# SI-3000N Series

3-Terminal, Full-Mold, Low Dropout Voltage Dropper Type

■Features

• Compact full-mold package (equivalent to TO220)
• Output current: 1.0A
• Low dropout voltage: $V_{DIF} \leq 1V$ (at I_O=1.0A)
• Built-in foldback overcurrent, overvoltage, thermal protection circuits

■Applications

• For stabilization of the secondary stage of switching power supplies
• Electronic equipment
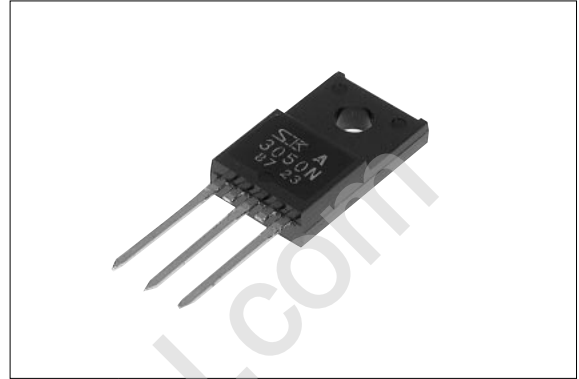
■Absolute Maximum Ratings

(T$_a$=25°C)

Parameter	Symbol	Ratings			Unit
		SI-3050N	SI-3090N/3120N	SI-3150N	
DC Input Voltage	V$_{IN}$	25	30	35	V
DC Output Current	I$_O$	1.0^{*2}			A
Power Dissipation	P$_{D1}$	14(With infinite heatsink)			W
	P$_{D2}$	1.5(Without heatsink, stand-alone operation)			W
Junction Temperature	T$_j$	−40 to +125			°C
Ambient Operating Temperature	T$_{op}$	−30 to +100			°C
Storage Temperature	T$_{stg}$	−40 to +125			°C
Thermal Resistance (junction to case)	R$_{th(j-c)}$	7.0			°C/W
Thermal Resistance (junction to ambient air)	R$_{th(j-a)}$	66.7(Without heatsink, stand-alone operation)			°C/W

■Electrical Characteristics

(Ta=25°C unless otherwise specified)

Parameter		Symbol	Ratings												Unit
			SI-3050N			SI-3090N			SI-3120N			SI-3150N			
			min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	
Input Voltage		VIN	6*3		15*2	10*3		20*2	13*3		25*2	16*3		27*2	V
Output Voltage	SI-3000N *1	VO	4.80	5.00	5.20	8.64	9.00	9.36	11.52	12.00	12.48	14.40	15.00	15.60	V
	SI-3000NA		4.90	5.00	5.10	8.82	9.00	9.18	11.76	12.00	12.24	14.70	15.00	15.30	
		Conditions	VIN=8V, Io=0.5A			VIN=12V, Io=0.5A			VIN=15V, Io=0.5A			VIN=18V, Io=0.5A			
Dropout Voltage		VDIF			0.5			0.5			0.5			0.5	V
		Conditions	Io≤0.5A												
					1.0			1.0			1.0			1.0	
		Conditions	Io≤1.0A												
Line Regulation		ΔVOLINE		10	30		18	48		24	64		30	90	mV
		Conditions	VIN=6 to 15V, Io=0.5A			VIN=10 to 20V, Io=0.5A			VIN=13 to 25V, Io=0.5A			VIN=16 to 27V, Io=0.5A			
Load Regulation		ΔVOLOAD		40	100		70	180		93	240		120	300	mV
		Conditions	VIN=8V, Io=0 to 1.0A			VIN=12V, Io=0 to 1.0A			VIN=15V, Io=0 to 1.0A			VIN=18V, Io=0 to 1.0A			
Temperature Coefficient of Output Voltage		ΔVO/ΔTa		±0.5			±1.0			±1.5			±1.5		mV/°C
		Conditions	VIN=8V, Io=5mA, Tj=0 to 100°C			VIN=12V, Io=5mA, Tj=0 to 100°C			VIN=15V, Io=5mA, Tj=0 to 100°C			VIN=18V, Io=5mA, Tj=0 to 100°C			
Ripple Rejection		RREJ		54			54			54			54		dB
		Conditions	VIN=8V, f=100 to 120Hz			VIN=12V, f=100 to 120Hz			VIN=15V, f=100 to 120Hz			VIN=18V, f=100 to 120Hz			
Quiescent Circuit Current		Iq		3	10		3	10		3	10		3	10	mA
		Conditions	VIN=8V, Io=0A			VIN=12V, Io=0A			VIN=15V, Io=0A			VIN=18V, Io=0A			
Overcurrent Protection Starting Current*4,5		IS1	1.2			1.2			1.2			1.2			A
		Conditions	VIN=8V			VIN=12V			VIN=15V			VIN=18V			

*1: "A" may be indicated to the right of the Sanken logo.

