

## SI-3000P Series

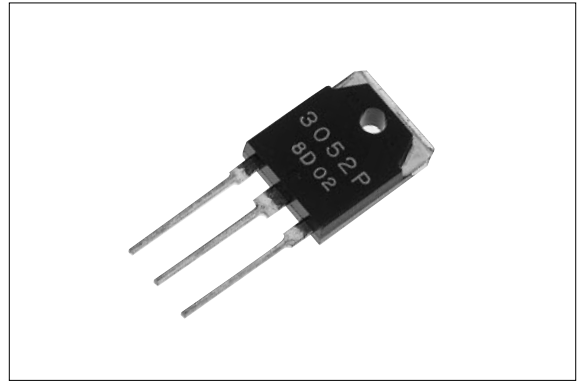
# 3-Terminal, Dropper Type

### ■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 <sub>IN</sub>	45	V
DC Output Current	I <sub>O</sub>	2.0	A
Power Dissipation	P <sub>D1</sub>	50(T <sub>C</sub> =25°C)	W
	P <sub>D2</sub>	2.0(Without heatsink, stand-alone operation)	W
Junction Temperature	T <sub>J</sub>	-30 to +125	°C
Ambient Operating Temperature	T <sub>OP</sub>	-20 to +80	°C
Storage Temperature	T <sub>STG</sub>	-30 to +125	°C
Thermal Resistance (junction to case)	R <sub>th(j-c)</sub>	2.0	°C/W

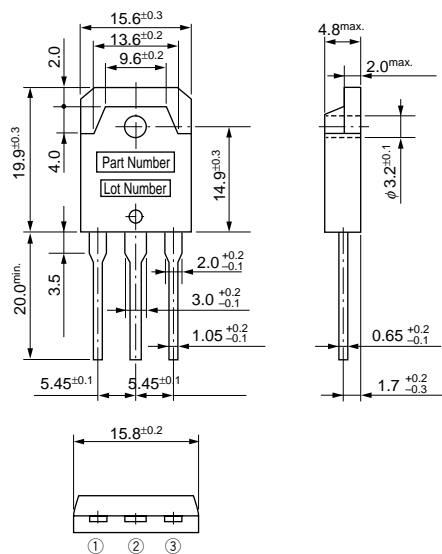
### ■Electrical Characteristics

(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 <sub>IN</sub>	8		30	15		35	18		40	27		40	V
Output Voltage	V <sub>O</sub>	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 <sub>IN</sub> =10V, I <sub>O</sub> =0.5A			V <sub>IN</sub> =19V, I <sub>O</sub> =0.5A			V <sub>IN</sub> =23V, I <sub>O</sub> =0.5A			V <sub>IN</sub> =33V, I <sub>O</sub> =0.5A			
Dropout Voltage	V <sub>DIF</sub>			3			3			3			3	V
	Conditions	I <sub>O</sub> =2.0A												
Line Regulation	ΔV <sub>O LINE</sub>		2	10		10	30		10	30		25	50	mV
	Conditions	V <sub>IN</sub> =8.5 to 11.5V, I <sub>O</sub> =0.5A			V <sub>IN</sub> =16 to 22V, I <sub>O</sub> =0.5A			V <sub>IN</sub> =19.5 to 26.5V, I <sub>O</sub> =0.5A			V <sub>IN</sub> =28 to 38V, I <sub>O</sub> =0.5A			
Load Regulation	ΔV <sub>O LOAD</sub>		40	100		80	200		80	200		120	300	mV
	Conditions	V <sub>IN</sub> =10V, I <sub>O</sub> =0 to 2.0A			V <sub>IN</sub> =19V, I <sub>O</sub> =0 to 2.0A			V <sub>IN</sub> =23V, I <sub>O</sub> =0 to 2.0A			V <sub>IN</sub> =33V, I <sub>O</sub> =0 to 2.0A			
Temperature Coefficient of Output Voltage	ΔV <sub>O</sub> /ΔT <sub>a</sub>		±0.5			±1.5			±1.5			±2.5		mV/°C
Ripple Rejection	R <sub>REJ</sub>		60			60			60			60		dB
	Conditions	f=100 to 120Hz												
Overcurrent Protection Starting Current	I <sub>S1</sub>	2.4			2.4			2.4			2.4			A
	Conditions	V <sub>IN</sub> =10V			V <sub>IN</sub> =19V			V <sub>IN</sub> =23V			V <sub>IN</sub> =33V			
Limited Current at Overcurrent Protection Operation	I <sub>S2</sub>			0.6			0.6			0.6			0.6	A
	Conditions	V <sub>IN</sub> =10V			V <sub>IN</sub> =19V			V <sub>IN</sub> =23V			V <sub>IN</sub> =33V			

