

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	VIN	43	V
Power Dissipation	Pd1	14(With infinite heatsink)	W
	Pd2	1.5(Without heatsink, stand-alone operation)	W
Junction Temperature	Tj	+125	°C
Storage Temperature	Tstg	−40 to +125	°C
Thermal Resistance(junction to case)	θj-c	7.0	°C/W
Thermal Resistance(junction to ambient air)	θj-a	66.7	°C/W

Recommended Operating Conditions

Parameter	Symbol	Ratings	Unit
		SI-8050E	
DC Input Voltage Range	VIN	7 to 40	V
Output Current Range	Io	0 to 0.6	A
Operating Junction Temperature Range	Tjop	−30 to +125	°C
Operating Temperature Range	Top	−30 to +125	°C

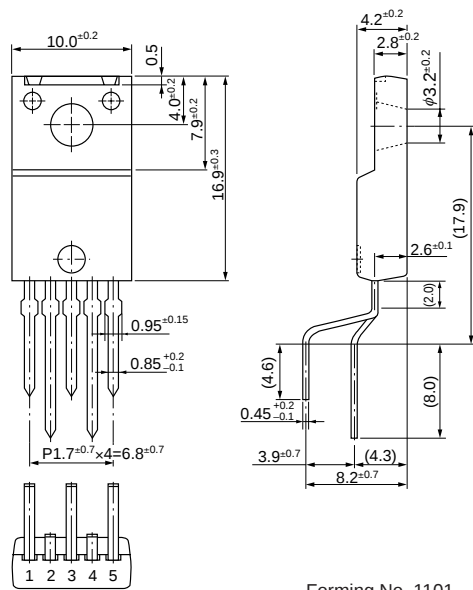
Electrical Characteristics

(Ta=25°C)

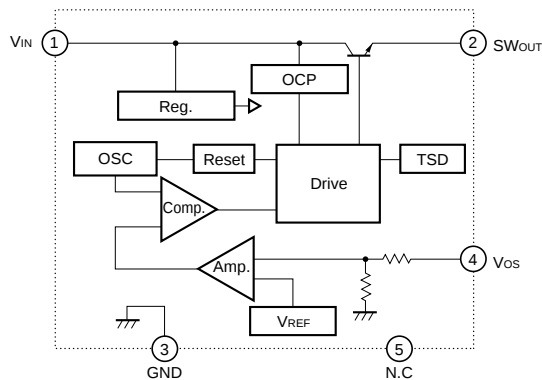
Parameter	Symbol	Ratings			Unit
		SI-8050E			
		min.	typ.	max.	
Output Voltage	V _O	4.80	5.00	5.20	V
	Conditions	V _{IN} =20V, I _O =0.3A			
Efficiency	η		80		%
	Conditions	V _{IN} =20V, I _O =0.3A			
Oscillation Frequency	f		60		kHz
	Conditions	V _{IN} =20V, I _O =0.3A			
Line Regulation	ΔV _{OLINE}		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)

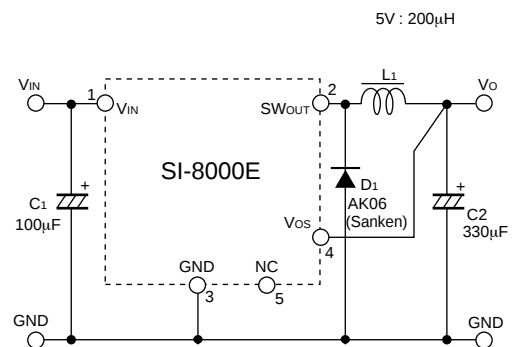
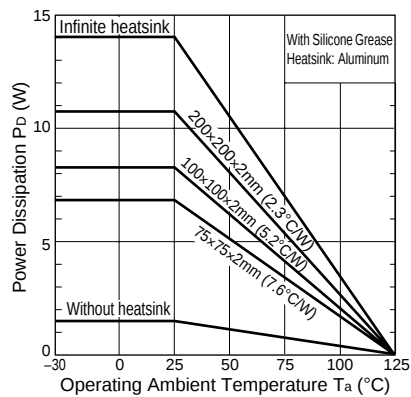
(Unit : mm)



■Block Diagram



■Typical Connection Diagram

■T_a-P_D Characteristics

$$P_D = V_O \cdot I_O \left(\frac{100}{\eta \chi} - 1 \right) - V_F \cdot I_O \left(1 - \frac{V_O}{V_{IN}} \right)$$

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.

V_O : Output voltage
 V_{IN} : Input voltage
 I_O : Output current
 $\eta \chi$: Efficiency (%)
 V_F : Diode D₁ forward voltage
 0.4V(AK06)

Thermal design for D₁ must be considered separately.