THE DATASHEET OF

SI-8008TM

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

■Features

- Compact surface-mount package (TO252-5)
- Output current: 1.5 A
- High efficiency: 81% typ. (at Vo = 5 V)
- Requires only 4 discrete components
- Built-in reference oscillator (300 kHz)
- Built-in drooping-type-overcurrent and thermal protection circuits
- Output ON/OFF available (circuit current at output OFF: 200 μA typ.)
- Soft start available by ON/OFF pin

■Applications

- Onboard local power supplies
- AV equipment
- OA equipment

■Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit	Conditions
DC Input Voltage	V_{IN}	43	V	
Power Dissipation	P_{D1}	1.06	W	When mounted on glass-epoxy board (900 mm² copper area 4.3%)
	P_{D2}	1.65		When mounted on glass-epoxy board (900 mm² copper area 50%)
Junction Temperature*	T_j	–30 to +150	°C	
Storage Temperature	T_{stg}	–40 to +150	°C	
Thermal Resistance (Junction to Case)	$\theta_{j\text{-}c}$	6	°C/W	
Thermal Resistance (Junction to Ambient Air)	$\theta_{j\text{-}a}$	95	°C/W	When mounted on glass-epoxy board (900 mm² copper area 4.3%)

*: This product has built-in thermal protection circuits that may operate when the junction temperature rises above 130°C.
The recommended design for the junction temperature during operation is below 125°C.

■Recommended Operating Conditions

Parameter	Symbol	Ratings	Unit
		SI-8008TM	
Input Voltage Range	V_{IN}	V_O+3*1 to 40	V
Output Voltage	V_O	0.8 to 24	V
Output Current Range	I_O	0 to 1.5	A
Operating Junction Temperature Range	T_{jop}	–20 to +100	°C
Operating Temperature Range	T_{op}	–20 to +85	°C

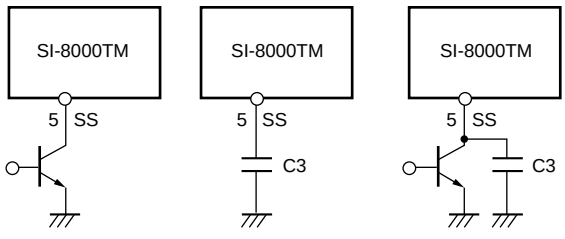
*1: The minimum value of an input voltage range is the higher of 4.5 V or V_O + 3 V.

■Electrical Characteristics

(T_a=25°C)

Parameter		Symbol	Rating SI-8008TM min.	typ.	max.	Unit
Reference Voltage		V_{ADJ}	0.784	0.800	0.816	V
		Conditions	V_{IN}=15V, I_O=0.1A			
Temperature Coefficient of Reference Voltage		$\Delta V_{ADJ}/\Delta T$		±0.1		mV/°C
		Conditions	V_{IN}=15V, I_O=0.1A, T_C=0 to 100°C			
Efficiency		η		81		%
		Conditions	V_{IN}=15V, I_O=0.5A			
Oscillation Frequency		fo		300		kHz
		Conditions	V_{IN}=15V, I_O=0.5A			
Line Regulation		ΔV_{OLINE}		60	80	mV
		Conditions	V_{IN}=10 to 30V, I_O=0.5A			
Load Regulation		ΔV_{OLOAD}		10	40	mV
		Conditions	V_{IN}=15V, I_O=0.2 to 1.5A			
Overcurrent Protection Starting Current		I_S	1.6			A
		Conditions	V_{IN}=15V			
ON/OFF Pin*	Low Level Voltage	V_{SSL}			0.5	V
	Outflow Current at Low Voltage	I_{SSL}		10	40	μA
		Conditions	V_{SSL}=0V			
Quiescent Circuit Current		I_q		6		mA
		Conditions	V_{IN}=15V, I_O=0A			
		$I_{q\ (OFF)}$		200	400	μA
		Conditions	V_{IN}=15V, V_{SS}=0V			