■Outline Drawing

(unit:mm)



Plastic Mold Package Type (TO-3P)

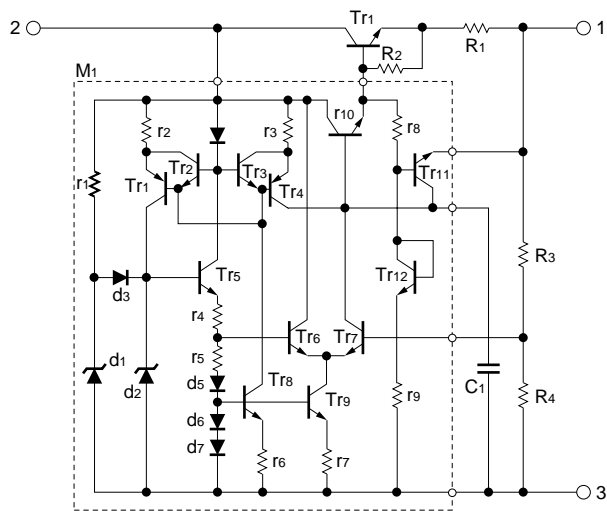
Flammability: UL94V-0

Weight: Approx. 6g

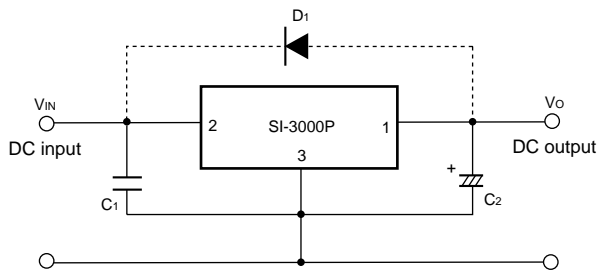
Terminal Connections

- ① Output
- ② Input (backside of case)
- ③ Ground

■Block Diagram



■Standard External Circuit



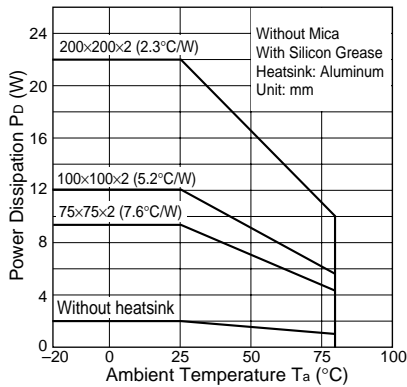
- C1: Oscillation prevention capacitor (approx. 0.33 $\mu$ F)  
Connection to terminal No.2 must be made as short as possible.
- C2: Output capacitor (47 to 100 $\mu$ F)  
Connection to terminal No.1 must be made as short as possible.
- D1: Protection diode (RM1Z)  
Required for protection against reverse biasing of input and output.

Note 1: Connect a 47 $\mu$ F to 100 $\mu$ F 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).

