

## SI-3000LUS Series

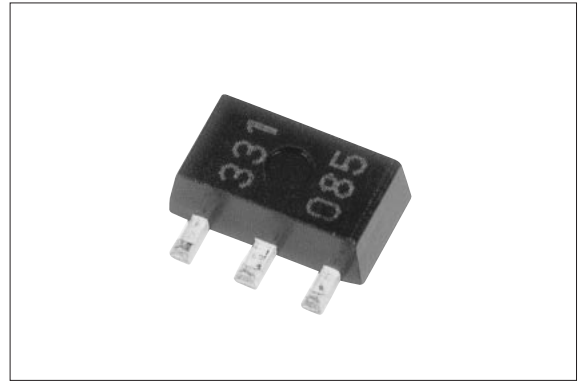
# Surface-Mount, Low Current Consumption, Low Dropout Voltage Dropper Type

### ■Features

- Compact surface-mount package (SOT-89-3)
- Output current: 250 mA
- Low dropout voltage:  $V_{DIF} \leq 0.5 \text{ V}$  (at  $I_o = 250 \text{ mA}$ )
- 4 types of output voltages (1.8 V, 2.5 V, 3.3 V, 5.0 V) available
- Built-in dropping type overcurrent, thermal protection circuits

### ■Applications

- Auxiliary power supply for PC
- Battery-driven electronic equipment



### ■Absolute Maximum Ratings

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

Parameter	Symbol	Ratings	Unit
DC Input Voltage	$V_{IN}$	18	V
DC Output Current	$I_o$	250	mA
Power Dissipation	$P_D^{*1}$	0.75	W
Junction Temperature	$T_j^{*2}$	-40 to +135	$^\circ\text{C}$
Storage Temperature	$T_{op}^{*2}$	-40 to +125	$^\circ\text{C}$
Thermal Resistance (Junction to Ambient Air)	$\theta_{j-a}^{*1}$	146	$^\circ\text{C/W}$

\*1: When mounted on glass-epoxy board  $40 \times 40 \text{ mm}$  (copper laminate area 2%)

\*2: Thermal protection circuits may operate if the junction temperature exceeds  $135^\circ\text{C}$

### ■Recommended Operating Conditions

Parameter	Symbol	Ratings		Unit
		min.	max.	
Input Voltage	$V_{IN}$	*2	$V_o+2^{*1}$	V
DC Output Current	$I_o$	0	250	mA
Ambient Operating Temperature	$T_{op}$	-20	85	$^\circ\text{C}$

\*1:  $V_{IN}(\text{max})$  and  $I_o(\text{max})$  are restricted by the relationship  $P_D = (V_{IN} - V_o) \times I_o$ .

Calculate these values referring to the reference data.

\*2: Refer to the dropout voltage section.

■Electrical Characteristics

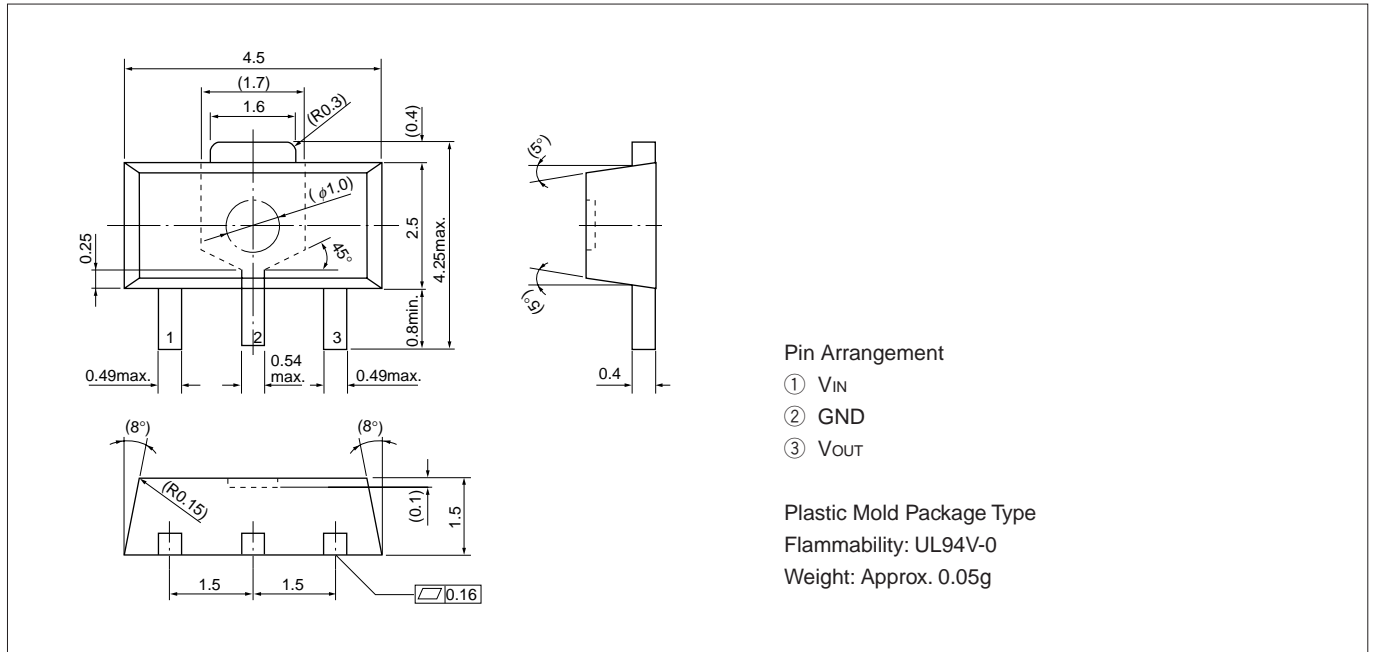
( $T_a=25^{\circ}\text{C}$ ,  $V_c=2\text{V}$  unless otherwise specified)

