

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 $V_o = 5\text{ V}$)
- 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

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		$^{\circ}\text{C}$
Operating Temperature Range	T_{op}	-20 to +85		$^{\circ}\text{C}$

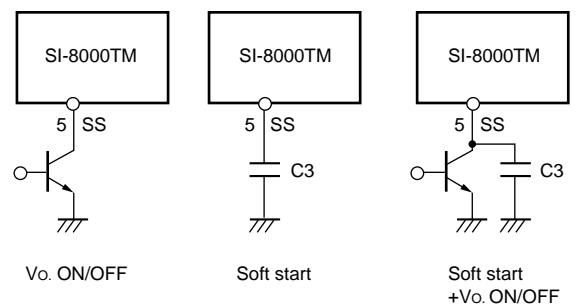
*1: The minimum value of an input voltage range is the higher of 4.5 V or $V_o + 3\text{ V}$.

Electrical Characteristics

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

Parameter	Symbol	Rating			Unit
		SI-8008TM			
		min.	typ.	max.	
Reference Voltage	V_{ADJ}	0.784	0.800	0.816	V
Temperature Coefficient of Reference Voltage	$\Delta V_{ADJ}/\Delta T$	Conditions			
		$V_{IN}=15\text{ V}, I_o=0.1\text{ A}$			
Efficiency	η	Conditions			
		$V_{IN}=15\text{ V}, I_o=0.5\text{ A}$			
Oscillation Frequency	f_o	Conditions			
		$V_{IN}=15\text{ V}, I_o=0.5\text{ A}$			
Line Regulation	ΔV_{OLINE}	Conditions			
		$V_{IN}=10\text{ to }30\text{ V}, I_o=0.5\text{ A}$			
Load Regulation	ΔV_{OLOAD}	Conditions			
		$V_{IN}=15\text{ V}, I_o=0.2\text{ to }1.5\text{ A}$			
Overcurrent Protection Starting Current	I_s	Conditions			
		$V_{IN}=15\text{ V}$			
ON/OFF Pin*	Low Level Voltage	V_{SSL}		0.5	V
	Outflow Current at Low Voltage	I_{SSL}	10	40	$\approx\text{A}$
Quiescent Circuit Current	I_q	Conditions			
		$V_{IN}=15\text{ V}, I_o=0\text{ A}$			
		$V_{IN}=15\text{ V}, V_{SS}=0\text{ V}$			

*: 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 V_{SSL} 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.



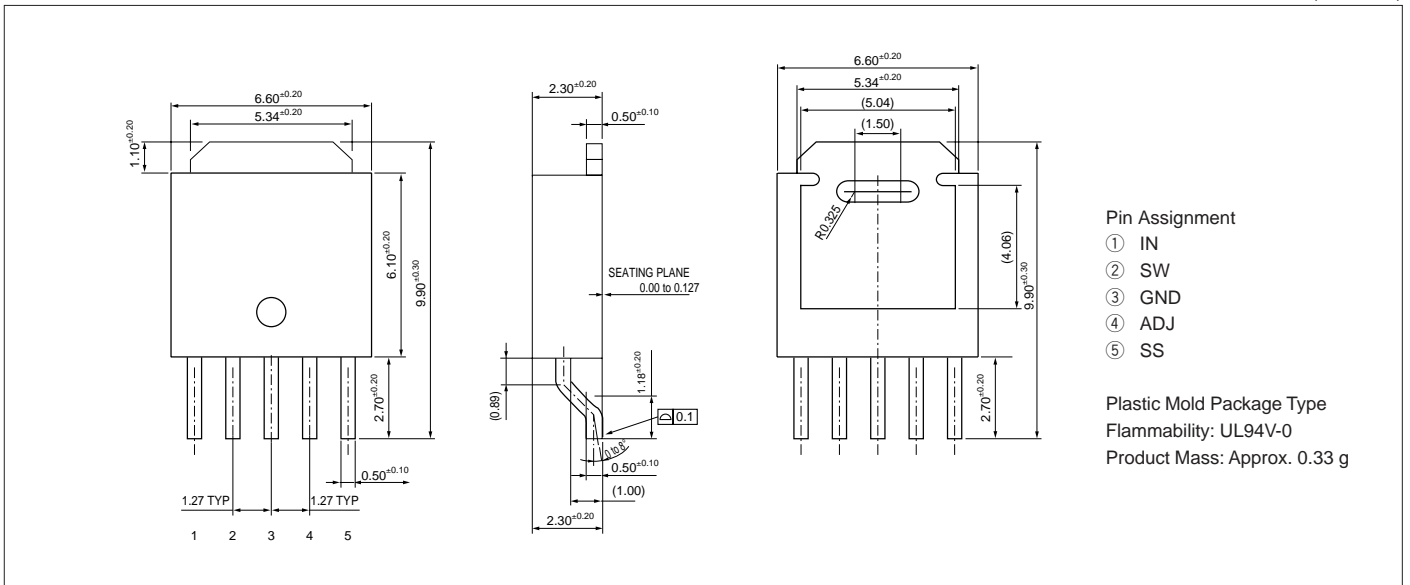
Absolute Maximum Ratings

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 mm ² copper area 4.3%)
	P_{D2}	1.65		When mounted on glass-epoxy board (900 mm ² copper area 50%)
Junction Temperature*	T_j	-30 to +150	$^{\circ}\text{C}$	
Storage Temperature	T_{stg}	-40 to +150	$^{\circ}\text{C}$	
Thermal Resistance (Junction to Case)	θ_{jc}	6	$^{\circ}\text{C}/\text{W}$	
Thermal Resistance (Junction to Ambient Air)	θ_{ja}	95	$^{\circ}\text{C}/\text{W}$	When mounted on glass-epoxy board (900 mm ² copper area 4.3%)

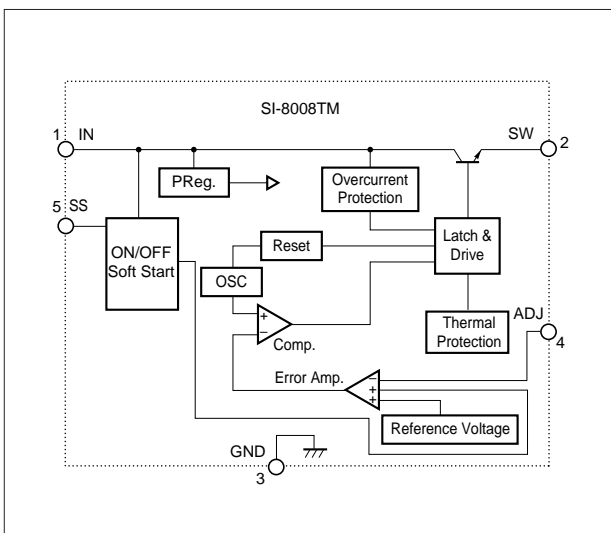
*: This product has built-in thermal protection circuits that may operate when the junction temperature rises above 130 $^{\circ}\text{C}$.
The recommended design for the junction temperature during operation is below 125 $^{\circ}\text{C}$.

External Dimensions (TO252-5)

(Unit : mm)



Block Diagram



Typical Connection Diagram

