

SI-3000P Series

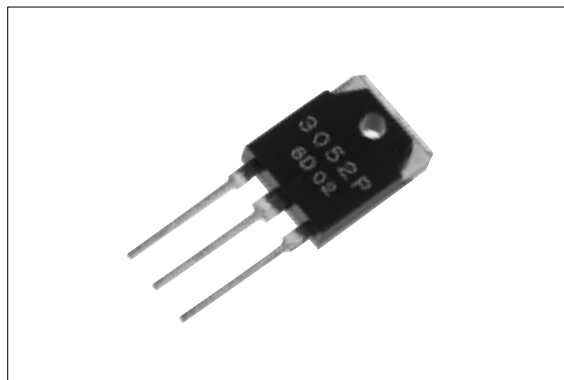
3-Terminal, Dropper Type

■Features

- TO-3P package 3-terminal regulator
- Output current: 2.0A
- Wide range of DC input voltage
- Built-in foldback overcurrent protection circuit

■Applications

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



■Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Input Voltage	V_{IN}	45	V
DC Output Current	I_O	2.0	A
Power Dissipation	P_{D1}	50($T_C=25^{\circ}C$)	W
	P_{D2}	2.0(Without heatsink, stand-alone operation)	W
Junction Temperature	T_J	-30 to +125	$^{\circ}C$
Ambient Operating Temperature	T_{OP}	-20 to +80	$^{\circ}C$
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)

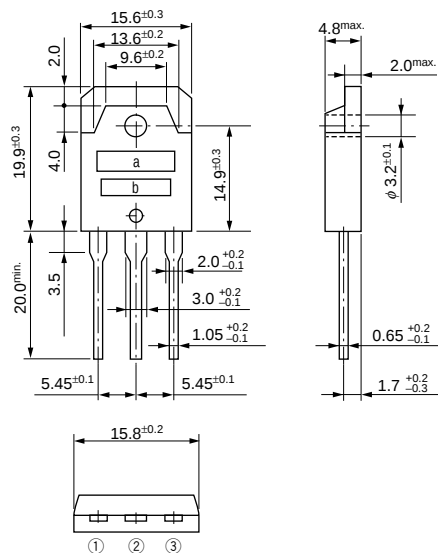
Parameter	Symbol	Ratings												unit
		SI-3052P			SI-3122P			SI-3152P			SI-3242P			
		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	
Input Voltage	V _{IN}	8		30	15		35	18		40	27		40	V
Output Voltage	V _O	4.9	5.0	5.1	11.8	12.0	12.2	14.8	15.0	15.2	23.8	24.0	24.2	V
	Conditions	V _{IN} =10V, I _O =0.5A			V _{IN} =19V, I _O =0.5A			V _{IN} =23V, I _O =0.5A			V _{IN} =33V, I _O =0.5A			
Dropout Voltage	V _{DIF}			3			3			3			3	V
	Conditions	I _O =2.0A												
Line Regulation	ΔV _{OLINE}		2	10		10	30		10	30		25	50	mV
	Conditions	V _{IN} =8.5 to 11.5V, I _O =0.5A			V _{IN} =16 to 22V, I _O =0.5A			V _{IN} =19.5 to 26.5V, I _O =0.5A			V _{IN} =28 to 38V, I _O =0.5A			
Load Regulation	ΔV _{OLOAD}		40	100		80	200		80	200		120	300	mV
	Conditions	V _{IN} =10V, I _O =0 to 2.0A			V _{IN} =19V, I _O =0 to 2.0A			V _{IN} =23V, I _O =0 to 2.0A			V _{IN} =33V, I _O =0 to 2.0A			
Temperature Coefficient of Output Voltage	ΔV _O /ΔT _a		±0.5			±1.5			±1.5			±2.5		mV/°C
Ripple Rejection	R _{REJ}	60			60			60			60			dB
	Conditions	f=100 to 120Hz												
Overcurrent Protection Starting Current	I _{S1}	2.4			2.4			2.4			2.4			A
	Conditions	V _{IN} =10V			V _{IN} =19V			V _{IN} =23V			V _{IN} =33V			
Limited Current at Overcurrent Protection	I _{S2}			0.6			0.6			0.6			0.6	A
	Conditions	V _{IN} =10V			V _{IN} =19V			V _{IN} =23V			V _{IN} =33V			

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:

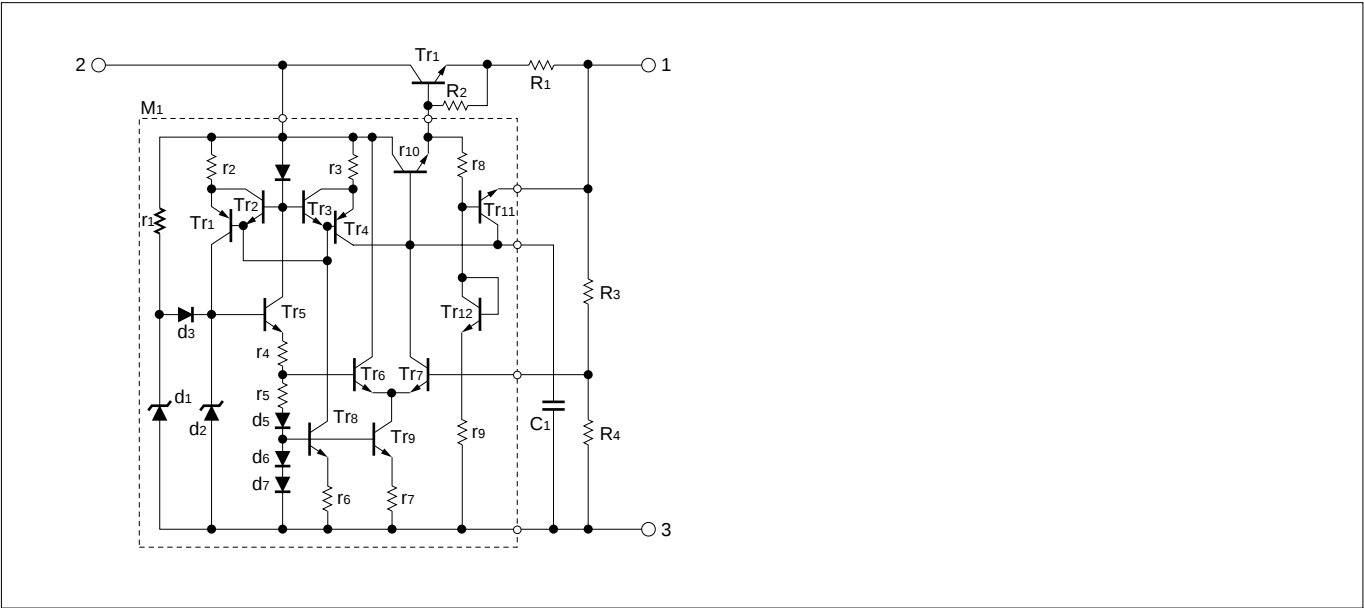
- (1) Constant current load (2) Plus/minus power (3) Series power (4) V_O adjustment by raising ground voltage

■External Dimensions

(unit:mm)



■Block Diagram



■Standard External Circuit

C1: Oscillation prevention capacitor (approx. 0.33μF)
Connection to terminal No.2 must be made as short as possible.

C2: Output capacitor (47 to 100μF)
Connection to terminal No.1 must be made as short as possible.

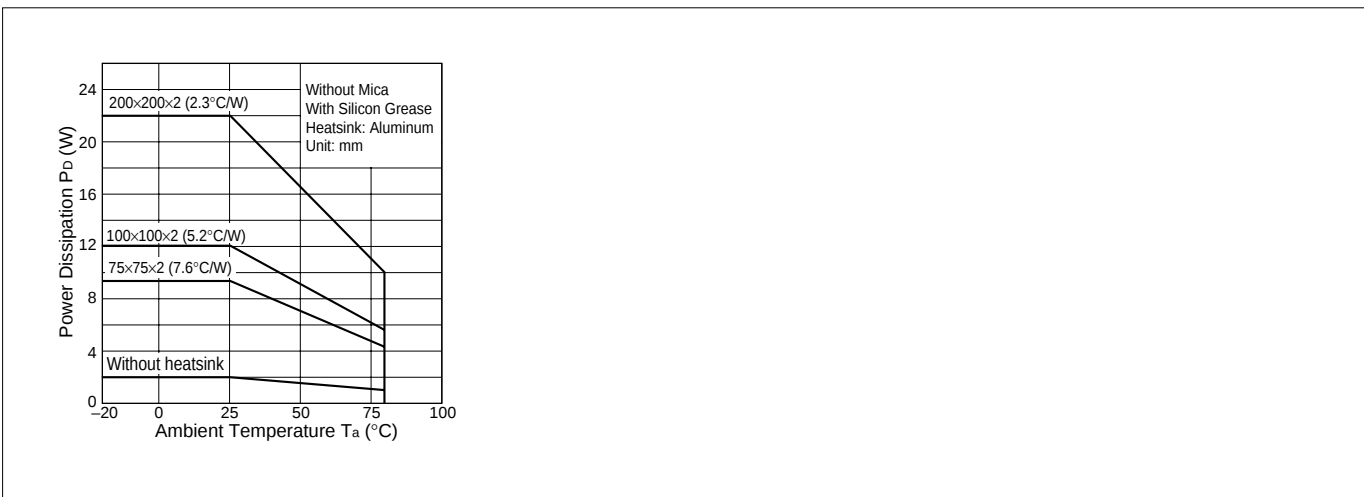
D1: Protection diode (RM1Z)
Required for protection against reverse biasing of input and output.

Note 1: Connect a 47μF to 100μF capacitor to both sides of the load if the wiring between the output terminal and the load is long.

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).