Parameter	Symbol	Ratings												Unit
		SI-3018LUS (Under development)			SI-3025LUS (Under development)			SI-3033LUS			SI-3050LUS (Under development)			
		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	
Output Voltage	$V_o$	1.764	1.800	1.836	2.450	2.500	2.550	3.234	3.300	3.366	4.900	5.000	5.100	V
	Conditions	$V_{IN}=3.3\text{V}$ , $I_o=10\text{mA}$			$V_{IN}=3.3\text{V}$ , $I_o=10\text{mA}$			$V_{IN}=5\text{V}$ , $I_o=10\text{mA}$			$V_{IN}=6\text{V}$ , $I_o=10\text{mA}$			
Dropout Voltage	$V_{DIF}$			0.3			0.3			0.3			0.3	V
	Conditions	$I_o=100\text{mA}$												
	Conditions			0.5			0.5			0.5			0.5	
Line Regulation	$\Delta V_{LINE}$			10			10			10			10	mV
	Conditions	$V_{IN}=3.3$ to $5\text{V}$ , $I_o=10\text{mA}$			$V_{IN}=3.3$ to $5\text{V}$ , $I_o=10\text{mA}$			$V_{IN}=4.5$ to $8\text{V}$ , $I_o=10\text{mA}$			$V_{IN}=6$ to $10\text{V}$ , $I_o=10\text{mA}$			
Load Regulation	$\Delta V_{LOAD}$			40			40			40			40	mV
	Conditions	$V_{IN}=3.3\text{V}$ , $I_o=0$ to $250\text{mA}$			$V_{IN}=3.3\text{V}$ , $I_o=0$ to $250\text{mA}$			$V_{IN}=5\text{V}$ , $I_o=0$ to $250\text{mA}$			$V_{IN}=6\text{V}$ , $I_o=0$ to $250\text{mA}$			
Temperature Coefficient of Output Voltage	$\Delta V_o/\Delta T_a$		$\pm 0.25$			$\pm 0.25$			$\pm 0.3$			$\pm 0.3$		mV/ $^{\circ}\text{C}$
	Conditions	$T_j=0$ to $100^{\circ}\text{C}$												
Ripple Rejection	$R_{REJ}$		55			55			55			55		dB
	Conditions	$V_{IN}=3.3\text{V}$ , $f=100$ to $120\text{Hz}$			$V_{IN}=3.3\text{V}$ , $f=100$ to $120\text{Hz}$			$V_{IN}=5\text{V}$ , $f=100$ to $120\text{Hz}$			$V_{IN}=6\text{V}$ , $f=100$ to $120\text{Hz}$			
Quiescent Circuit Current	$I_q$			250			250			250			250	$\mu\text{A}$
	Conditions	$V_{IN}=3.3\text{V}$ , $I_o=0\text{mA}$			$V_{IN}=3.3\text{V}$ , $I_o=0\text{mA}$			$V_{IN}=5\text{V}$ , $I_o=0\text{mA}$			$V_{IN}=6\text{V}$ , $I_o=0\text{mA}$			
Overcurrent Protection Starting Current <sup>*1</sup>	$I_{s1}$	260			260			260			260			mA
	Conditions	$V_{IN}=3.3\text{V}$			$V_{IN}=3.3\text{V}$			$V_{IN}=5\text{V}$			$V_{IN}=6\text{V}$			

