

SI-8000E Series

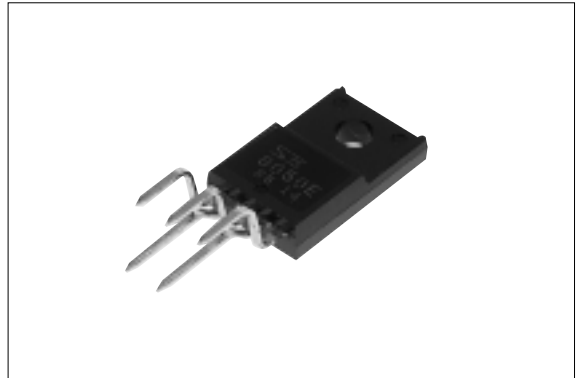
Full-Mold, Separate Excitation Switching Type

■Features

- Compact full-mold package (equivalent to TO220)
- High efficiency: 80 to 88%
- Requires only 4 external components
- Phase correction and output voltage adjustment performed internally
- 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	SI-8090E	SI-8120E
$V_o(V)$	5.0	9.0	12.0
$I_o(A)$	0.6		

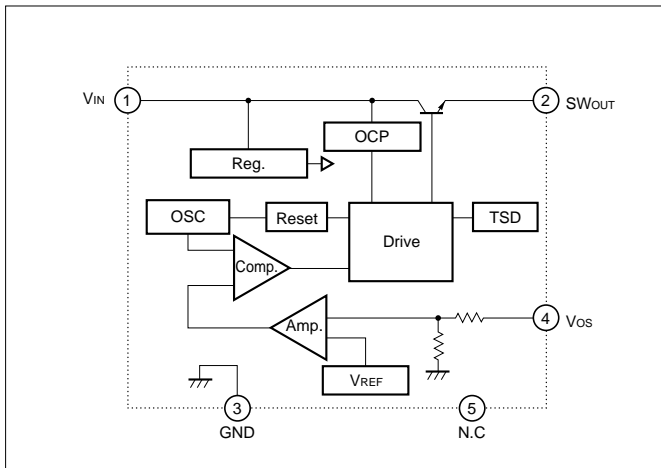
■Absolute Maximum Ratings

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)	$R_{th(j-c)}$	7.0	°C/W
Thermal Resistance(junction to ambient air)	$R_{th(j-a)}$	66.7	°C/W

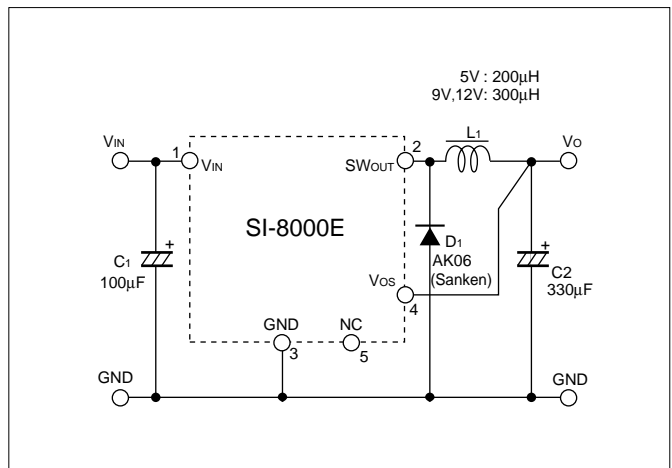
■Recommended Operating Conditions

Parameter	Symbol	Ratings			Unit
		SI-8050E	SI-8090E	SI-8120E	
DC Input Voltage Range	V_{IN}	7 to 40	11 to 40	14 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

