

SI-8000E Series Full-Mold, Separate Excitation Step-down Switching Mode

■Features

- Compact full-mold package (equivalent to TO220)
- High efficiency: 80%
- Requires only 4 discrete components
- Internally-adjusted phase correction and output voltage
- Built-in reference oscillator (60kHz)
- Built-in overcurrent and thermal protection circuits

■Applications

- Power supplies for telecommunication equipment
- Onboard local power supplies

■Lineup

Part Number	SI-8050E
Vo(V)	5.0
Io(A)	0.6

■Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
DC Input Voltage	V _{IN}	43	V
Power Dissipation	P _{D1}	14(With infinite heatsink)	W
	P _{D2}	1.5(Without heatsink, stand-alone operation)	W
Junction Temperature	T _j	+125	°C
Storage Temperature	T _{stg}	-40 to +125	°C
Thermal Resistance(junction to case)	θ _{j-c}	7.0	°C/W
Thermal Resistance(junction to ambient air)	θ _{j-a}	66.7	°C/W

■Recommended Operating Conditions

Parameter	Symbol	Ratings		Unit
		SI-8050E		
DC Input Voltage Range	V _{IN}	7 to 40		V
Output Current Range	I _o	0 to 0.6		A
Operating Junction Temperature Range	T _{jop}	-30 to +125		°C
Operating Temperature Range	T _{op}	-30 to +125		°C

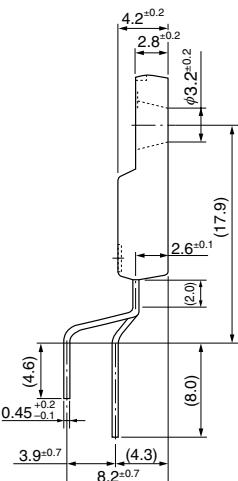
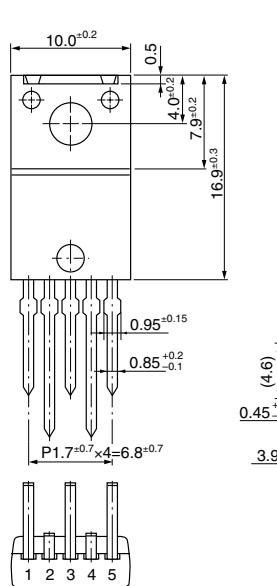
■Electrical Characteristics

(T_a=25°C)

Parameter	Symbol	Ratings			Unit
		min.	typ.	max.	
Output Voltage	V _o	4.80	5.00	5.20	V
	Conditions		V _{IN} =20V, I _o =0.3A		
Efficiency	η		80		%
	Conditions		V _{IN} =20V, I _o =0.3A		
Oscillation Frequency	f		60		kHz
	Conditions		V _{IN} =20V, I _o =0.3A		
Line Regulation	ΔV _{OLINE}		80	100	mV
	Conditions		V _{IN} =10 to 30V, I _o =0.3A		
Load Regulation	ΔV _{OLOAD}		30	40	mV
	Conditions		V _{IN} =20V, I _o =0.1 to 0.4A		
Temperature Coefficient of Output Voltage	ΔV _o /ΔT _a		±0.5		mV/°C
Overcurrent Protection Starting Current	I _{s1}	0.61			A
	Conditions		V _{IN} =10V		

External Dimensions (TO220F-5)

(Unit : mm)



Pin Assignment

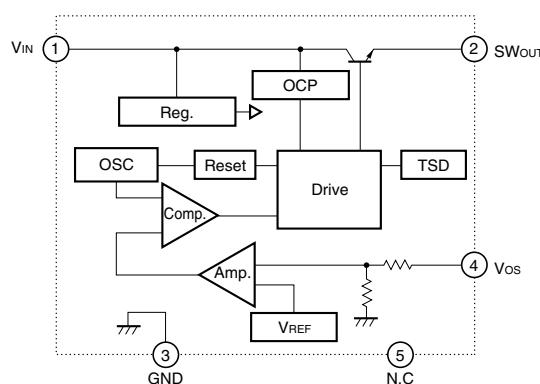
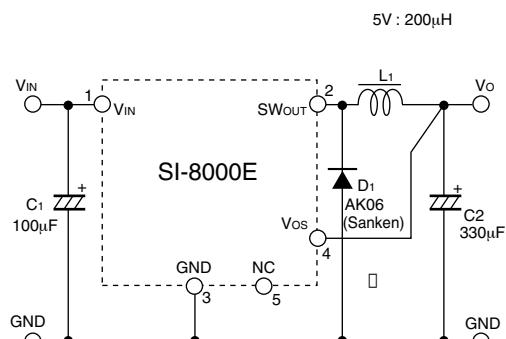
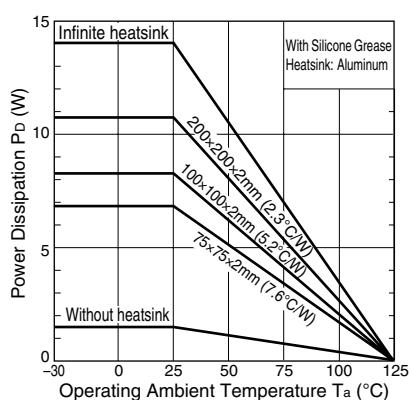
- ① VIN
- ② SWOUT
- ③ GND
- ④ Vos
- ⑤ N.C

Plastic Mold Package Type

Flammability: UL94V-0

Product Mass: Approx. 2.3g

Forming No. 1101

Block Diagram**Typical Connection Diagram****T_a-P_D Characteristics**

$$P_D = V_o \cdot I_o \left(\frac{100}{\eta x} - 1 \right) - V_F \cdot I_o \left(1 - \frac{V_o}{V_{IN}} \right)$$

The efficiency depends on the input voltage and the output current. Therefore, obtain the value from the efficiency graph and substitute the percentage in the formula above.

- | |
|---|
| Vo : Output voltage
Vin : Input voltage
Io : Output current
ηx : Efficiency (%)
Vf : Diode D1 forward voltage
0.4V(AK06) |
|---|

Thermal design for D1 must be considered separately.