

SI-8000Y Series Current Mode Control Step-down Switching Mode

Features

- Compact (equivalent to TO220) full-mold package
- Output current: 8.0 A
- High efficiency: 86%
- Built-in reference oscillator (130 kHz)
- Built-in drooping-type-overcurrent protection and thermal protection circuits
- Built-in soft start circuit (Output ON/OFF available)
- Low current consumption during off

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Input Voltage	V_{IN}	45	V
Power Dissipation	P_{D1}	20.8(With infinite heatsink)	W
	P_{D2}	1.8(Without heatsink, stand-alone operation)	W
Junction Temperature	T_j	-30 to +150	°C
Storage Temperature	T_{stg}	-40 to +150	°C
Thermal Resistance (Junction to Case)	θ_{j-c}	6	°C/W
Thermal Resistance (Junction to Ambient Air)	θ_{j-a}	66.7	°C/W

Applications

- AV equipment
- OA equipment
- Gaming equipment
- Onboard local power supplies

Recommended Operating Conditions

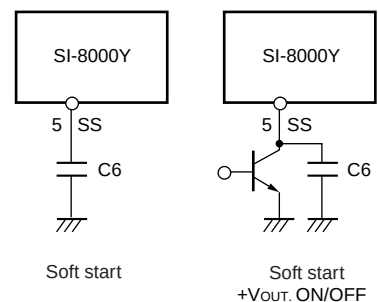
Parameter	Symbol	Ratings		Unit
		SI-8010Y	SI-8050Y	
Input Voltage Range	V_{IN}	8 or V_o+3^* to 43	8 to 43	V
Output Voltage Range	V_o	1 to 15	5	V
Output Current Range	I_o	0 to 8.0		A
Operating Junction Temperature Range	T_{jop}	-30 to +135		°C
Operating Temperature Range	T_{op}	-30 to +85		°C

*: The minimum value of the input voltage range is 8 V or $V_o + 3V$, whichever is higher.

Electrical Characteristics

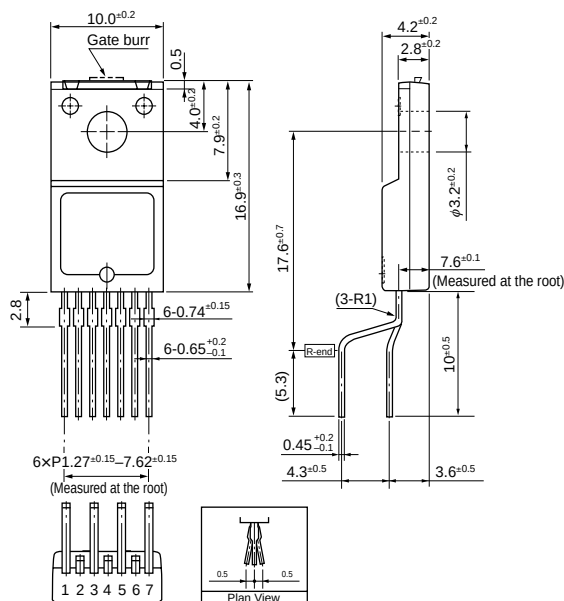
Parameter		Symbol	Ratings						Unit
			SI-8010Y*			SI-8050Y			
			min.	typ.	max.	min.	typ.	max.	
Output Voltage (Reference voltage for SI-8010Y)		V _O (V _{REF})	0.98	1.00	1.02	4.90	5.00	5.10	V
		Conditions	V _{IN} =30V, I _O =0.1A			V _{IN} =30V, I _O =0.1A			
Temperature Coefficient of Output Voltage (Reference voltage temperature coefficient for SI-8010Y)		ΔV _O /ΔT(ΔV _{REF} /ΔT)	±0.1			±0.5			mV/°C
		Conditions	V _{IN} =30V, I _O =0.1A, T _a =0 to 100°C			V _{IN} =30V, I _O =0.1A, T _a =0 to 100°C			
Efficiency		η	86			86			%
		Conditions	V _{IN} =30V, I _O =3A			V _{IN} =30V, I _O =3A			
Oscillation Frequency		f _o	130			130			kHz
		Conditions	V _{IN} =30V, I _O =3A			V _{IN} =30V, I _O =3A			
Line Regulation		ΔV _{OLINE}	30			30			mV
		Conditions	V _{IN} =10 to 43V, I _O =3A			V _{IN} =10 to 43V, I _O =3A			
Load Regulation		ΔV _{OLOAD}	30			30			mV
		Conditions	V _{IN} =30V, I _O =0.1 to 8A			V _{IN} =30V, I _O =0.1 to 8A			
Overcurrent Protection Starting Current		I _S	8.1			8.1			A
		Conditions	V _{IN} =20V			V _{IN} =20V			
Quiescent Circuit Current		I _q	8			8			mA
		Conditions	V _{IN} =30V, I _O =0A, EN/SS=open			V _{IN} =30V, I _O =0A, EN/SS=open			
		I _q (OFF)	200			200			μA
		Conditions	V _{IN} =30V, EN/SS=0V			V _{IN} =30V, EN/SS=0V			
EN/SS Pin*		Outflow Current at Low Voltage	I _{SSL}	10		30		μA	
			Conditions	V _{IN} =30V, EN/SS=0V		V _{IN} =30V, EN/SS=0V			
		Low Level Voltage	V _{SSL}			0.5		0.5	V
Conditions	V _{IN} =30V		V _{IN} =30V						
Error Amplifier Voltage Gain		AEA		300			300	V/V	
Error Amplifier Transformer Conductance		GEA		800			800	μA/V	
Current Sense Amplifier Impedance		1/GCS		0.16			0.16	V/A	
Maximum ON Duty		DMAX		92			92	%	
Minimum ON Time		DMIN		200			200	nsec	