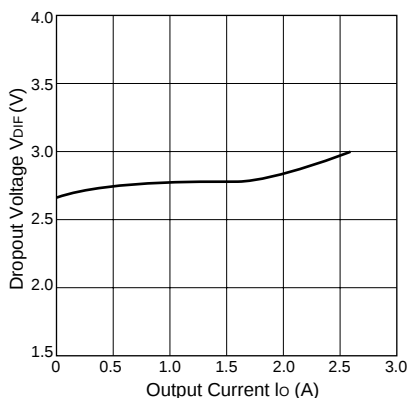
■Ta-Pd Characteristics



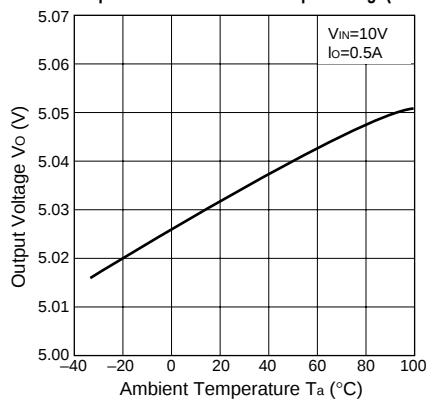
■Typical Characteristics

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

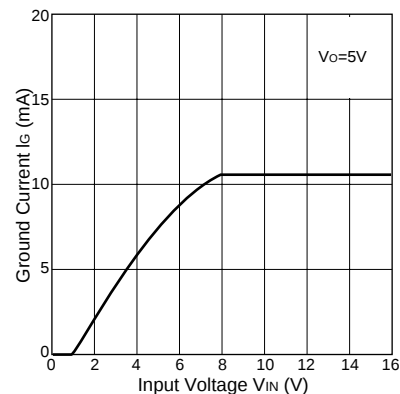
I_o vs. V_{DIF} Characteristics



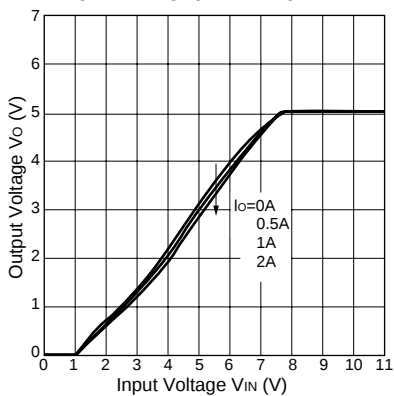
Temperature Coefficient of Output Voltage(SI-3052P)



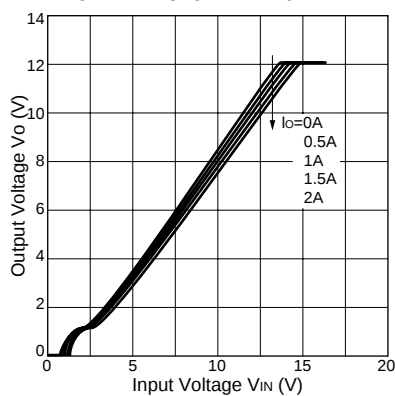
Circuit Current(SI-3052P)



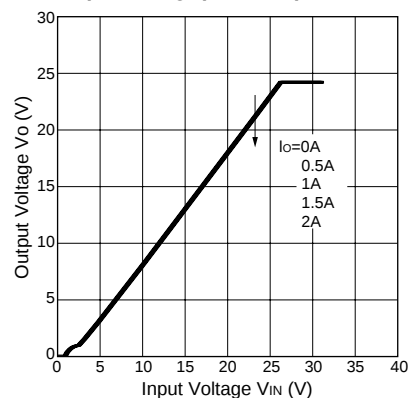
Output Voltage(SI-3052P)



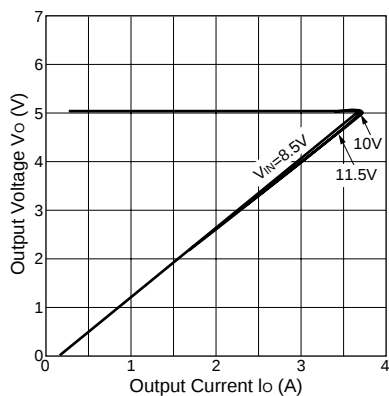
Output Voltage(SI-3122P)



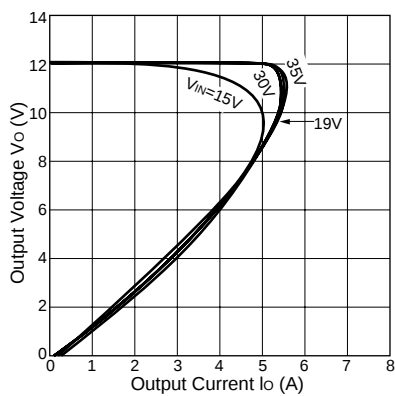
Output Voltage(SI-3242P)



Overcurrent Protection Characteristics(SI-3052P)



Overcurrent Protection Characteristics(SI-3122P)



Overcurrent Protection Characteristics(SI-3242P)