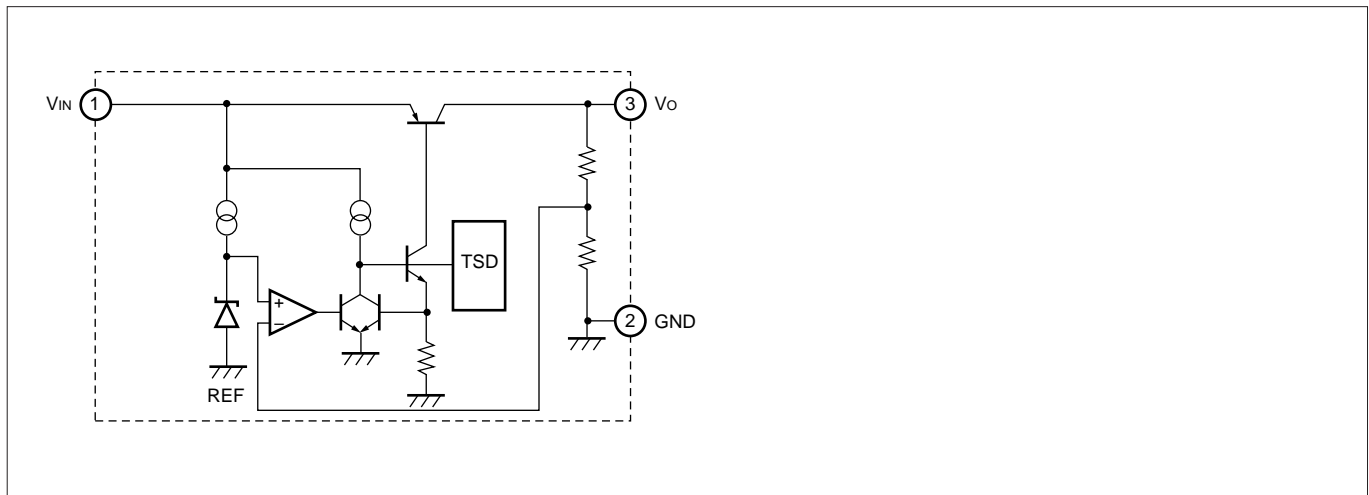
\*1:  $I_{s1}$  is specified as the 5% drop point of output voltage  $V_o$  on the condition that  $V_{IN}=3.3\text{V}$  (5 V for SI-3033LUS, 6 V for SI-3050LUS), and  $I_o=10\text{mA}$ .

■External Dimensions

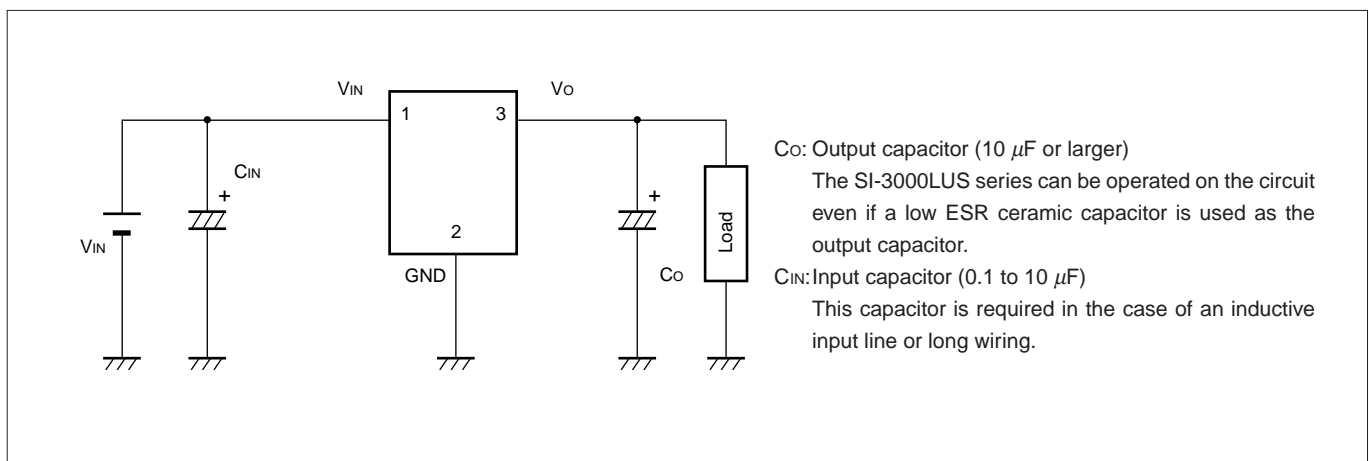
(Unit : mm)