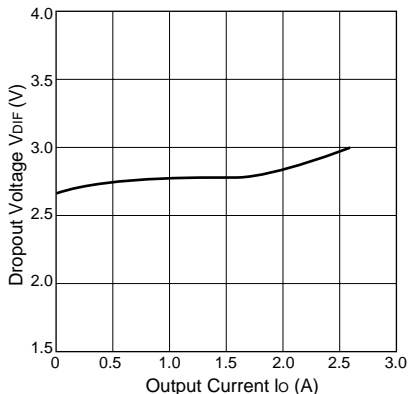
■ $T_a$ - $P_D$  Characteristics



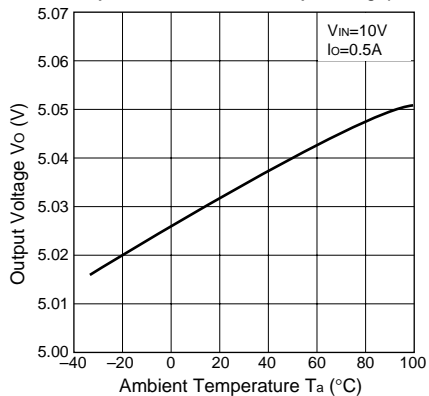
■Typical Characteristics

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

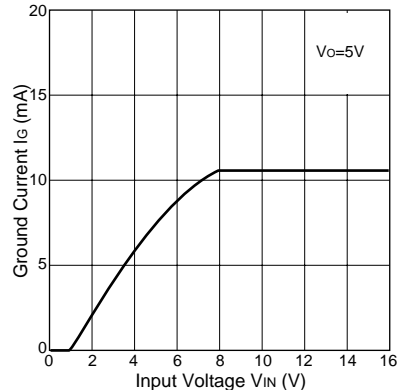
**$I_o$  vs.  $V_{DIF}$  Characteristics**



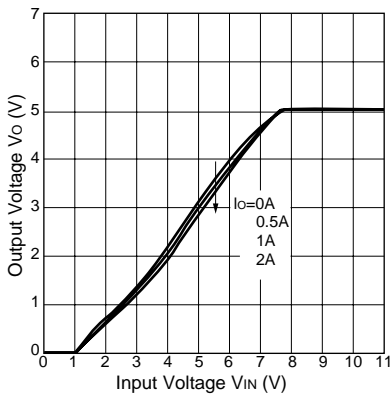
**Temperature Coefficient of Output Voltage(SI-3052P)**



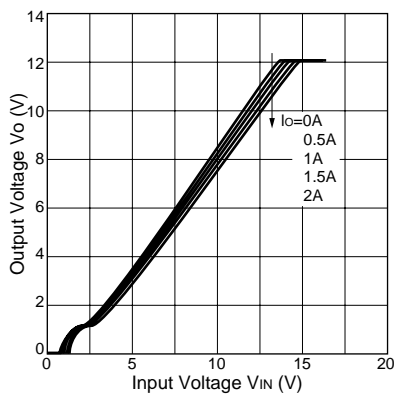
**Circuit Current(SI-3052P)**



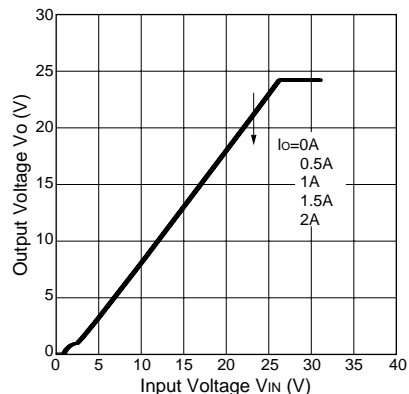
**Rise Characteristics(SI-3052P)**



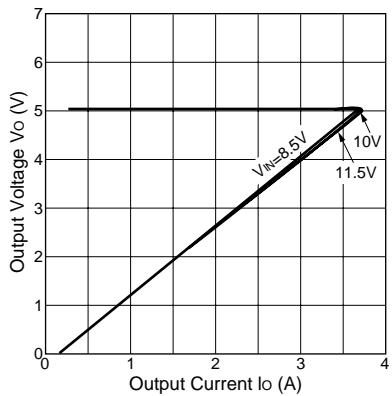
**Rise Characteristics(SI-3122P)**



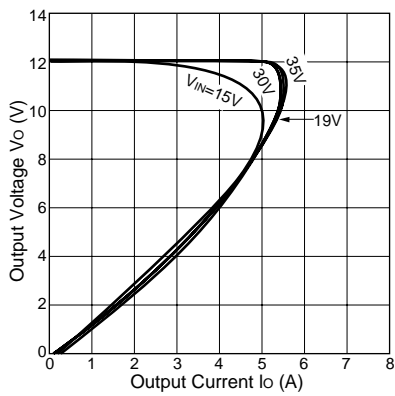
**Rise Characteristics(SI-3242P)**



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



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



**Overcurrent Protection Characteristics(SI-3242P)**

