Sanken Switching Power Supply.

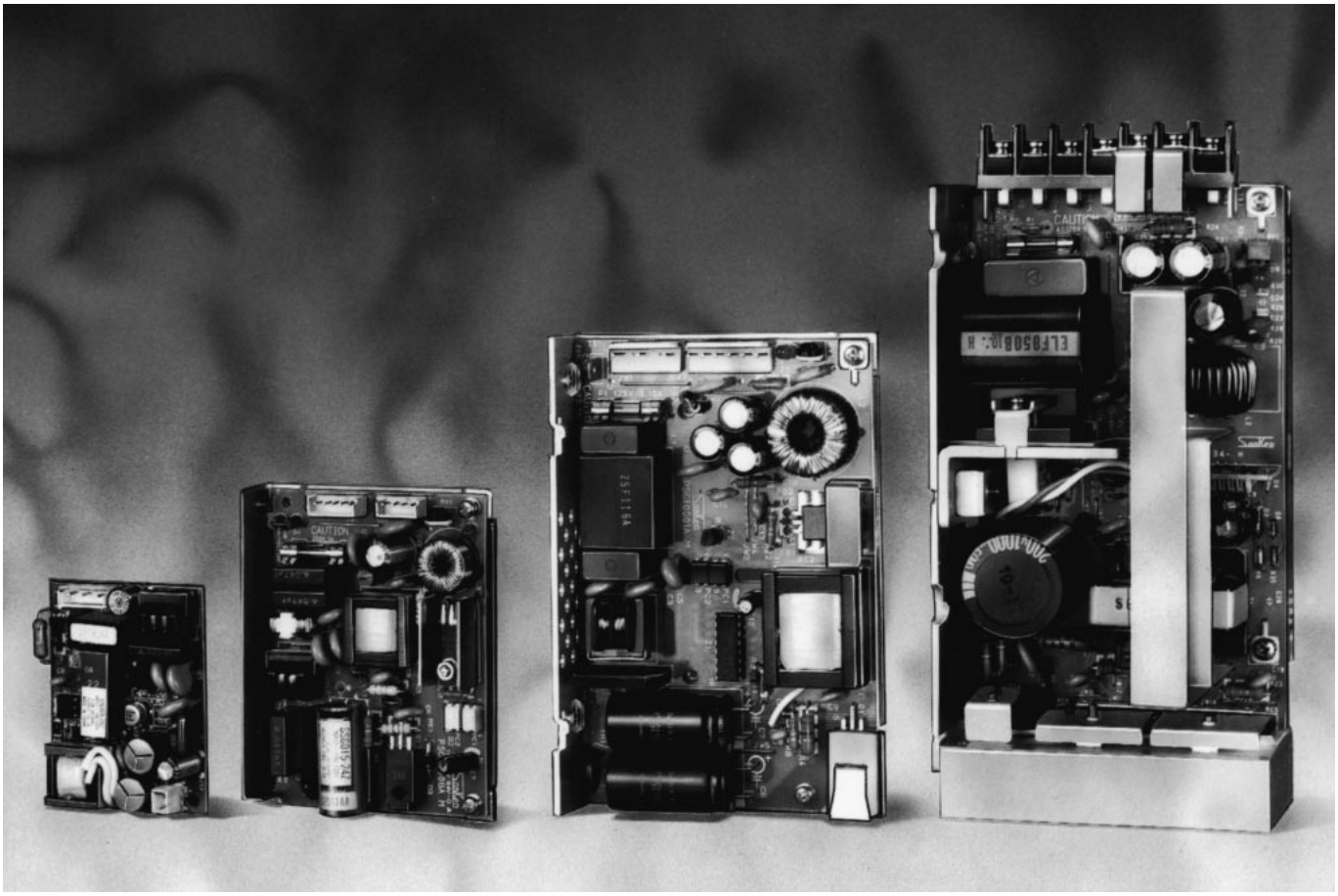
SSG Series

5W, 10W, 15W, 30W, 50W, 100W, 150W

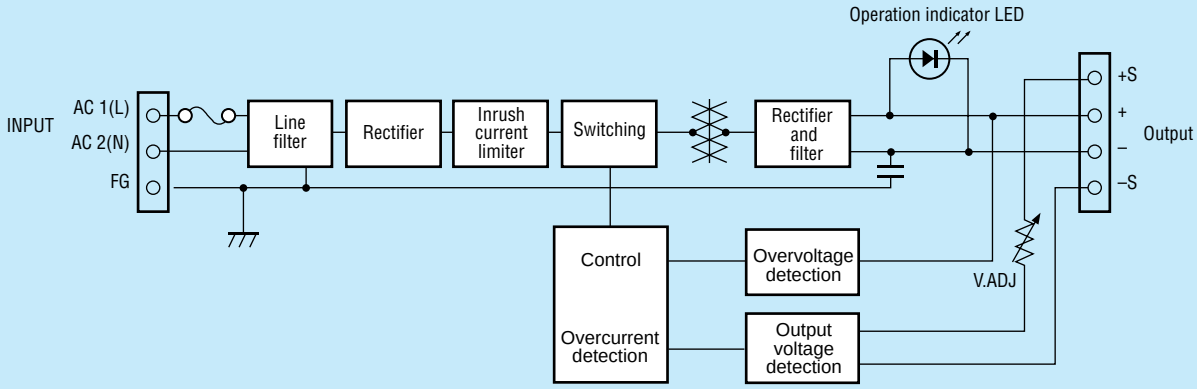
The SSG Series utilizes surface-mount components and an ultra-small TIW (Triple Insulation Wire) transformer to produce a line of very small, light-weight switching power supplies.