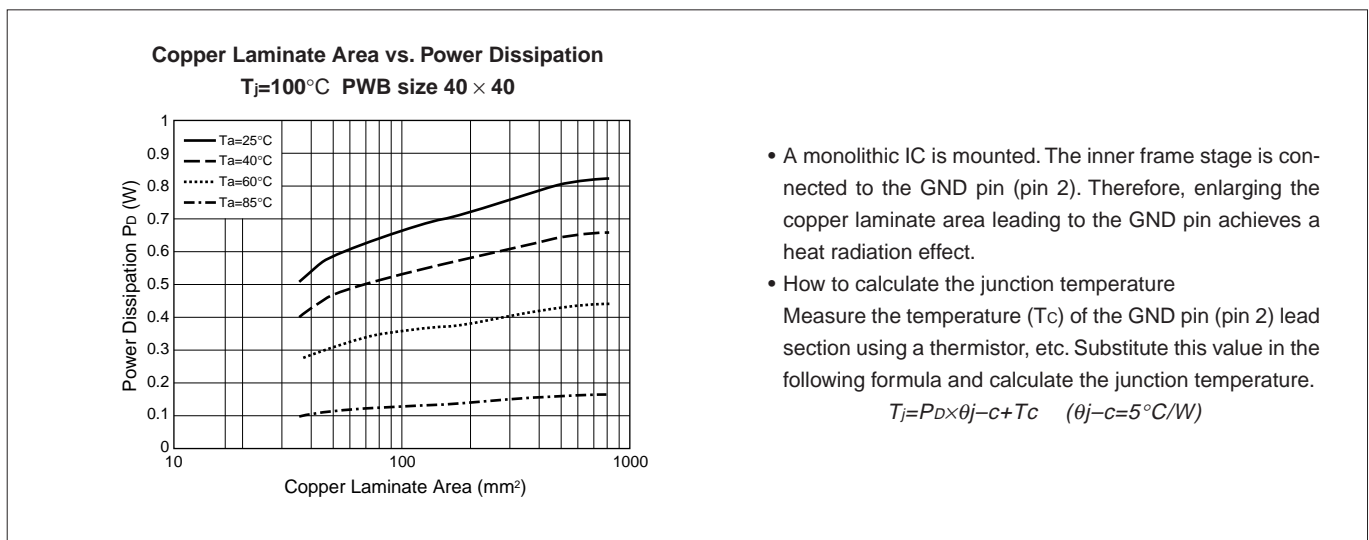
■Block Diagram



■Standard External Circuit



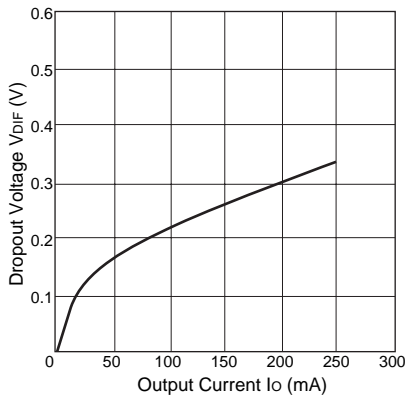
■Reference Data



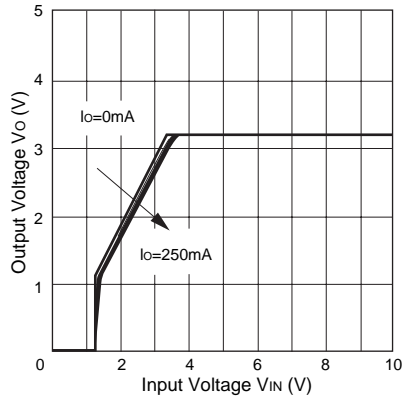
■Typical Characteristics of SI-3033LUS

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

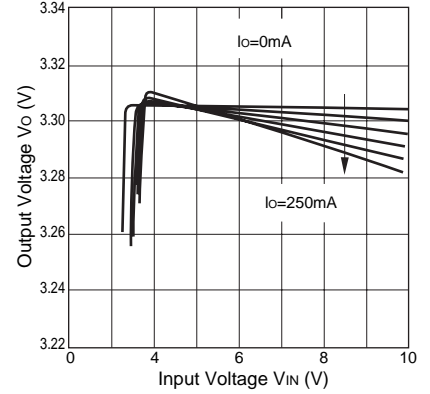
**$I_o$  vs.  $V_{DIF}$  Characteristics**



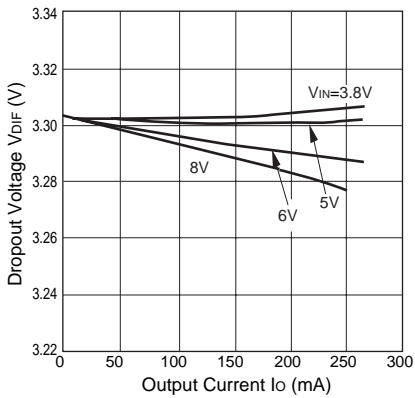
**Output Voltage Characteristics**



**Line Regulation**



**Load Regulation**



**Overcurrent Protection Characteristics**

