

SI-8100QL Series Current Mode Control Step-down Switching Mode

■Features

- DIP8 package
- Introduction of current mode control method
- Output current: 3.5A
- High efficiency: 90% (Vo=5V)
- Built-in reference oscillator (350kHz)
- Built-in drooping-type overcurrent and thermal protection circuits
- Built-in soft start circuit
- Built-in on/off function (Active Hi)
- Low current consumption during off

■Applications

- DVD recorder, FPD-TV
- Onboard local power supplies
- OA equipment

■Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit	Conditions
Input Voltage	V _{IN}	30	V	
Power Dissipation ^{*1}	P _D	1.56	W	When mounted on glass-epoxy board measuring 70x60 mm (copper laminate area: 1310 mm ²)
Junction Temperature ^{*2}	T _j	-30 to +150	°C	
Storage Temperature	T _{stg}	-40 to +150	°C	
Thermal Resistance (Junction to Case)	θ _{j-c}	25	°C/W	
Thermal Resistance (Junction to Ambient Air)	θ _{j-a}	64	°C/W	When mounted on glass-epoxy board measuring 70x60 mm (copper laminate area: 1310 mm ²)

*1: Limited by thermal protection circuit

*2: Note that the detect temperature for thermal protection is about 140°C.

■Recommended Operating Conditions

Parameter	Symbol	Ratings		Unit	Conditions
		SI-8105QL			
Input Voltage Range	V _{IN}	Vo+3 ^{*1} to 28		V	
Output Voltage Range	Vo	0.5 to 24		V	
Output Current Range	I _o	0 to 3.5		A	
Operating Junction Temperature Range	T _{jop}	-30 to +125		°C	
Operating Temperature Range	Top	-30 to +85		°C	

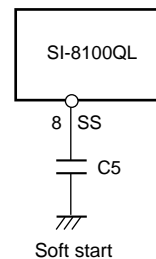
*1: The minimum value of the input voltage range is 4.75 V or Vo +3 V, whichever is higher.

■Electrical Characteristics

(When Ta=25°C and Vo=5V)

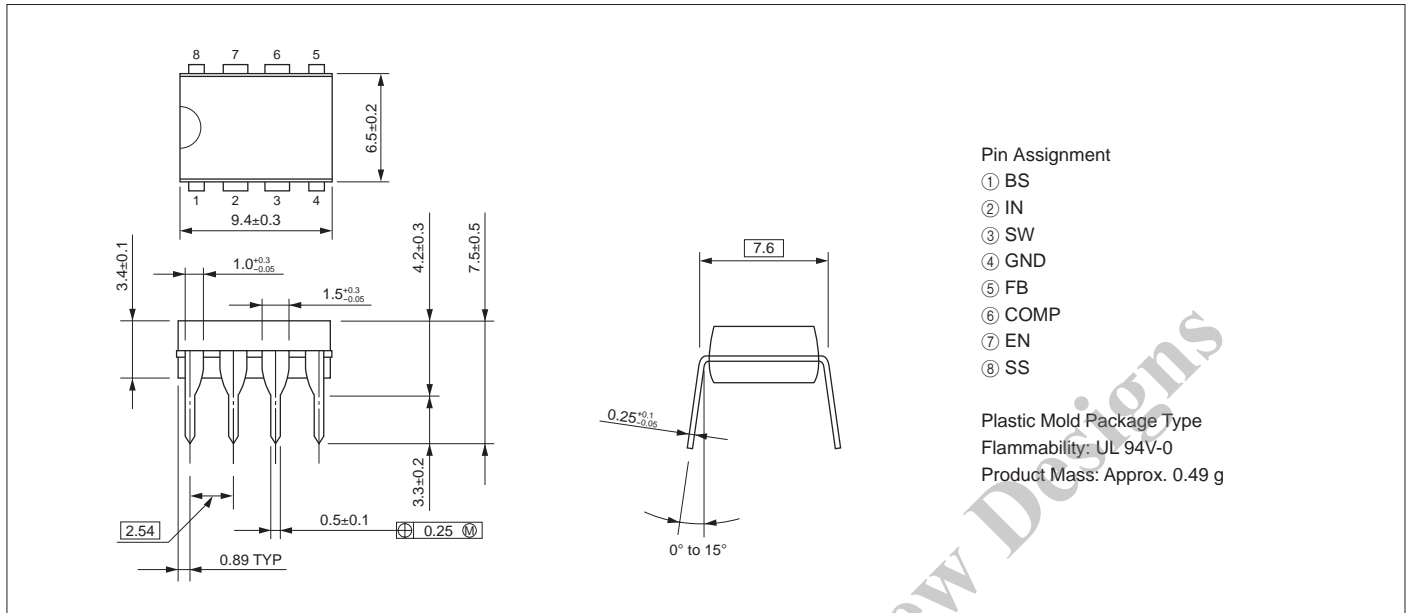
Parameter	Symbol	Ratings			Unit
		SI-8105QL			
		min.	typ.	max.	
Reference Voltage	V _{ADJ}	0.485	0.500	0.515	V
	Conditions	V _{IN} =12V, I _o =1A			
Temperature Coefficient of Reference Voltage	(ΔV _{ADJ} /ΔT)		0.05		mV/°C
	Conditions	V _{IN} =12V, I _o =1A, Ta=-40 to +85°C			
Efficiency	η		90		%
	Conditions	V _{IN} =12V, I _o =1A			
Oscillation Frequency	f _o	315	350	385	kHz
	Conditions	V _{IN} =16V, I _o =1A			
Line Regulation	ΔV _{OLINE}		30	60	mV
	Conditions	V _{IN} =8 to 28V, I _o =1A			
Load Regulation	ΔV _{OLOAD}		30	60	mV
	Conditions	V _{IN} =12V, I _o =0.1 to 3.5A			
Overcurrent Protection Starting Current	I _s	3.6		6.0	A
	Conditions	V _{IN} =12V			
Quiescent Circuit Current	I _q		18		mA
	Conditions	V _{IN} =12V, I _o =0A, V _{EN} =open			
	I _{q(OFF)}			20	μA
Conditions	V _{IN} =12V, I _o =0A, V _{EN} =0V				
SS Pin	Outflow Current at Low Voltage	I _{SSL}	5		μA
		Conditions	V _{IN} =12V, V _{SSL} =0V		
EN Pin	High Level Voltage	V _{CEH}	2.8		V
		Conditions	V _{IN} =12V		
	Low Level Voltage	V _{CEL}			2.2
Inflow Current at Low Voltage	I _{CEH}		5		μA
		Conditions	V _{EN} =0V		
Error Amplifier Voltage Gain	AEA		1000		V/V
Error Amplifier Transformer Conductance	GEA		800		μA/V
Current Sense Amplifier Impedance	1/GCS		0.35		V/A
Maximum ON Duty	D _{MAX}		92		%
Minimum ON Time	D _{MIN}		100		nsec.

