

SI-3000V Series

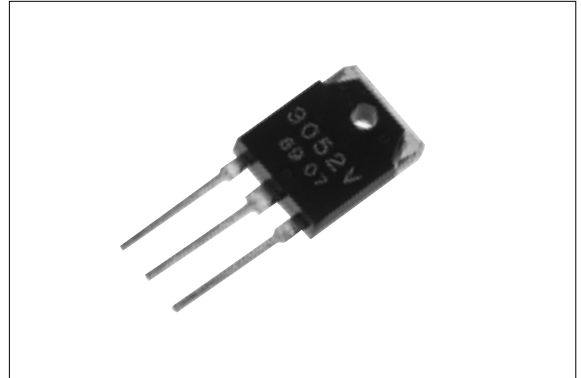
3-Terminal, Low Dropout Voltage Dropper Type

■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

(Ta=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									
	Conditions			1.0			1.0			1.0	
Line Regulation	ΔV _{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	ΔV _{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	ΔV _O /ΔT _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			

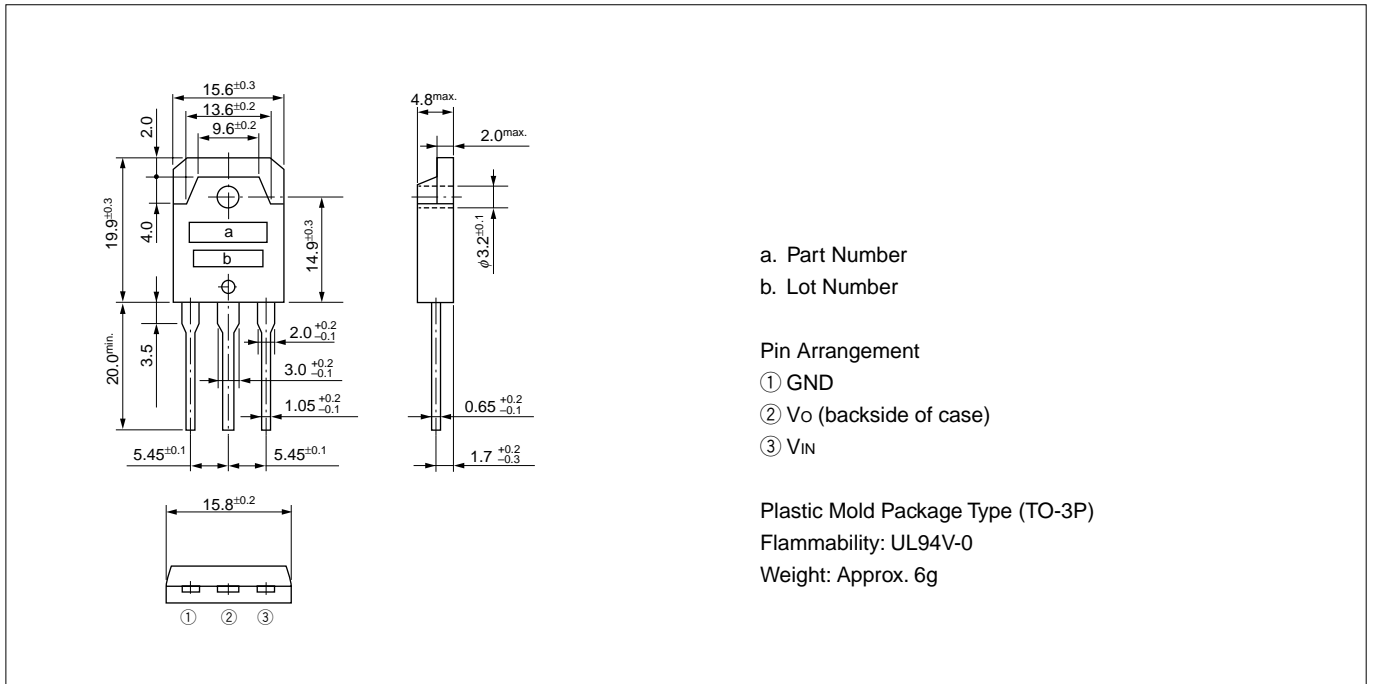
The following are also available: SI-3522V(5.2V), SI-3062V(6V), SI-3082V(8V), SI-3922V(9.2V), SI-3102V(10V), SI-3132V(13.1V), SI-3182V(18V), SI-3202V(20V).

