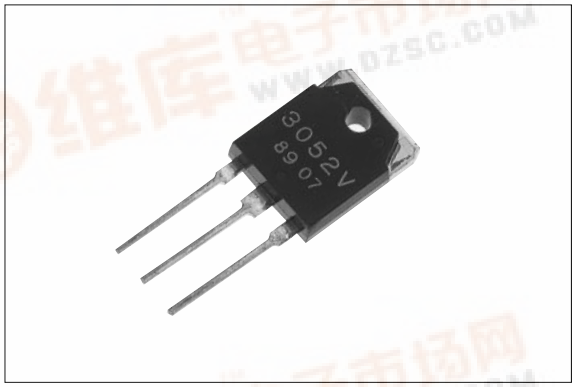
SI-3000V Series

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

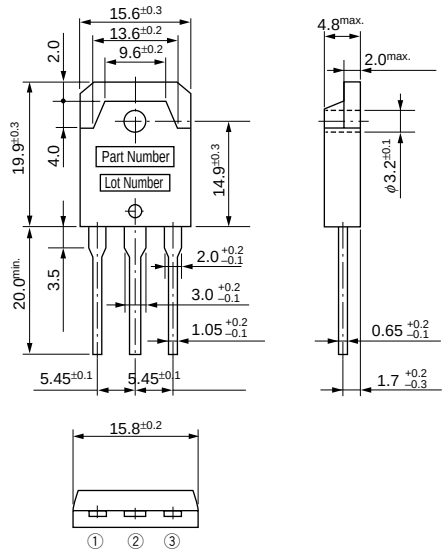
(T_a=25°C)

Parameter	Symbol	SI-3052V			SI-3122V			SI-3152V			unit
		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	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	$\Delta V_O/\Delta T_a$		±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)

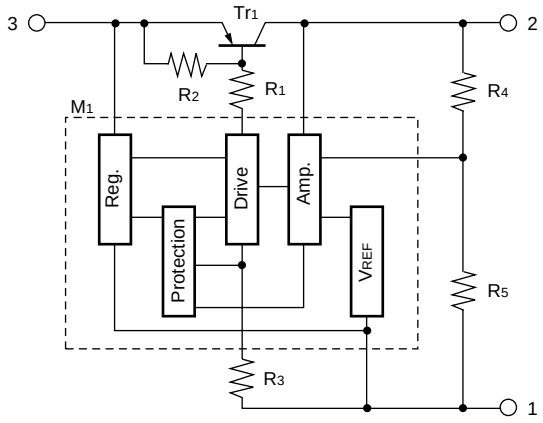


Plastic Mold Package Type (TO-3P)
Flammability: UL94V-0
Weight: Approx. 6g

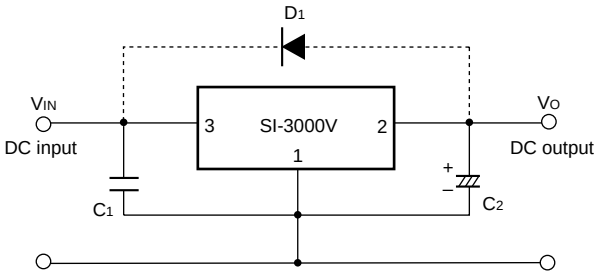
Terminal Connections

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.

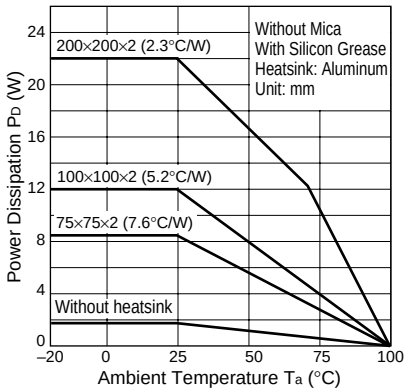
D_1: Protection diode (RM1Z)
Required for protection against reverse biasing of input and output.

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).

