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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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# SI-8000Q Series Surface Mount, Current Mode Control Step-down Switching Mode

## ■ Features

- Compact surface-mount package (HSOP8)
- Introduction of current mode control method
- Output current: 3.5A
- High efficiency: 90% (Vo = 5 V)
- Built-in reference oscillator (500 kHz)
- A ceramic capacitor can be used for output
- Built-in drooping-type over current and thermal protection circuits
- Built-in soft start circuit
- Built-in on/off function (Active Hi)
- Low current consumption during off

## ■ Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit	Conditions
Input Voltage	V <sub>IN</sub>	30	V	
Power Dissipation*1	PD	1.35	W	When mounted on glass-epoxy board, 30×30 mm (copper laminate area : 25×25 mm)
Junction Temperature*2	T <sub>J</sub>	-30 to +1 50	°C	
Storage Temperature	T <sub>stg</sub>	-40 to +1 50	°C	
Thermal Resistance (junction to case)	θ <sub>J-C</sub>	40	°C/W	
Thermal Resistance (junction to ambient air)	θ <sub>J-A</sub>	74	°C/W	When mounted on glass epoxy board, 30×30mm (copper laminate area : 25×25 mm)

\*1 : Limited by thermal protection circuit

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

## ■ Applications

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

## ■ Recommended Operating Conditions

Parameter	Symbol	Ratings	Unit	Conditions
		SI-8005Q		
DC Input Voltage Range	V <sub>IN</sub>	Vo+3*1 to 28	V	
Output Voltage Range	V <sub>O</sub>	0.5 to 24	V	
Output Current Range	I <sub>O</sub>	0to3.5	A	
Operating Junction Temperature Range	T <sub>OP</sub>	-30 to +125	°C	
Operating Temperature Range	T <sub>OP</sub>	-30 to +85	°C	

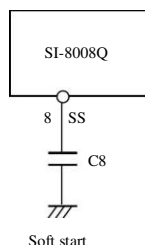
\*1 : The minimum value of the input voltage range is 4.75 V or Vo +3 V, whichever is higher.

## ■ Electrical Characteristics

(R1=46kΩ, R2=5.1kΩ when Ta = 25°C and Vo=5V)

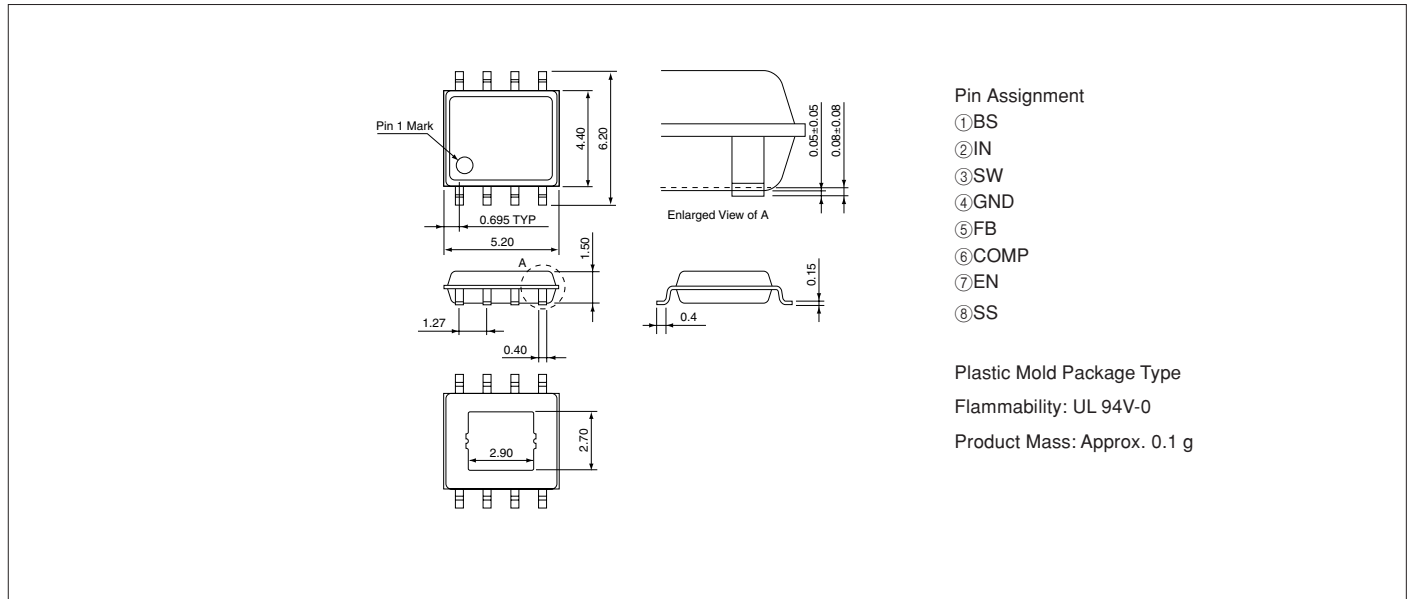
Parameter	Symbol	Rating			Unit
		SI-8005Q			
		min.	typ.	max.	
Reference Voltage	V <sub>ADJ</sub>	0.485	0.500	0.515	V
Conditions	V <sub>IN</sub> =12V, I <sub>O</sub> =1A				
Temperature Coefficient of Reference Voltage	ΔV <sub>ADJ</sub> /ΔT		0.05		mV/°C
Conditions	V <sub>IN</sub> =12V, I <sub>O</sub> =1 A, Ta=-40 to +85°C				
Efficiency	η		90		%
Conditions	V <sub>IN</sub> =12V, I <sub>O</sub> =1A				
Oscillation Frequency	f <sub>o</sub>	450	500	550	kHz
Conditions	V <sub>IN</sub> =16V, I <sub>O</sub> =1A				
Line Regulation	ΔV <sub>OLNE</sub>		30	60	mV
Conditions	V <sub>IN</sub> =8 to 28V, I <sub>O</sub> =1 A				
Load Regulation	ΔV <sub>OLAD</sub>		30	60	mV
Conditions	V <sub>IN</sub> =12V, I <sub>O</sub> =0.1 to 3.5A				
Over current Protection Starting Current	I <sub>S</sub>	3.6		6.0	A
Conditions	V <sub>IN</sub> =12V				
Quiescent Circuit Current	I <sub>q</sub>		18		mA
	Conditions	V <sub>IN</sub> =12V, I <sub>O</sub> =0A, V <sub>EN</sub> =open			
	I <sub>q(OFF)</sub>			20	μA
Conditions	V <sub>IN</sub> =12V, I <sub>O</sub> =0A, V <sub>EN</sub> =0V				
SS Pin	Outflow Current at Low Voltage	I <sub>SSL</sub>	5		μA
Conditions	V <sub>IN</sub> =1 6V, V <sub>SSL</sub> =0V				
EN Pin	High Level Voltage	V <sub>C/N</sub>	2.8		V
	Conditions	V <sub>IN</sub> =12V			
	Low Level Voltage	V <sub>C/L</sub>		2.2	V
Conditions	V <sub>IN</sub> =12V				
Inflow Current at Low Low Voltage	I <sub>C.E.H</sub>		5		μA
	Conditions	V <sub>EN</sub> =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 <sub>MAX</sub>		92		%
Minimum ON Time	D <sub>MIN</sub>		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.

