



# THE DATASHEET OF SI-8401L



# SI-8400L/8500L Series Separate Excitation Switching Mode Regulator ICs with Coil

## ■ Features

- Switching ICs/Coil combined type
- Requires only 2 discrete components
- Low switching noise
- No heatsink required
- Built-in overcurrent and thermal protection circuits
- Built-in soft start circuit (Output ON/OFF available)...SI-8500L Series

## ■ Applications

- Telephone power supplies
- Onboard local power supplies

## ■ Lineup

Part Number	SI-8401L	SI-8501L
V <sub>o</sub> (V)	5.0	5.0
I <sub>o</sub> (A)	0.5	1.0

## ■ Absolute Maximum Ratings

Parameter	Symbol	Ratings		Unit
		SI-8400L	SI-8500L	
DC Input Voltage	V <sub>IN</sub>	35		V
Power Dissipation	P <sub>D</sub>	1.25	3	W
Junction Temperature	T <sub>j</sub>	+100		°C
Storage Temperature	T <sub>stg</sub>	-25 to +85		°C

## ■ Recommended Operating Conditions

Parameter	Symbol	Ratings		Unit
		SI-8401L		
DC Input Voltage Range	V <sub>IN</sub>	7 to 33		V
Output Current Range	I <sub>o</sub>	0 to 0.5		A
Operating Temperature Range	T <sub>op</sub>	-20 to +85		°C

Parameter	Symbol	Ratings		Unit
		SI-8501L		
DC Input Voltage Range	V <sub>IN</sub>	7 to 33		V
Output Current Range	I <sub>o</sub>	0 to 1.0		A
Operating Temperature Range	T <sub>op</sub>	-20 to +85		°C

## ■ Electrical Characteristics

(T<sub>a</sub>=25°C)

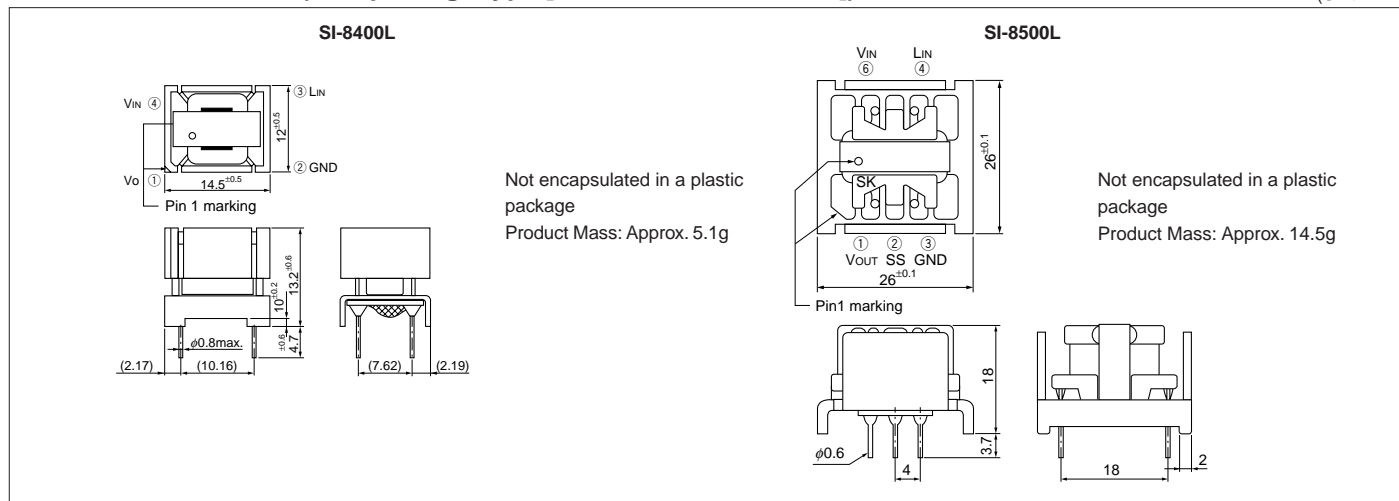
Parameter	Symbol	Ratings			Unit
		SI-8401L			
		min.	typ.	max.	
Output Voltage	V <sub>o</sub>	4.80	5.00	5.20	V
	Conditions	V <sub>IN</sub> =20V, I <sub>o</sub> =0.3A			
Efficiency	η		80		%
	Conditions	V <sub>IN</sub> =20V, I <sub>o</sub> =0.3A			
Oscillation Frequency	f		60		kHz
	Conditions	V <sub>IN</sub> =20V, I <sub>o</sub> =0.3A			
Line Regulation	ΔV <sub>OLINE</sub>		80	100	mV
	Conditions	V <sub>IN</sub> =10 to 30V, I <sub>o</sub> =0.3A			
Load Regulation	ΔV <sub>OLOAD</sub>		30	40	mV
	Conditions	V <sub>IN</sub> =20V, I <sub>o</sub> =0.1 to 0.4A			
Temperature Coefficient of Output Voltage	ΔV <sub>o</sub> /ΔT <sub>a</sub>		±0.5		mV/°C
Switching Ripple Voltage (C <sub>2</sub> =470μF)	ΔV <sub>r</sub>		20	40	mV <sub>P-P</sub>
	Conditions	V <sub>IN</sub> =20V, I <sub>o</sub> =0.3A			
Overcurrent Protection Starting Current	I <sub>s1</sub>	0.55			A
	Conditions	V <sub>IN</sub> =10V			

