN} = 20V$			

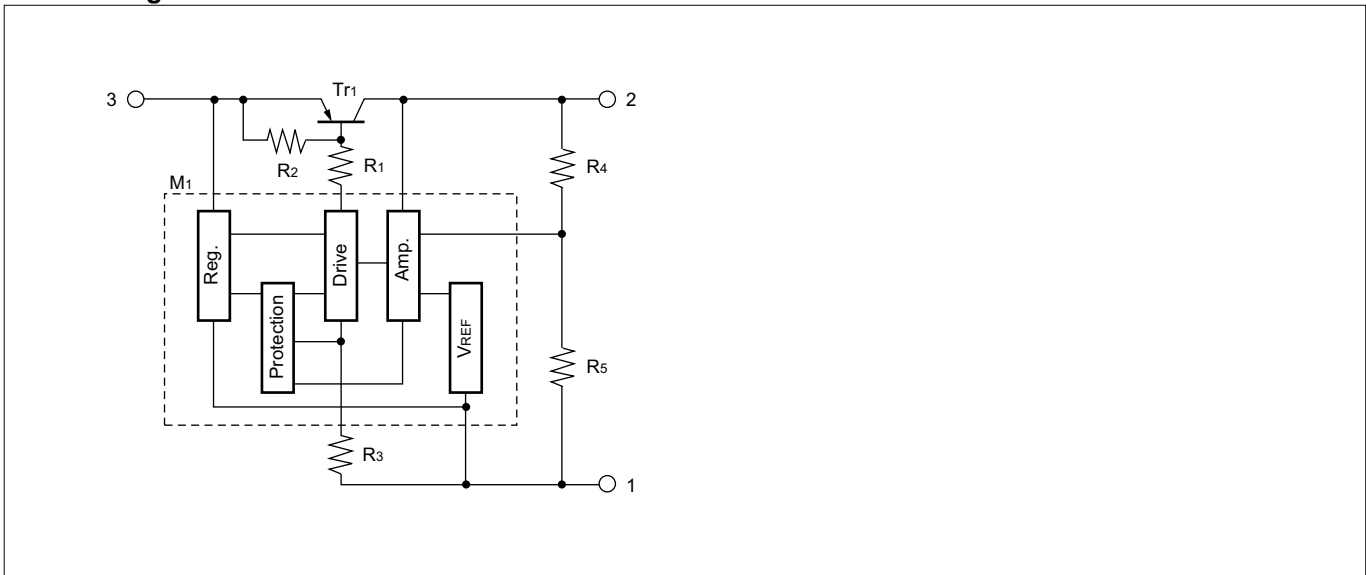
The following are also available: SI-3522V(5.2V), SI-3062V(6V), SI-3082V(8V), SI-3922V(9.2V), SI-3102V(10V), SI-3132V(13.1V), SI-3182V(18V), SI-3202V(20V).

■Outline Drawing

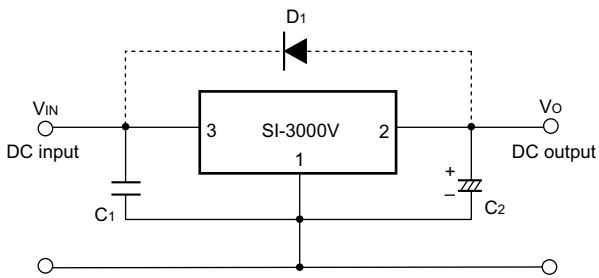
(unit:mm)



■Block Diagram



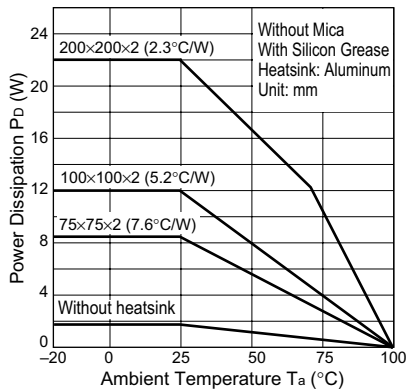
■Standard External Circuit



- C1: Oscillation prevention capacitor (approx. 0.33 $\mu$ F)  
Connection to terminal No.3 must be made as short as possible.
- C2: Output capacitor (47 to 100 $\mu$ F)  
Connection to terminal No.2 must be made as short as possible.
- D1: 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  $\tan\delta$  is used. Be sure to connect a tantalum capacitor (approx. 10 $\mu$ F) in parallel with output capacitor C2.
- 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).

