SI-8200L/8300L Series

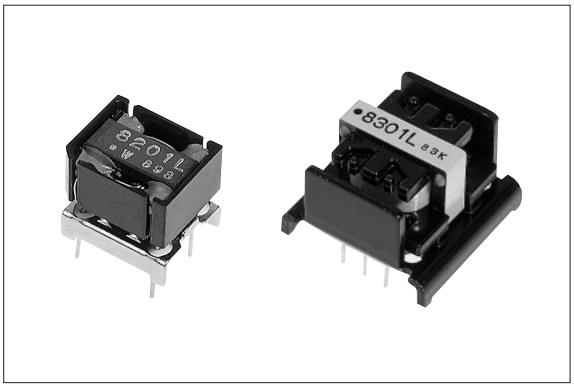
Self Oscillating Switching Type with Coil

■Features

- Integrated switching IC and coil construction
- Requires 2 external components only
- Low switching noise
- Heatsink not required

■Applications

- Telephone power supplies
- Onboard local power supplies



■Lineup

Part Number	SI-8201L	SI-8203L	SI-8211L	SI-8213L	SI-8301L
V_O(V)	5	12	5	12	5
I_O(A)	0.4	0.35	0.3	0.28	1.0

■Absolute Maximum Ratings

Parameter	Symbol	Ratings			Unit
		SI-8201L/8203L	SI-8211L/8213L	SI-8301L	
DC Input Voltage	V_{IN}	45	60	45	V
Power Dissipation	P_D	1.5	1.17	3.0	W
Junction Temperature	T_j	+100			°C
Storage Temperature	T_{stg}	–25 to +85			°C

■Recommended Operating Conditions

Parameter	Symbol	Ratings					Unit
		SI-8201L	SI-8203L	SI-8211L	SI-8213L	SI-8301L	
DC Input Voltage Range	V_{IN}	10 to 40	16 to 40	15 to 55	22 to 55	8 to 40	V
Output Current Range	I_O	0 to 0.4	0 to 0.35	0 to 0.3	0 to 0.28	0 to 1.0	A
Operating Temperature Range	T_{op}	–10 to +65				–10 to +85	°C

■Electrical Characteristics

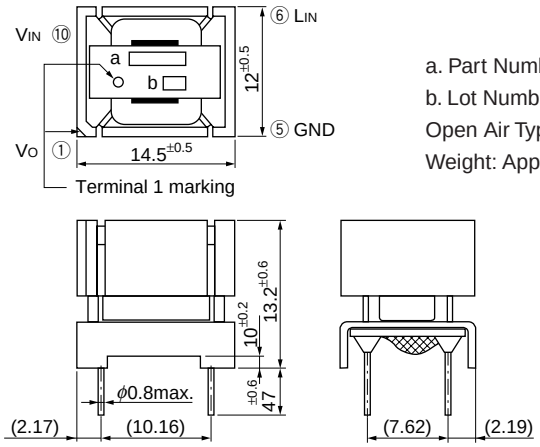
(Ta=25°C)

Parameter	Symbol	Ratings															Unit
		SI-8201L			SI-8203L			SI-8211L			SI-8213L			SI-8301L			
		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	
Output Voltage	V_O	4.9	5.0	5.1	11.8	12.0	12.2	4.9	5.0	5.1	11.8	12.0	12.2	5.0	5.1	5.2	V
	Conditions	V_{IN}=15V, I_O=0.2A			V_{IN}=25V, I_O=0.2A			V_{IN}=35V, I_O=0.2A			V_{IN}=38V, I_O=0.2A			V_{IN}=15V, I_O=0.5A			
Efficiency	η		73			79			63			78			73		%
	Conditions	V_{IN}=15V, I_O=0.2A			V_{IN}=25V, I_O=0.2A			V_{IN}=35V, I_O=0.2A			V_{IN}=38V, I_O=0.2A			V_{IN}=15V, I_O=0.5A			
Switching Frequency	f	25			25			25			25				25		kHz
Line Regulation	ΔV_{OLINE}		15	60		15	60			60			60			50	mV
	Conditions	V_{IN}=10 to 20V, I_O=0.2A			V_{IN}=16 to 34V, I_O=0.2A			V_{IN}=20 to 50V, I_O=0.2A			V_{IN}=22 to 50V, I_O=0.2A			V_{IN}=10 to 20V, I_O=0.5A			
Load Regulation	ΔV_{OLOAD}		15	60		60	100			60			60			80	mV
	Conditions	V_{IN}=15V, I_O=0.02 to 0.25A			V_{IN}=25V, I_O=0.02 to 0.3A			V_{IN}=35V, I_O=0.02 to 0.3A			V_{IN}=38V, I_O=0.02 to 0.28A			V_{IN}=15V, I_O=0.3 to 0.7A			
Temperature Coefficient of Output Voltage	$\Delta V_O/\Delta T_a$			±1.5			±1.5			±1.5			±1.5			±1.5	mV/°C
Switching Ripple Voltage (C2=470μF)	ΔV_r		30	60		60	100		30	60		50	100		45		mV_{p-p}
	Conditions	V_{IN}=25V, I_O=0.3A			V_{IN}=40V, I_O=0.35A			V_{IN}=48V, I_O=0.3A			V_{IN}=48V, I_O=0.28A			V_{IN}=15V, I_O=0.5A			