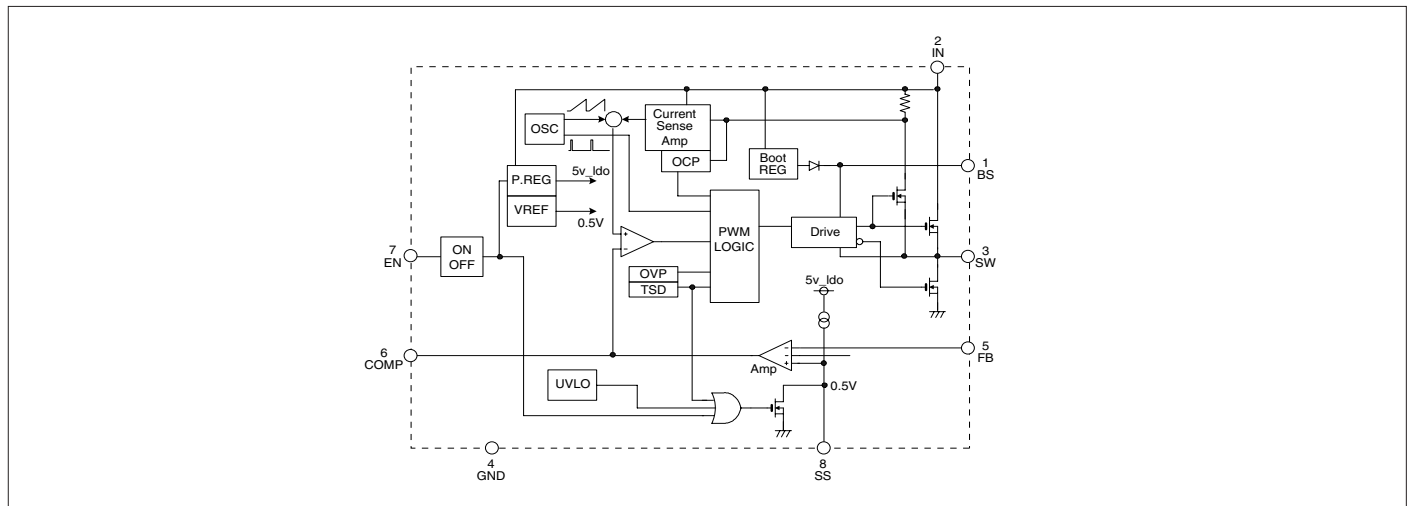


External Dimensions (HSOP8)

(Unit : mm)



Block Diagram



Typical Connection Diagram