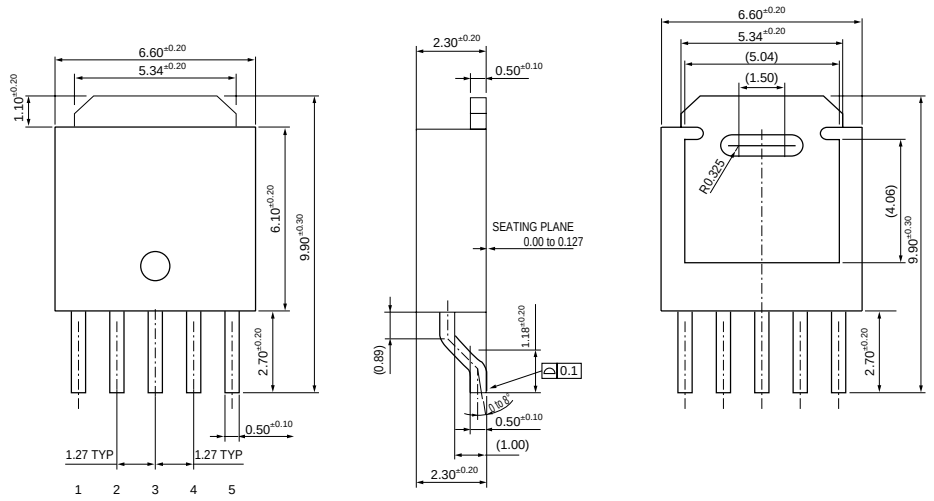
*: Pin 5 is the SS pin. Soft start at power on can be performed with a capacitor connected to this pin. The output can also be turned ON/OFF with this pin.
The output is stopped by setting the voltage of this pin to VSSL or lower. SS-pin voltage can be changed with an open-collector drive circuit of a transistor. When using both the soft-start and ON/OFF functions together, the discharge current from C3 flows into the ON/OFF control transistor. Therefore, limit the current securely to protect the transistor if C3 capacitance is large. The SS pin is pulled up to the power supply in the IC, so applying the external voltage is prohibited. If the pin is not used, leave it open.



V_O. ON/OFF | Soft start | Soft start +V_O. ON/OFF

■External Dimensions (TO252-5)

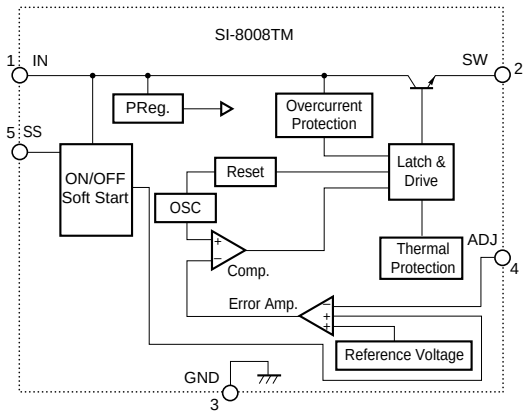
(Unit : mm)



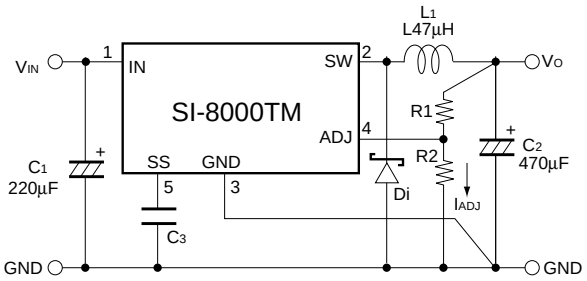
Pin Assignment
① IN
② SW
③ GND
④ ADJ
⑤ SS

Plastic Mold Package Type
Flammability: UL94V-0
Product Mass: Approx. 0.33 g

■Block Diagram



■Typical Connection Diagram



C_1 : 220μF
C_2 : 470μF
C_3 : 1μF (Only when using soft-start function)
L_1 : 47μF
Di : SJPB-H6 (Sanken)

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