

SI-8000SD Series Surface Mount, Separate Excitation Step-down Switching Mode

Features

- Surface-mount package (TO263-5)
- Output current: 3.0A
- High efficiency: 79% typ. (SI-8033SD), 84% typ. (SI-8050SD)
- Requires only 4 discrete external components
- Internally-adjusted phase correction and output voltage
- Built-in reference oscillator (60kHz)
- Built-in overcurrent and thermal protection circuits
- Output ON/OFF available
- Soft start available by S.S pin

Applications

- Power supplies for telecommunication equipment
- Onboard local power supplies

Recommended Operating Conditions

Parameter	Symbol	Ratings		Unit
		SI-8033SD	SI-8050SD	
DC Input Voltage Range	V_{IN1}	5.5 to 28	7 to 40	V
Output Current Range*	I_o	0 to 3.0		A
Operating Junction Temperature Range	T_{jop}	-30 to +125		°C
Operating Temperature Range*	T_{op}	-30 to +125		°C

*: Limited by Ta-Pd characteristics.

Electrical Characteristics

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

Parameter	Symbol	Ratings						Unit	
		SI-8033SD			SI-8050SD				
		min.	typ.	max.	min.	typ.	max.		
Output Voltage	V_o	3.17	3.3	3.43	4.8	5.0	5.2	V	
	Conditions	$V_{IN}=15\text{V}, I_o=1\text{A}$			$V_{IN}=20\text{V}, I_o=1\text{A}$				
Efficiency	η	79			84			%	
	Conditions	$V_{IN}=15\text{V}, I_o=1\text{A}$			$V_{IN}=20\text{V}, I_o=1\text{A}$				
Oscillation Frequency	f	60			60			kHz	
	Conditions	$V_{IN}=15\text{V}, I_o=1\text{A}$			$V_{IN}=20\text{V}, I_o=1\text{A}$				
Line Regulation	ΔV_{OLINE}	25			40			mV	
	Conditions	$V_{IN}=8\text{ to }28\text{V}, I_o=1\text{A}$			$V_{IN}=10\text{ to }30\text{V}, I_o=1\text{A}$				
Load Regulation	ΔV_{OLOAD}	10			10			mV	
	Conditions	$V_{IN}=15\text{V}, I_o=0.5\text{ to }1.5\text{A}$			$V_{IN}=20\text{V}, I_o=0.5\text{ to }1.5\text{A}$				
Temperature Coefficient of Output Voltage	$\Delta V_o/\Delta T_a$	± 0.5			± 0.5			mV/°C	
Overcurrent Protection Starting Current	I_{s1}	3.1			3.1			A	
	Conditions	$V_{IN}=15\text{V}$			$V_{IN}=20\text{V}$				
Soft Start Pin*	Low-Level Voltage	V_{SSL}	0.2			0.2			V
	Outflow Current at Low Voltage	I_{SSL}	20	30	40	20	30	40	μA
		Conditions	$V_{SSL}=0.2\text{V}$						

* Pin 5 is a soft start pin. Soft start at power on can be performed with a capacitor connected to this pin.

The output can also be turned ON/OFF with this pin.

The output is stopped by setting the voltage of this pin to V_{SSL} or lower.

Soft-start pin voltage can be changed with an open-collector drive circuit of a transistor.

When using both the soft-start and ON/OFF functions together, the discharge current from C_3 flows into the ON/OFF control transistor. Therefore, limit the current securely to protect the transistor if C_3 capacitance is large.

The ON/OFF pin is pulled up to the power supply in the IC, so applying the external voltage is prohibited.

If this pin is not used, leave it open.

Lineup

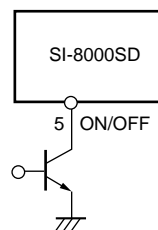
Part Number	SI-8033SD	SI-8050SD
V_o (V)	3.3	5.0
I_o (A)	3	

Absolute Maximum Ratings

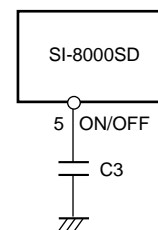
Parameter	Symbol	Ratings	Unit	Conditions
DC Input Voltage	V_{IN}	43*1	V	
Power Dissipation*2	P_D	3	W	When mounted on glass-epoxy board 40 x 40 mm (copper area: 100%)
Junction Temperature	T_j	+125	°C	
Storage Temperature	T_{stg}	-40 to +125	°C	
Thermal Resistance (Junction to Case)	θ_{j-c}	3	°C/W	
Thermal Resistance (Junction to Ambient Air)	θ_{j-a}	33.3	°C/W	When mounted on glass-epoxy board 40 x 40 mm (copper area: 100%)

*1: 35V for SI-8033SD

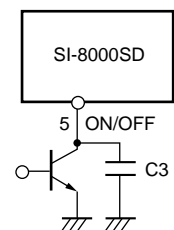
*2: Limited by thermal protection circuit.