*: A foldback type overcurrent protection circuit is built into the I_C regulator. Therefore, avoid using it for the following applications as it may cause starting errors:

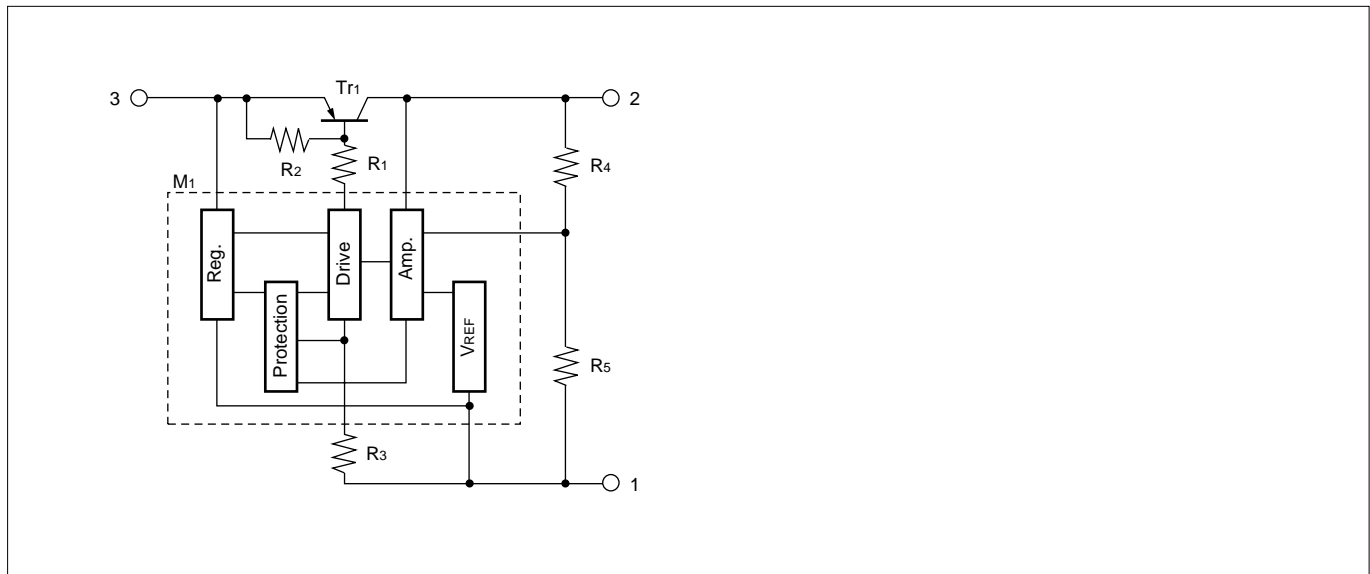
- (1) Constant current load (2) Plus/minus power (3) Series power (4) V_O adjustment by raising ground voltage

■External Dimensions

(unit:mm)



■Block Diagram



■Standard External Circuit

The standard external circuit diagram shows the SI-3000V device with terminal 1 connected to GND. Terminal 3 is connected to the DC input (VIN) through a capacitor C1. Terminal 2 is connected to the DC output (VO) through a capacitor C2. A protection diode D1 is connected between terminal 3 and terminal 2. The output terminal 2 is also connected to GND through a diode (not explicitly labeled but implied by the note).

C1: Oscillation prevention capacitor (approx. 0.33 μ F)
 Connection to terminal No.3 must be made as short as possible.

C2: Output capacitor (47 to 100 μ F)
 Connection to terminal No.2 must be made as short as possible.

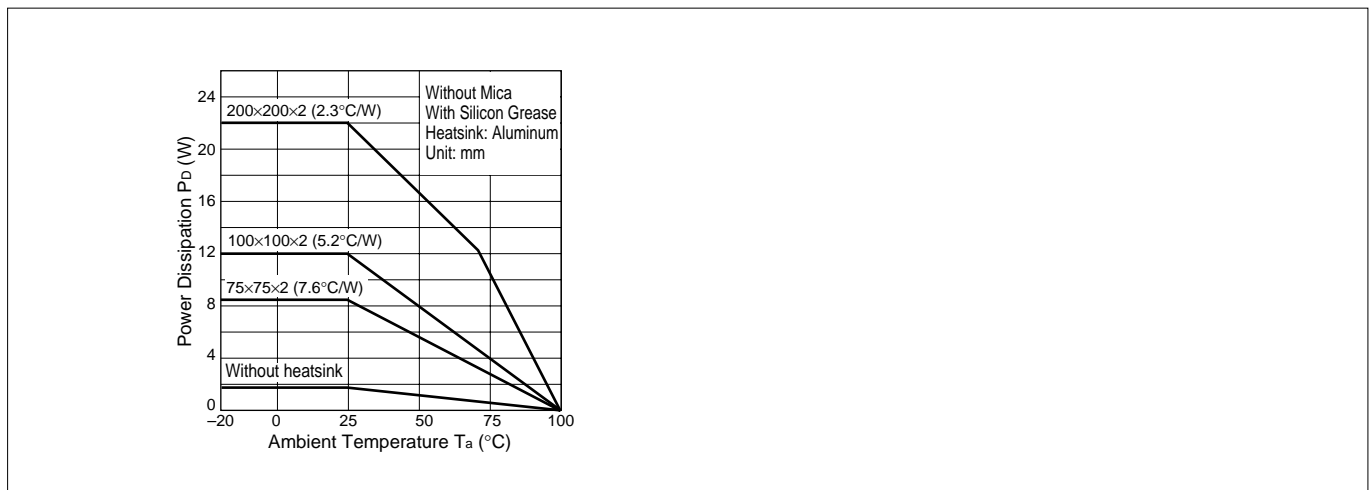
D1: Protection diode (RM1Z)
 Required for protection against reverse biasing of input and output.