(T<sub>a</sub>=25°C)

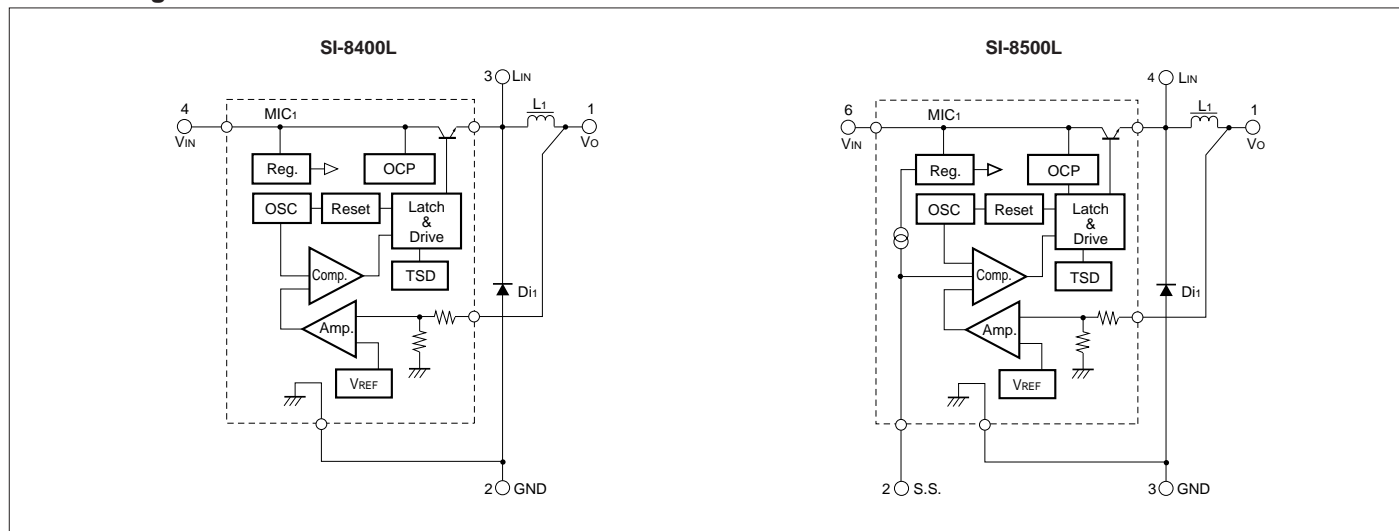
Parameter	Symbol	Ratings			Unit
		SI-8501L			
		min.	typ.	max.	
Output Voltage	V <sub>o</sub>	4.80	5.00	5.20	V
	Conditions	V <sub>IN</sub> =20V, I <sub>o</sub> =0.5A			
Efficiency	η		83		%
	Conditions	V <sub>IN</sub> =20V, I <sub>o</sub> =0.5A			
Oscillation Frequency	f		60		kHz
	Conditions	V <sub>IN</sub> =20V, I <sub>o</sub> =0.5A			
Line Regulation	ΔV <sub>OLINE</sub>		70	130	mV
	Conditions	V <sub>IN</sub> =10 to 30V, I <sub>o</sub> =0.5A			
Load Regulation	ΔV <sub>OLOAD</sub>		30	55	mV
	Conditions	V <sub>IN</sub> =20V, I <sub>o</sub> =0.2 to 0.8A			
Temperature Coefficient of Output Voltage	ΔV <sub>o</sub> /ΔT <sub>a</sub>		±0.5		mV/°C
Switching Ripple Voltage (C <sub>2</sub> =470μF)	ΔV <sub>r</sub>		45		mV <sub>P-P</sub>
	Conditions	V <sub>IN</sub> =20V, I <sub>o</sub> =0.5A			
Overcurrent Protection Starting Current	I <sub>s1</sub>	1.1			A
	Conditions	V <sub>IN</sub> =18V			