*: Pin 8 is the SS pin. Soft start at power on can be performed with a capacitor connected to this pin. The SS pin is pulled up to the power supply in the IC, so applying the external voltage is prohibited.

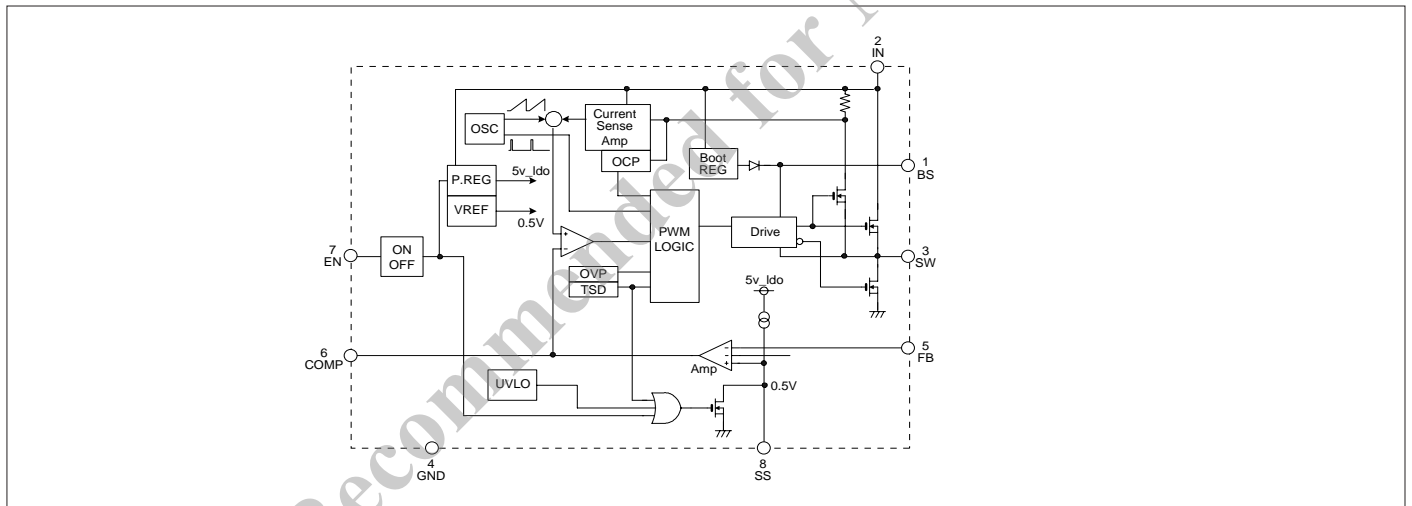


External Dimensions (DIP8)

(Unit : mm)



Block Diagram



Typical Connection Diagram