■Outline Drawing

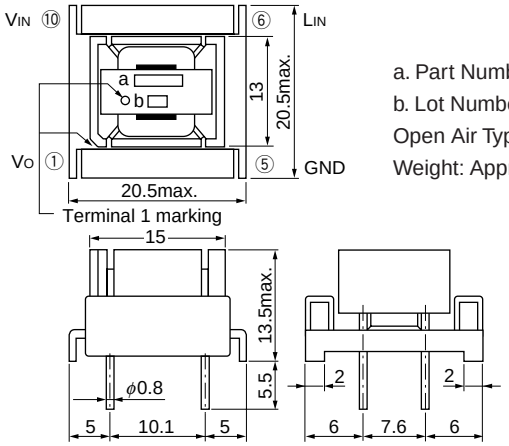
(unit: mm)

SI-8201L•8203L



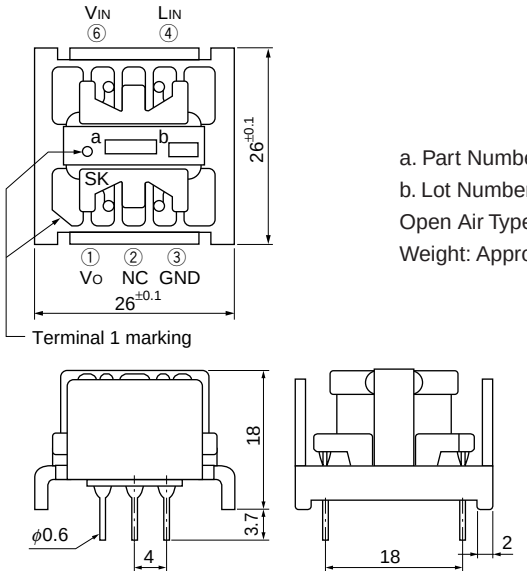
a. Part Number
b. Lot Number
Open Air Type
Weight: Approx. 5.1g

SI-8211L•8213L



a. Part Number
b. Lot Number
Open Air Type
Weight: Approx. 5.9g

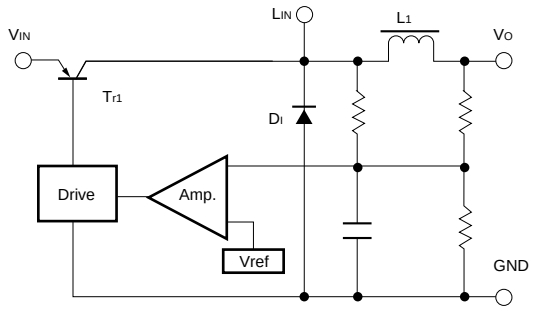
SI-8301L



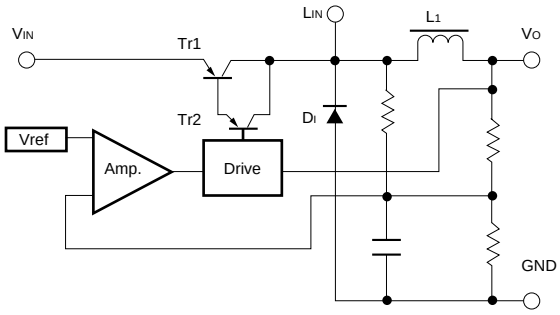
a. Part Number
b. Lot Number
Open Air Type
Weight: Approx. 14.5g

