

SI-8000GL Series Compact, Separate Excitation Step-down Switching Mode

Features

- DIP 8 pin package
- Output current: 1.5A
- High efficiency: 86% (at $V_{IN} = 20V$, $I_o = 1A$, $V_o = 5V$)
- Capable of downsize a choke-coil due to IC's high switching frequency (250kHz). (Compared with conventional Sanken devices)
- The output-voltage-variable type can vary its output voltage from 1V to 14V because of its low reference voltage (V_{ref}) of 1V.
- Wide Input Voltage Range (8 to 50V)
- Output ON/OFF available
- Built-in overcurrent protection and thermal protection circuits

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
DC Input Voltage	V_{IN}	53	V
Power Dissipation	P_D^{*1}	1	W
Junction Temperature	T_j	+125	°C
Storage Temperature	T_{stg}	-40 to +125	°C
Thermal Resistance (junction to case)	θ_{j-c}	28	°C/W
Thermal Resistance (junction to ambient air)	θ_{j-a}	100	°C/W

*1: Limited by thermal protection.

Applications

- Onboard local power supplies
- OA equipment
- For stabilization of the secondary-side output voltage of switching power supplies

Recommended Operating Conditions

Parameter	Symbol	Ratings		Unit
		SI-8010GL		
DC Input Voltage Range	V_{IN}	(8 or V_o+3) ^{*1} to 50		V
Output Voltage Range	V_o	1 to 14		V
Output Current Range ^{*2}	I_o	0.02 to 1.5 ^{*2}		A
Operating Junction Temperature Range	T_{jop}	-30 to +125		°C
Operating Temperature Range	T_{op}	-30 to +125		°C

*1: The minimum value of an input voltage range is the higher of either 8V or V_o+3V .

*2: Please be sure to let the output current run more than 20 mA. When using by less than 20 mA, there is a possibility that the output voltage becomes unstable.

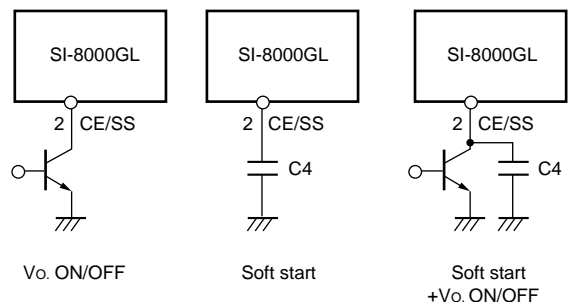
Electrical Characteristics

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

Parameter	Symbol	Ratings			Unit
		SI-8010GL (Variable type)			
		min.	typ.	max.	
Reference Voltage	V_{REF}	0.97	1.00	1.03	V
	Conditions	$V_{IN}=12V, I_o=1A$			
Efficiency	Eff	86			%
	Conditions	$V_{IN}=20V, I_o=1A, V_o=5V$			
Oscillation Frequency	F_{OSC}	250			kHz
	Conditions	$V_{IN}=12V, I_o=1A$			
Line Regulation	ΔV_{OLINE}	20			mV
	Conditions	$V_{IN}=10$ to $30V, I_o=1A$			
Load Regulation	ΔV_{OLOAD}	10			mV
	Conditions	$V_{IN}=12V, I_o=0.1$ to $1.5A$			
Temperature Coefficient of Reference Voltage	$\Delta V_{REF}/\Delta T_a$	± 0.5			mV/°C
Overcurrent Protection Starting Current	I_s	1.6			A
	Conditions	$V_{IN}=12V$			
Quiescent Circuit Current	I_q	7			mA
	Conditions	$V_{IN}=12V, I_o=0A$			
Circuit Current at Output OFF	$I_{q(OFF)}$	400			μA
	Conditions	$V_{IN}=12V, V_{ON/OFF}=0.3V$			
CE/SS* Terminal	Low Level Voltage	V_{SSL}	0.5		V
	Terminal Outflow Current at Low Voltage	I_{SSL}	50		μA
		Conditions	$V_{SSL}=0V$		