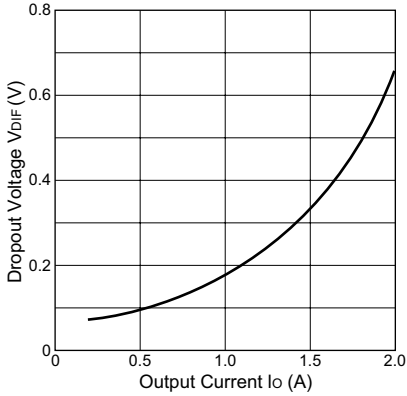
■ $T_a$ - $P_D$  Characteristics



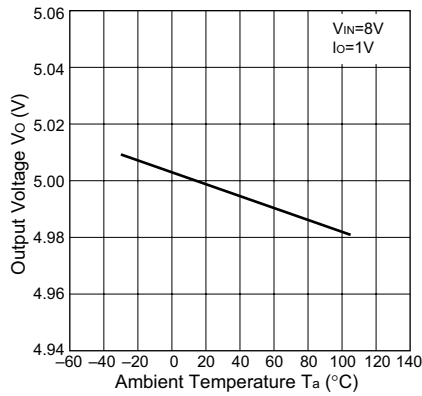
■Typical Characteristics

( $T_a=25^\circ\text{C}$ )

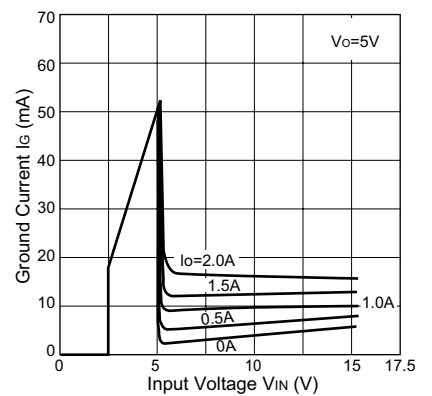
**$I_o$  vs.  $V_{DIF}$  Characteristics**



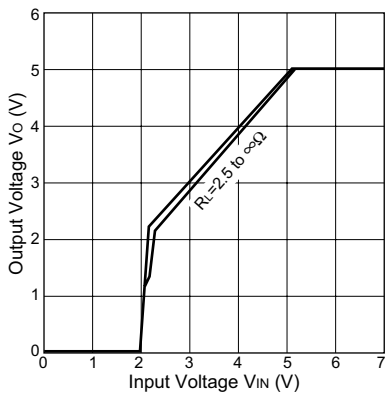
**Temperature Coefficient of Output Voltage(SI-3052V)**



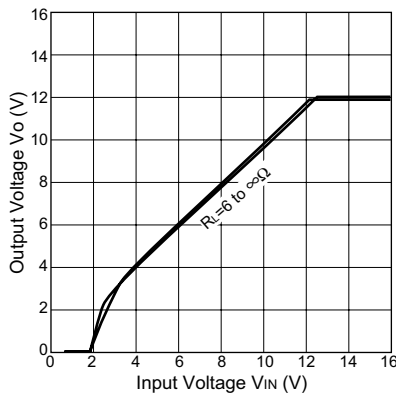
**Circuit Current(SI-3052V)**



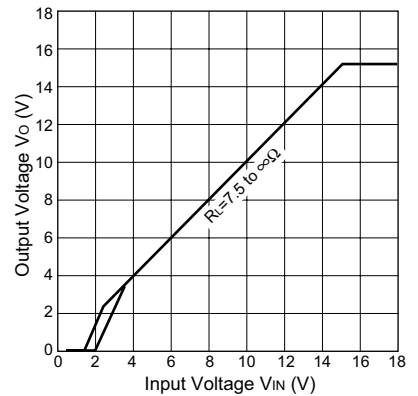
**Rise Characteristics(SI-3052V)**



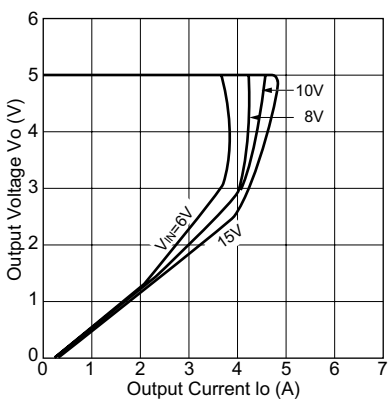
**Rise Characteristics(SI-3122V)**



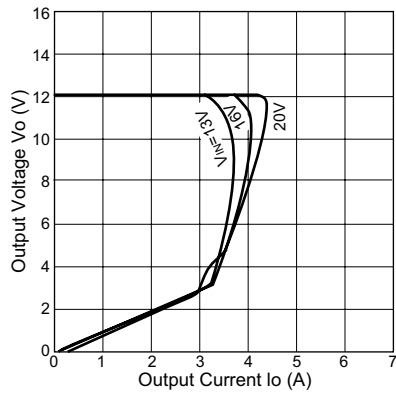
**Rise Characteristics(SI-3152V)**



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



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



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