V_{out} . ON/OFF



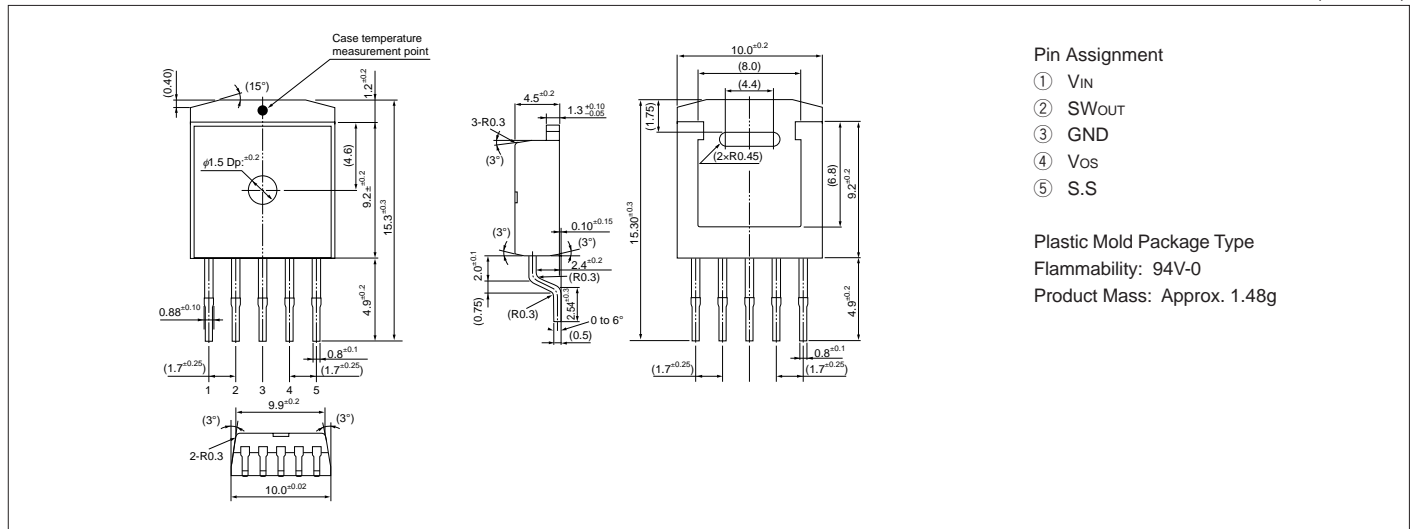
Soft start



Soft start + V_{out} . ON/OFF

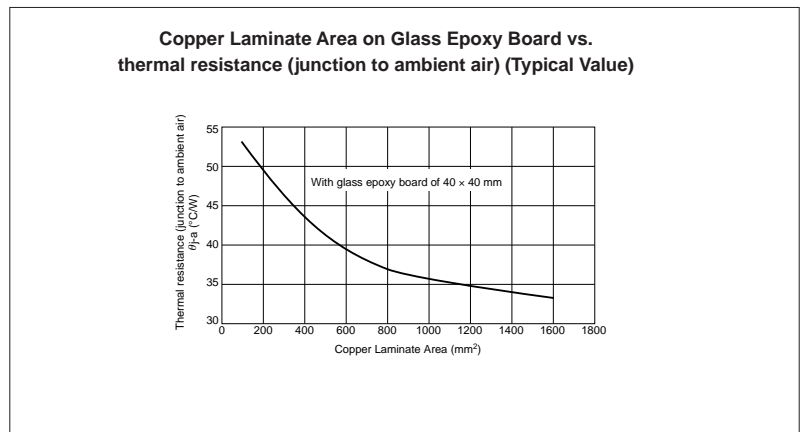
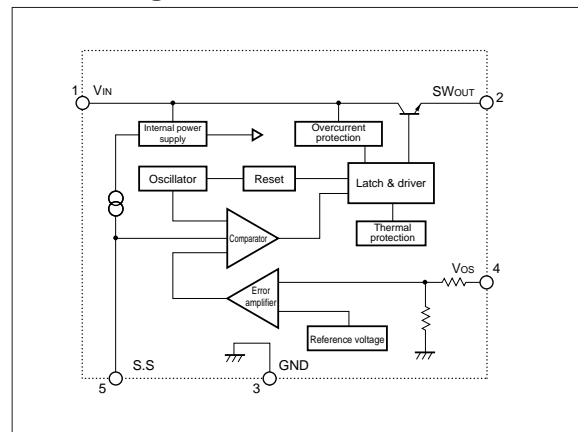
External Dimensions (TO263-5)

(Unit : mm)



Block Diagram

Reference Data



Typical Connection Diagram