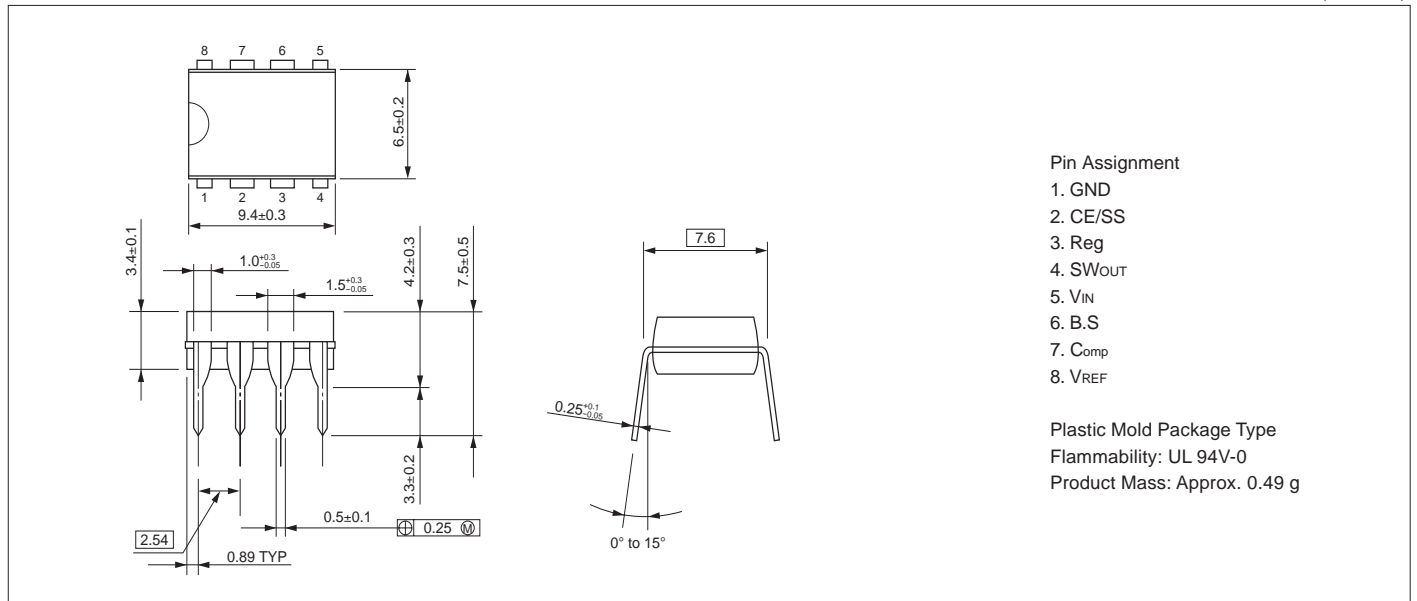
*: Pin 2 is the CE/SS pin. Soft start at power on can be performed with a capacitor connected to this pin. The output can also be turned ON/OFF with this pin. The output is stopped by setting the voltage of this pin to V_{SSL} or lower. CE/SS-pin voltage can be changed with an open-collector drive circuit of a transistor.

When using both the soft-start and ON/OFF functions together, the discharge current from C_4 flows into the ON/OFF control transistor. Therefore, limit the current securely to protect the transistor if C_3 capacitance is large. The CE/SS pin is pulled up to the power supply in the IC, so applying the external voltage is prohibited.

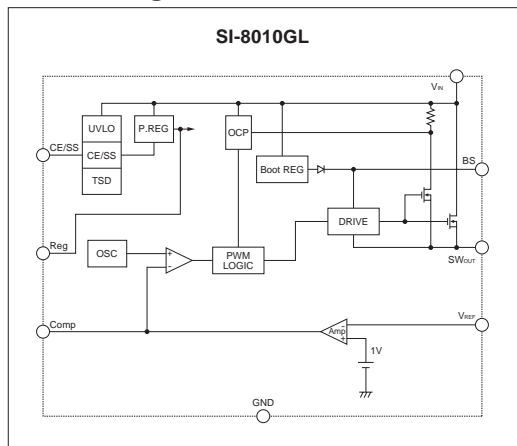


External Dimensions (DIP8)

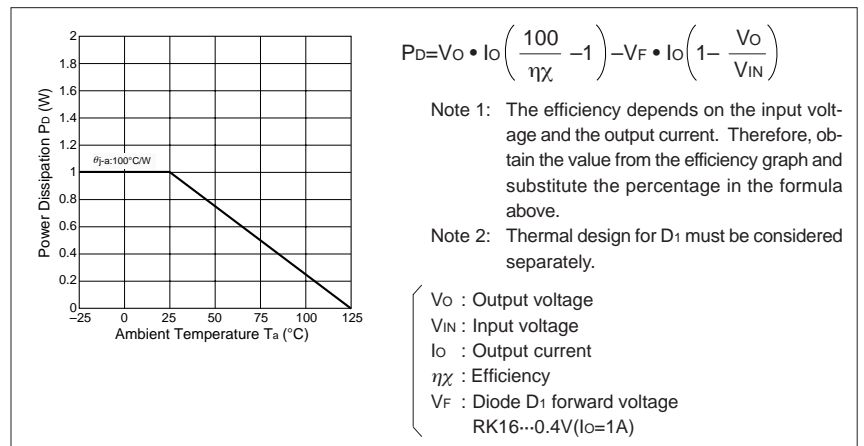
(Unit: mm)



Block Diagram



T_a-P_d Characteristics



Typical Connection Diagram