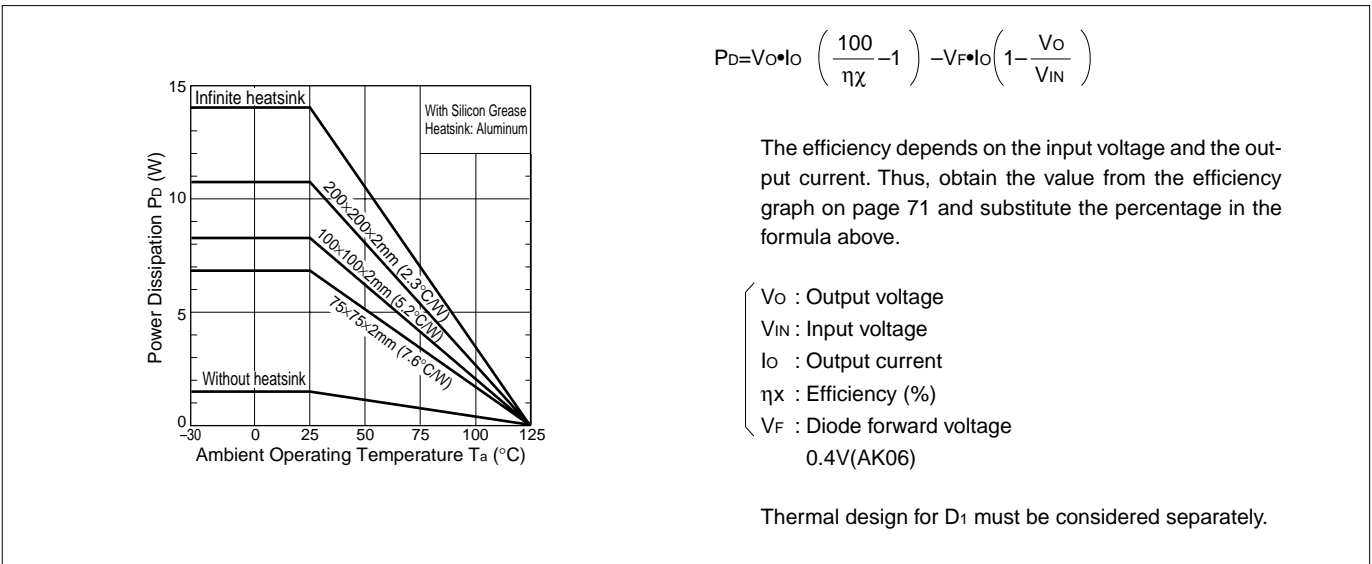
■Block Diagram



■Standard External Circuit



■Ta-Pd Characteristics



■Selecting External Components

1. Inductor L₁

- 1) It must be suited for switching regulators.
Do not use inductors such as noise filters, because they generate excessive heat.
- 2) It must have the appropriate inductance value.
If the inductance is too small (150µH or lower), abnormal oscillation may occur causing operation problems in the overcurrent protection circuit within the rated current range.
- 3) The rated current must be satisfied.
If the rated current is exceeded, magnetic saturation leads to overcurrent.

2. Capacitors C₁ and C₂

- 1) They must satisfy the breakdown voltage and allowable ripple current.
Exceeding the ratings of these capacitors or using them without derating shortens their service lives and may also cause abnormal oscillation of the IC.
- 2) C₂ should be a low-impedance type capacitor.
A low-impedance type capacitor is recommended for C₂ to ensure reduced ripple voltage and stable switching operation.