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 μ 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).

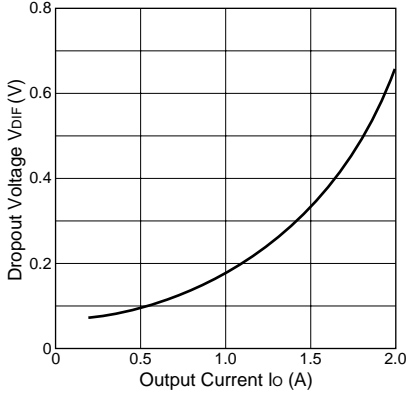
■Ta-Pd Characteristics



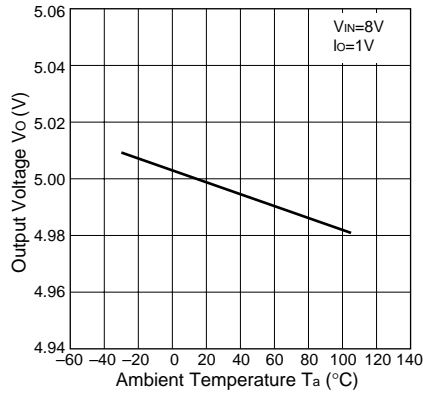
■Typical Characteristics

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

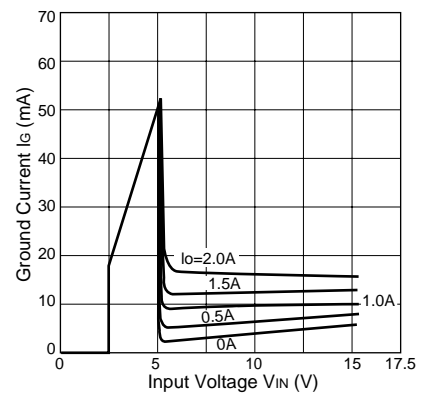
I_o vs. V_{DIF} Characteristics



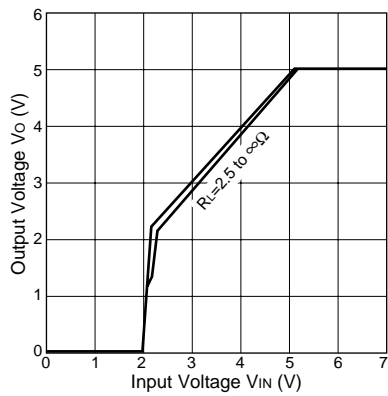
Temperature Coefficient of Output Voltage(SI-3052V)



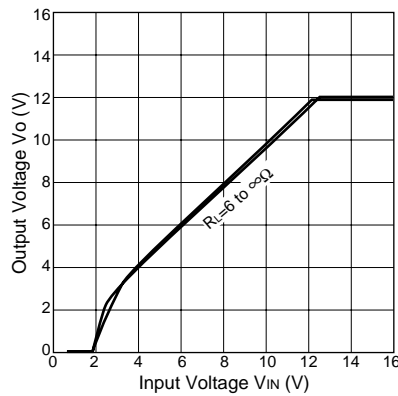
Circuit Current(SI-3052V)



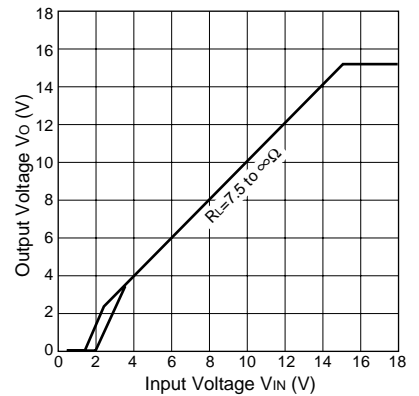
Output Voltage(SI-3052V)



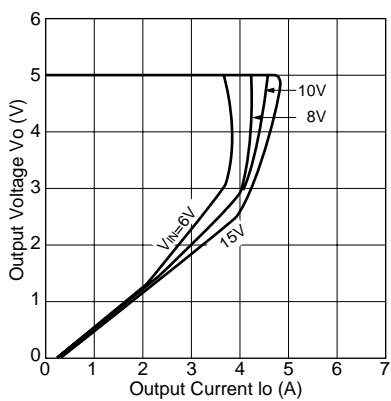
Output Voltage(SI-3122V)



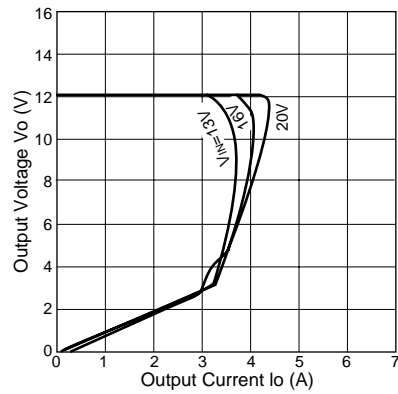
Output Voltage(SI-3152V)



Overcurrent Protection Characteristics(SI-3052V)



Overcurrent Protection Characteristics(SI-3122V)



Overcurrent Protection Characteristics(SI-3152V)