■Block Diagram

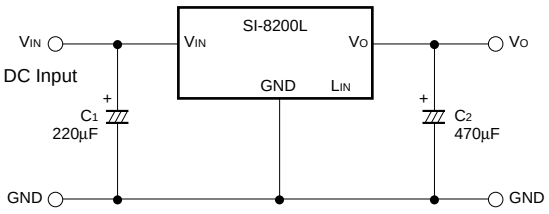
SI-8201L•8203L/SI-8301L

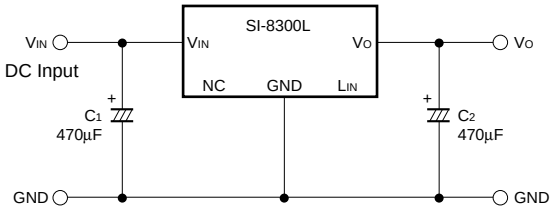


SI-8211L•8213L

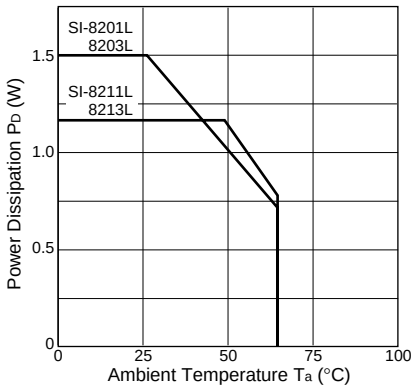


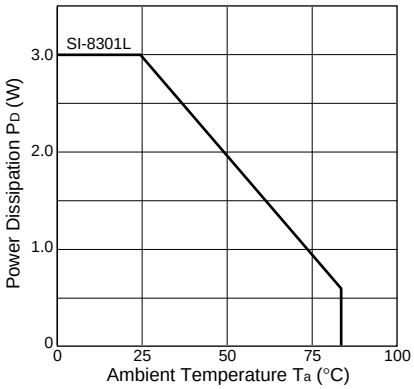
■Standard External Circuit





■Ta-PD Characteristics





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

V_O : Output voltage
I_O : Output current
$\eta\chi$: Efficiency (%)

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

■Caution

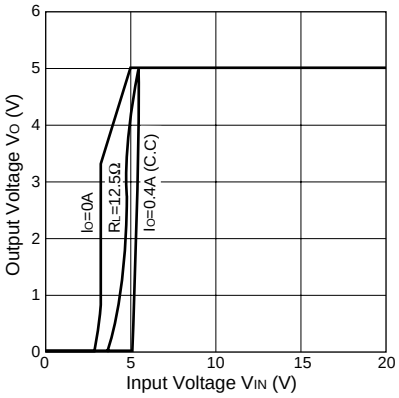
1. A low-impedance capacitor suitable for switching applications must be used for the external capacitor and must be connected as close to the IC as possible in order to assure low ripple voltage and stable switching operation.
2. The SI-8200L and 8300L series do not have a built-in overcurrent protection circuit. Thus, avoid short-circuit conditions that may cause an overcurrent.
3. The SI-8300L series may not start up if the input voltage rises too rapidly.
   Do not use the SI-8300L series in applications where the input terminal, pin6, is opened and closed directly in a state where the input voltage is already applied.
4. Terminals LIN and NC in the connection diagram must be left unconnected to other circuits.
5. The IC's metalic heatsink is electrically floating. Do not connect it to GND or any other circuit.
6. Since the SI-8200L and 8300L series have an open-package construction, they can only be used in specific environments. Verify the operating environment and use the IC within the conditions indicated in the reliability data.

■Typical Characteristics

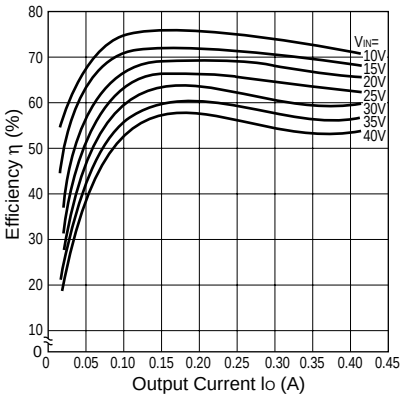
(T_a=25°C)

