

SPI-8000A Series**Surface Mount, Separate Excitation Step-down Switching Mode****■Features**

- Surface-mount 16 pin package
- Output current: 3.0A
- High efficiency: 91% (at $V_{IN} = 10V$, $I_O = 1A$, $V_O = 5V$)
- Capable of downsizing a choke-coil due to IC's high switching frequency (125kHz). (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 and thermal protection circuits

■Absolute Maximum Ratings(T_a=25°C)

Parameter	Symbol	Ratings	Unit
DC Input Voltage	V_{IN}	53	V
Power Dissipation	$P_D^{*1, *2}$	2.4	W
Junction Temperature	T_j	+125	°C
Storage Temperature	T_{stg}	-40 to +125	°C
Thermal Resistance (junction to case)	θ_{jc}^{*2}	18	°C/W
Thermal Resistance (junction to ambient air)	θ_{ja}^{*2}	50	°C/W

*1: Limited due to thermal protection.

*2: When mounted on glass-epoxy board 700cm² (copper laminate area 30.8cm²).**■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
		SPI-8010A	
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 3.0 ^{*2}	A
Operating Junction Temperature Range	T_{jop}	-30 to +125	°C
Operating Temperature Range	T_{op}	-30 to +125	°C

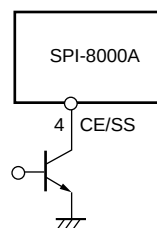
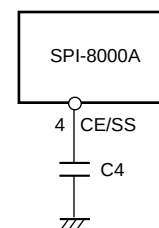
*1: The minimum value of an input voltage range is the higher of either 8V or V_O+3V .

*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.

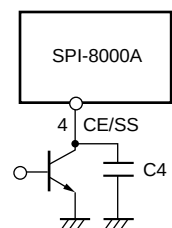
■Electrical Characteristics(T_a=25°C)

Parameter		Symbol	Rating			Unit
			SPI-8010A (Variable type)			
			min.	typ.	max.	
Reference Voltage		VREF	0.97	1.00	1.03	V
		Conditions	VIN=12V, IO=1A			
Efficiency		Eff		86		%
		Conditions	VIN=20V, IO=1A, VO=5V			
Oscillation Frequency		FOSC		250		kHz
		Conditions	VIN=12V, IO=1A			
Line Regulation		ΔVOLUME		20	40	mV
		Conditions	VIN=10 to 30V, IO=1A			
Load Regulation		ΔVLOAD		10	30	mV
		Conditions	VIN=12V, IO=0.1 to 1.5A			
Temperature Coefficient of Reference Voltage		ΔVREF/ΔTa		±0.5		mV/°C
Overcurrent Protection Starting Current		IS	3.1			A
		Conditions	VIN=12V			
Quiescent Circuit Current		Iq		7		mA
		Conditions	VIN=12V, IO=0A			
Circuit Current at Output OFF		Iq(off)			400	μA
		Conditions	VIN=12V, VON/OFF=0.3V			
CE/SS Terminal	Low Level Voltage	VSSL			0.5	V
	Outflow Current at Low Voltage	ISSL			50	μA
		Conditions	VSSL=0V			

* Pin 4 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 C₄ flows into the ON/OFF control transistor. Therefore, limit the current securely to protect the transistor if C₃ capacitance is large. The CE/SS pin is pulled up to the power supply in the IC, so applying the external voltage is prohibited.

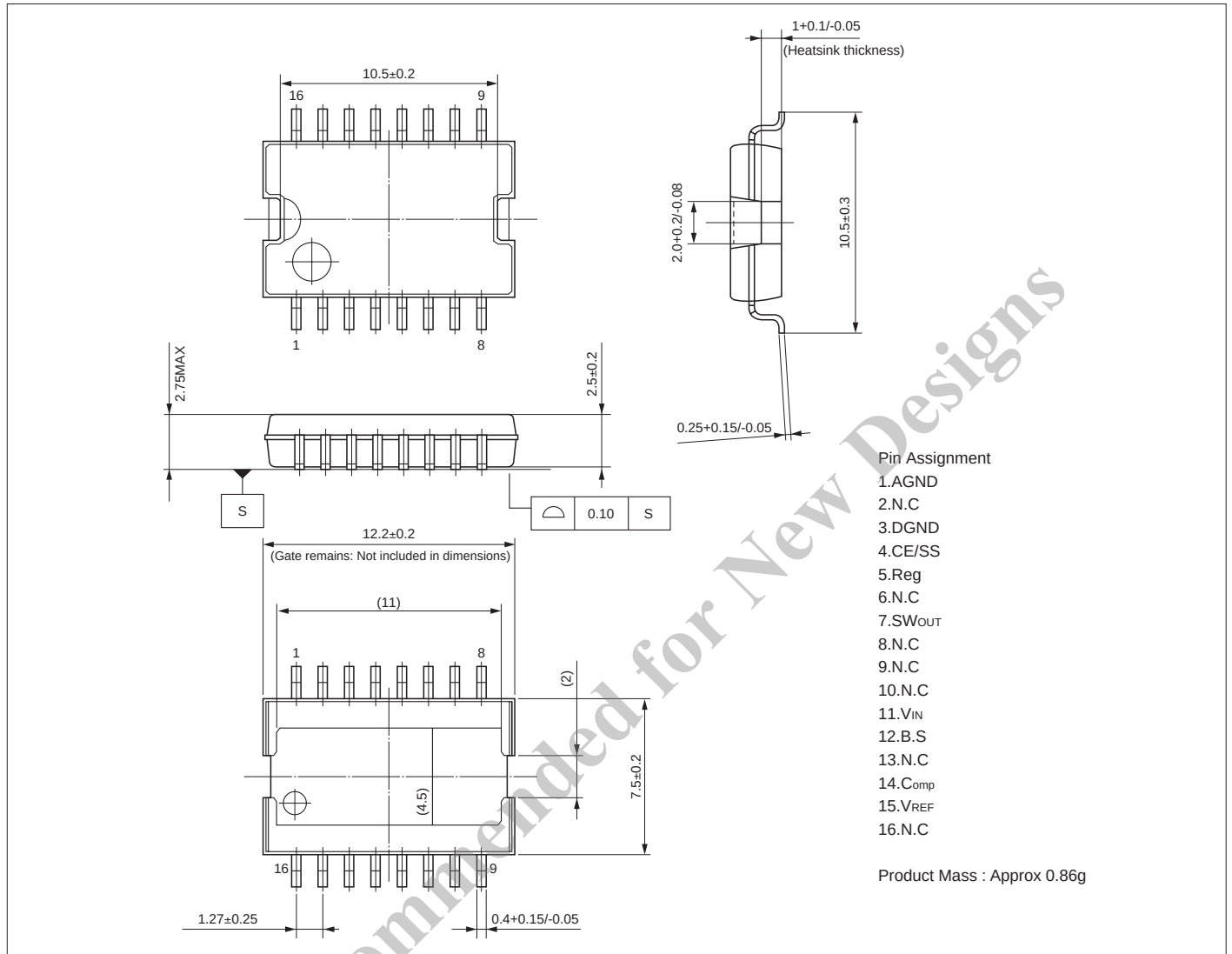
V_O ON/OFF

Soft start

Soft start
+V_O ON/OFF

External Dimensions (HSOP16)

(Unit : mm)



Block Diagram