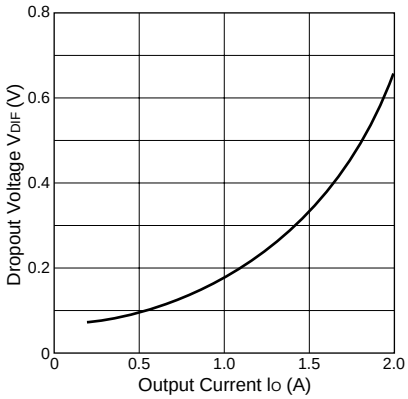
■T_a-P_D Characteristics



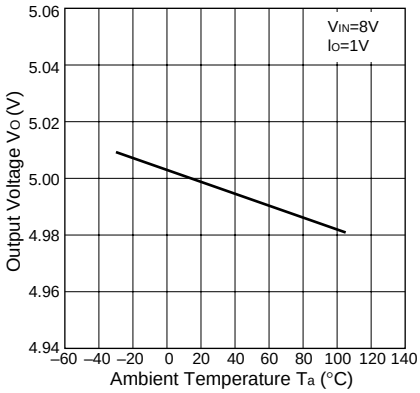
■Typical Characteristics

(T_a=25°C)

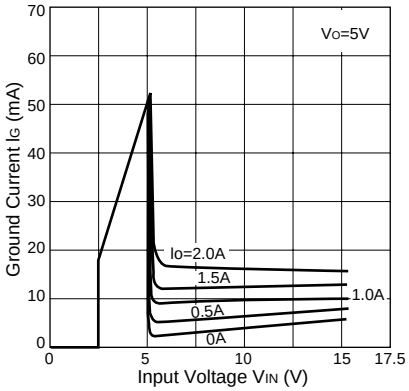
Io vs. VDIF Characteristics



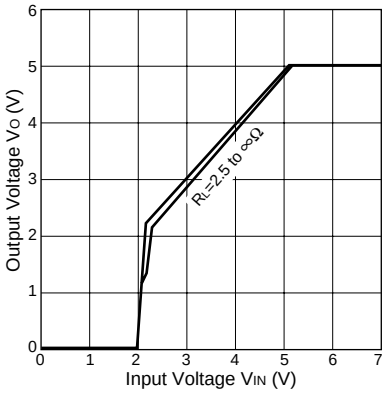
Temperature Coefficient of Output Voltage(SI-3052V)



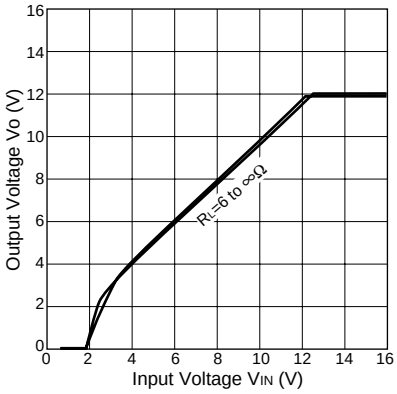
Circuit Current(SI-3052V)



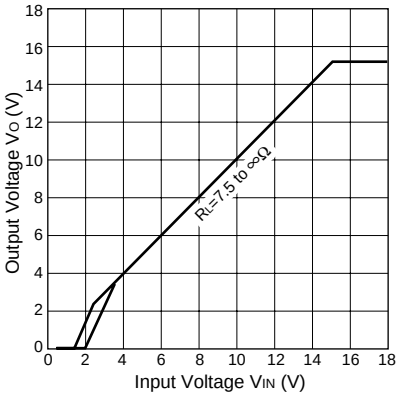
Rise Characteristics(SI-3052V)



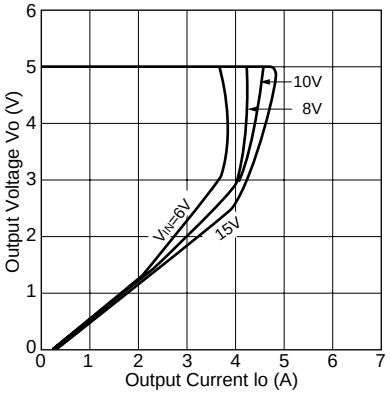
Rise Characteristics(SI-3122V)



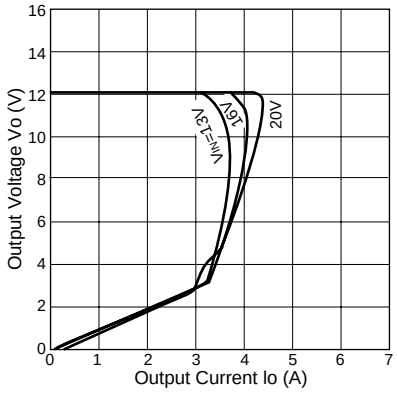
Rise Characteristics(SI-3152V)



Overcurrent Protection Characteristics(SI-3052V)



Overcurrent Protection Characteristics(SI-3122V)



Overcurrent Protection Characteristics(SI-3152V)