SI-8201L

Rise Characteristics

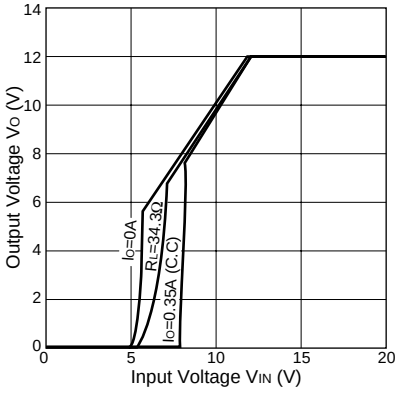


Efficiency Characteristics

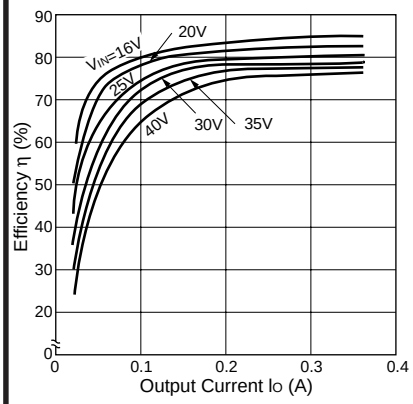


SI-8203L

Rise Characteristics

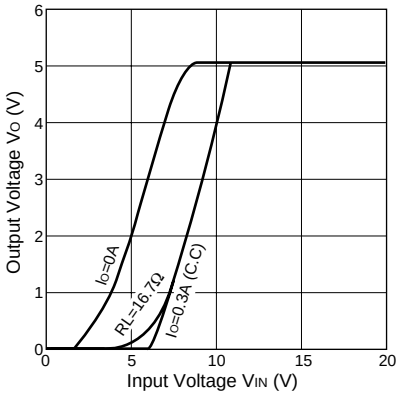


Efficiency Characteristics

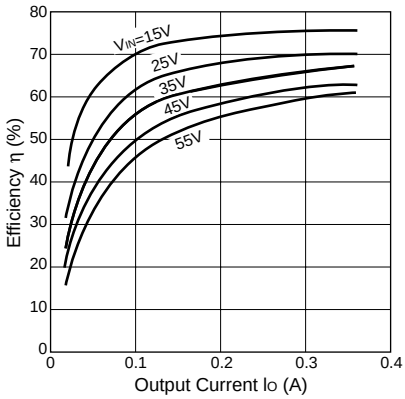


SI-8211L

Rise Characteristics

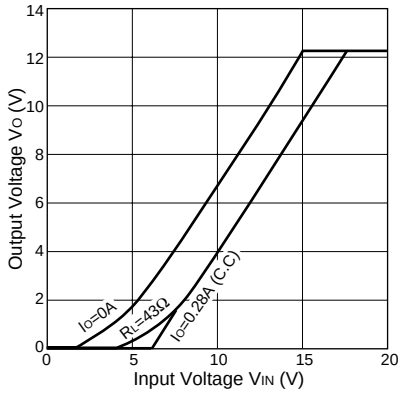


Efficiency Characteristics

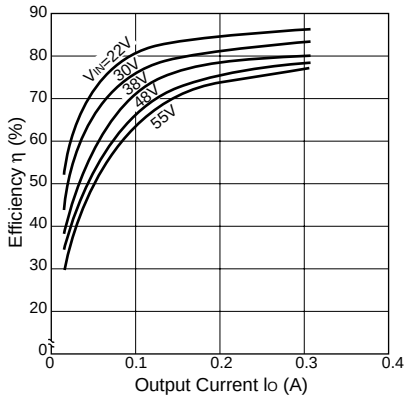


SI-8213L

Rise Characteristics

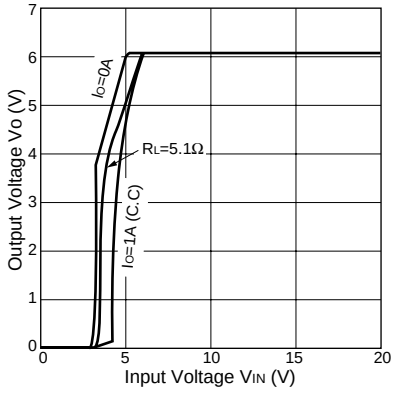


Efficiency Characteristics



SI-8301L

Rise Characteristics



Efficiency Characteristics