*: $R_1=8k\Omega$, $R_2=2k\Omega$ when $T_a=25^\circ\text{C}$ and $V_o=5V$



■External Dimensions (TO220F-7)

(Unit : mm)

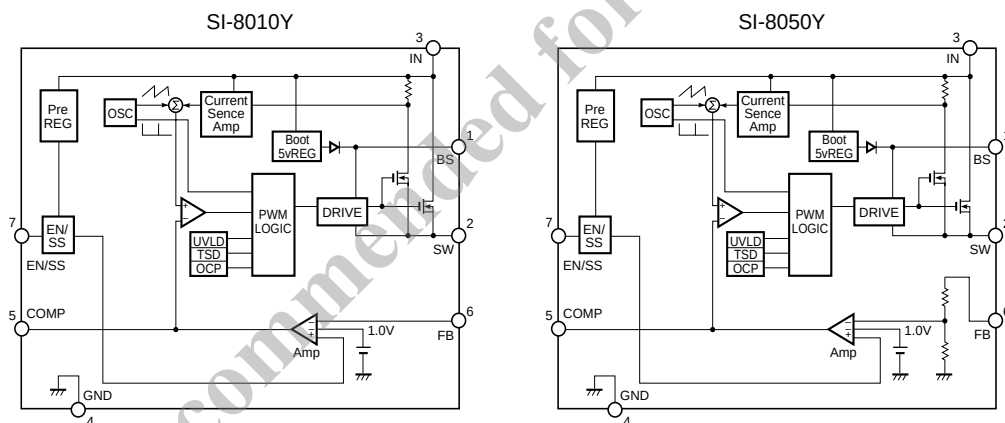


Pin Assignment

- ① BS
- ② SW
- ③ V_{IN}
- ④ GND
- ⑤ COMP
- ⑥ FB
- ⑦ EN/SS

Plastic Mold Package Type
Flammability: UL94V-0
Product Mass: Approx. 2.3g

■Block Diagram



■ Typical Connection Diagram