*2: $V_{IN(max)}$ and $I_{O(max)}$ are restricted by the relation $P_{D(max)}=(V_{IN}-V_O) \cdot I_O=14(W)$.

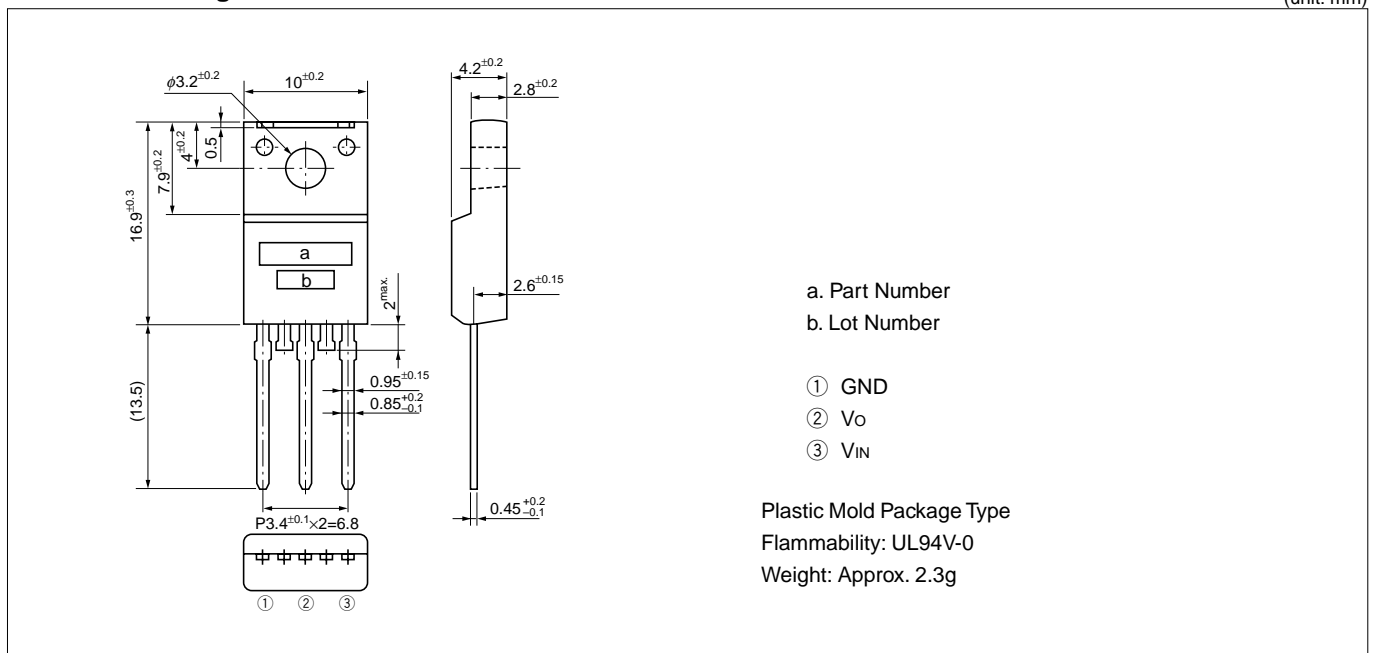*3: Refer to the dropout voltage.(Refer to Setting DC Input Voltage on page 7.)

*4: Is1 is specified at −5(%) drop point of output voltage Vo on the condition that VIN=Vo+3V, Io=0.5A.