External Dimensions (Non-package type [EI-12.5 core/EI-19 core])

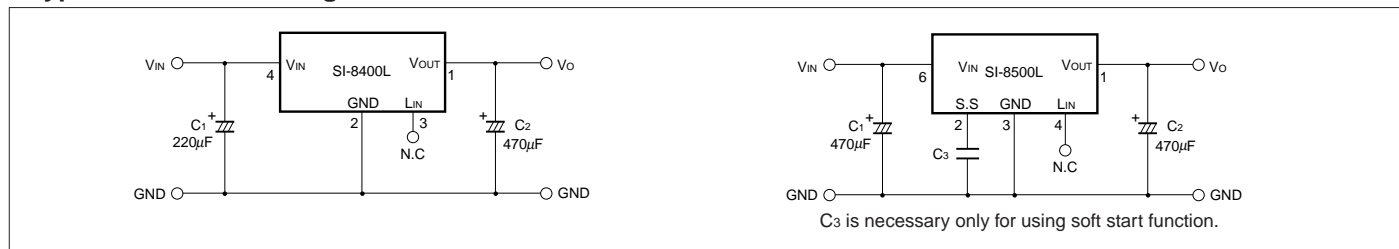
(Unit : mm)



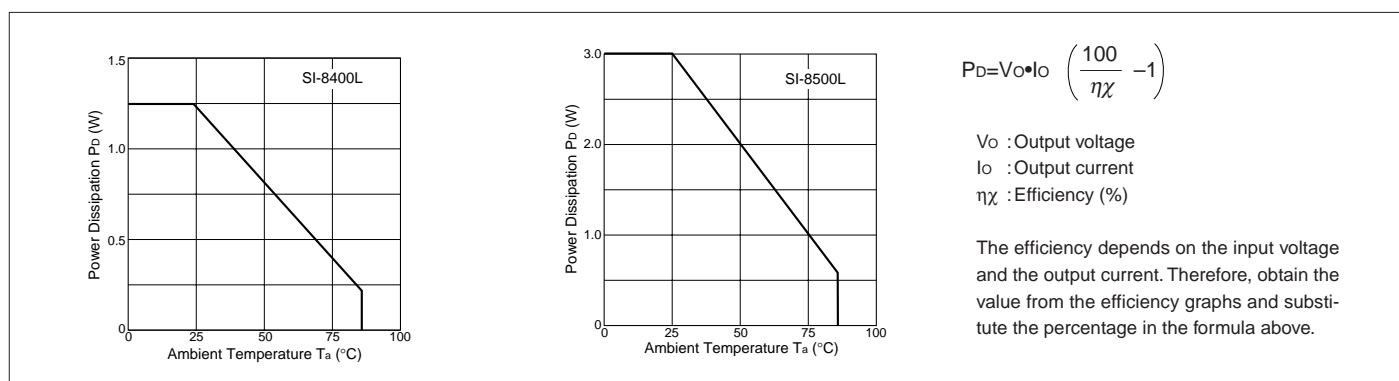
Block Diagram



Typical Connection Diagram





Ta-Pd Characteristics



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