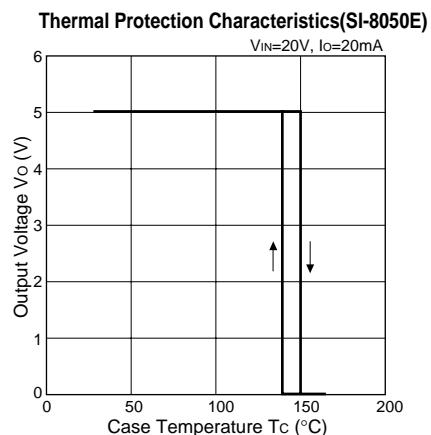
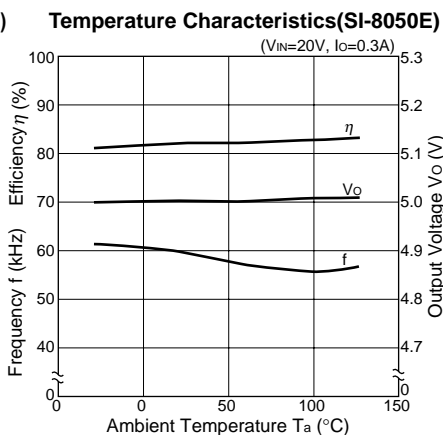
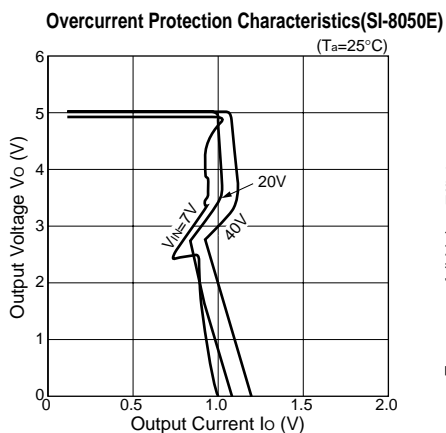
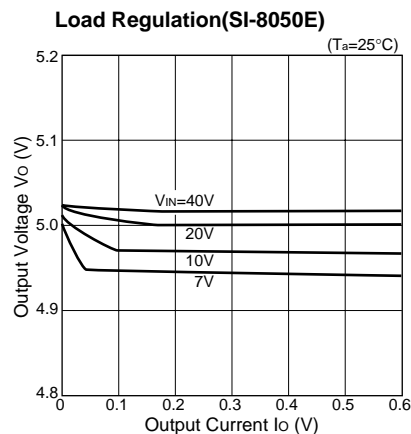
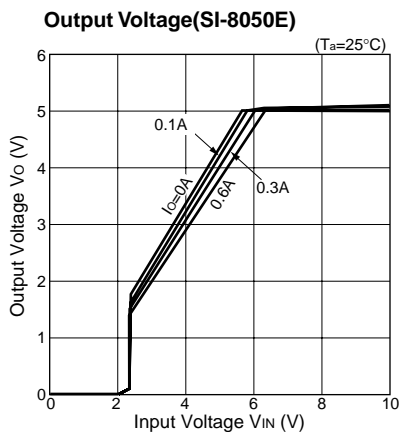
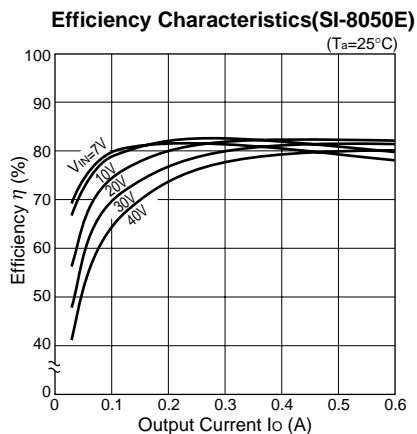
3. Diode D₁

The Sanken AK06 diode is recommended for D₁. If you intended to use an equivalent diode, be sure to use a Schottky Barrier diode and make sure that the reverse voltage applied to terminal 2 of the IC does not exceed the value (-1V) given in the absolute maximum ratings. If you use a fast recovery diode or any other diode, supplying a reverse voltage generated from the recovery or ON voltage of the diode may damage the IC.

Application

Variable output voltage
Output voltage can be adjusted in the same way as SI-8000S in page 77.

■Typical Characteristics



Note on Thermal Protection:

The thermal protection circuit is intended for protection against heat during instantaneous short-circuiting. Its operation is not guaranteed for continuous heating condition such as short-circuiting over extended periods of time.