*5: A foldback type overcurrent protection circuit is built into the IC regulator. Therefore, avoid using it for the following applications as it may cause starting errors:
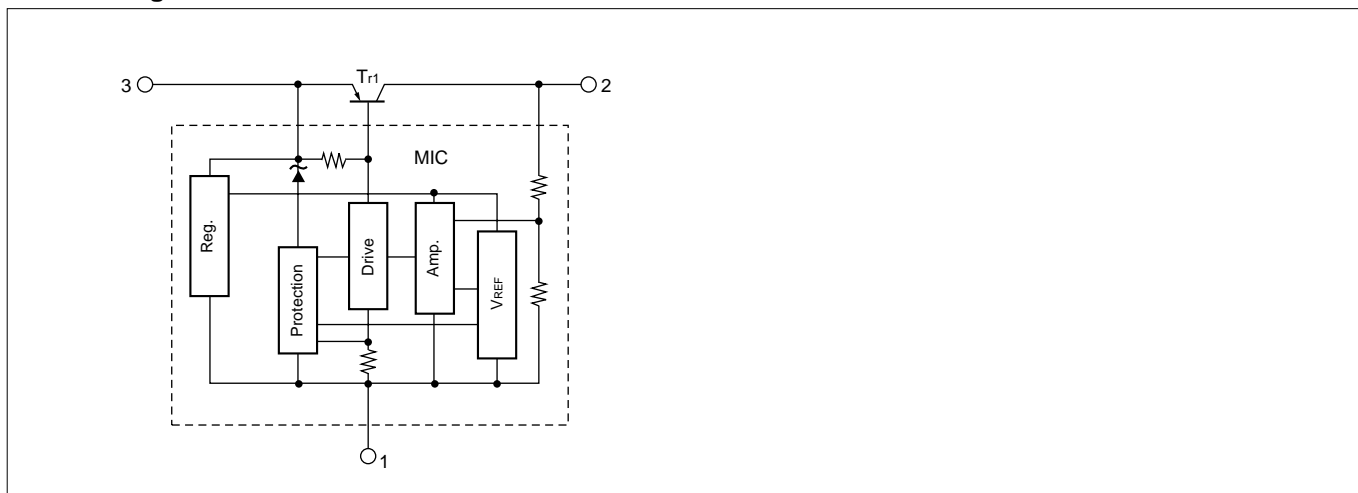(1) Constant current load (2) Plus/minus power (3) Series power (4) Vo adjustment by raising ground voltage
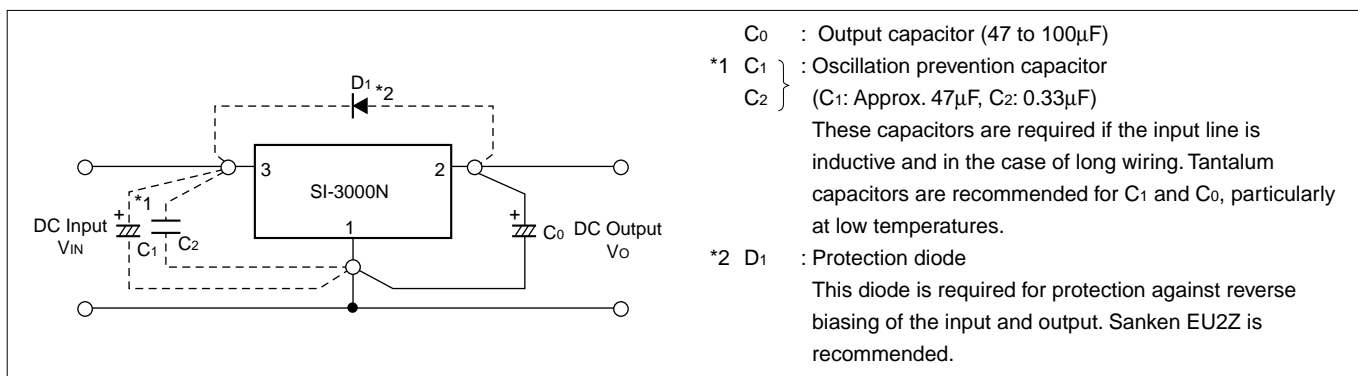
■Outline Drawing

(unit: mm)

a. Part Number
b. Lot Number

① GND
② VO
③ VIN

Plastic Mold Package Type
Flammability: UL94V-0
Weight: Approx. 2.3g

■**Block Diagram**

■**Standard External Circuit**

C_0 : Output capacitor (47 to 100μF)

*1 C_1 ⎱ : Oscillation prevention capacitor
   C_2 ⎰ (C_1: Approx. 47μF, C_2: 0.33μF)
   These capacitors are required if the input line is inductive and in the case of long wiring. Tantalum capacitors are recommended for C_1 and C_0, particularly at low temperatures.

*2 D_1 : Protection diode
   This diode is required for protection against reverse biasing of the input and output. Sanken EU2Z is recommended.

■**T$_a$-P$_D$ Characteristics**

$$P_D = I_O \bullet [V_{IN}(\text{mean}) - V_O]$$