FEATURES

- Firstly adopted newly developped transformer which is equipped with triple insulation wire (Without barrier tape)
- Pursuing smaller and thinner model
- Increased efficiency 4 to 5% compared with our existing products
- Obtained any applicable safety standards, UL and CSA certificate
- FCC class B application



SSG Series circuit diagram



* +S and + are connected with a short bar, as are -S and -.
+S and -S are provided on 100 W and 150 W models.
* Operation indicator LED and overvoltage detection are not provided on 5 W and 10 W models.

Item			Rating	5W	10W			
			Conditions	SSG 005-05	SSG 010-05	SSG 010-12	SSG 010-15	SSG 010-24
Input	Rated Input Voltage			100-120V AC	100-240V AC			
	Input Voltage Range			85 to 132V AC	85 to 264V AC			
	Input Current (see Note 1)			0.2 A	0.4/0.23A (typ)			
	Rated Frequency			50/60 Hz	50/60 Hz			
	Frequency Range			47 to 440 Hz	47 to 440 Hz			
	Efficiency (typ) (see Note 1)			68%	72%	75%	75%	78%
	Inrush Current (see Note 1, 2)			30A (max)	25/50 A (max)			
Output (see Note 3)	Rated Output Voltage			5V	+5V	+12V	+15V	+24V
	Adjustable Output Voltage Range			Fixed	Rated voltage ±10%			
	Rated Output Current			1A	2.0A	0.9A	0.7A	0.45A
	Adjustable Output Current Range			0 to 100%	0 to 100%			
	Maximum Output Power			5W	10W	10.8W	10.5W	10.8W
	Ripple (mVp-p) (see Note 1, 4)			150mVp-p	120mVp-p	170mVp-p	200mVp-p	300mVp-p
	Constant Voltage Accuracy	Static Input Range	85 to 132V AC	±3%	±3%			
		Static Load Range	0 to 100%					
		Time Drifft	10min. to 8 hours					
		Ambient Temperature Range	0 to +50°C					
Other	Output Holdup Time (see Note 1)			10ms (min)	10ms (min)			
	Startup Time (see Note 1)			10ms	400ms (typ)			
	Leakage Current (see Note 1)			0.5mA (max)	0.5mA (max)			
Additional Functions	Over Current Protection			Detection above 120% of rated current (output cutoff)				
	Over Voltage Protection			Not provided				
	Remote On/Off Control			Not provided				
	Remote Sensing			Not provided				
Environmental	Temperature		Operating Temperature	0 to 50°C (no cover)				
			Storage Temperature	-25 to +85°C				
	Relative Humidity		Operating Humidity	30 to 90% (no condensation)				
			Storage Humidity					
Insulation	Insulation Withstand Voltage		Between Input and Output	2000 V AC for 1 minute (Leakage current of 15 mA or less)				
			Between Input and Frame					
			Between Output and Frame	500 V AC for 1 minute (Leakage current of 15 mA or less)				
	Insulation Resistance		Between Input and Output	100 MΩ or more (measured with 500 V DC Megger)				
			Between Input and Frame					
			Between Output and Frame					
Applicable Standards	Safety Standards			UL and CSA certified				
	EMI Standards			Conforms to FCC Class B				
Structural Specifications	External Appearance			PCB type	PCB type (chassis is optional)			
	Size (dimensions in mm)			50 x 65 x 18 (W x D x H)	67 x 72 x 20 (W x D x H) (with chassis)			
	Weight (without cover)			50 g	80 g (130 g with chassis)			

Note 1: Rated input/output conditions means that the switching power supply is operated under the rated input voltage, rated frequency, rated output voltage, and at an ambient temperature of 25°C and 60% humidity.
Note 2: At cold start. (More current may flow at restart.)
Note 3: All output characteristics are measured at a point 5 cm from the output connector, with a 63 V 47 µF electrolytic capacitor attached at that point.
Note 4: Ripple noise is measured with a 100 MHz oscilloscope, using a 1:1 probe.

Item			Rating	15W			
			Conditions	SSG 015-05	SSG 015-12	SSG 015-15	SSG 015-24
Input	Rated Input Voltage			100-120V AC			
	Input Voltage Range			85 to 132V AC			
	Input Current (see Note 1)			0.5A (typ)			
	Rated Frequency			50/60 Hz			
	Frequency Range			47 to 440 Hz			
	Efficiency (typ) (see Note 1)			72%	75%	75%	78%
	Inrush Current (see Note 1, 2)			30 A (max)			
Output (see Note 3)	Rated Output Voltage			+5V	+12V	+15V	+24V
	Adjustable Output Voltage Range			Rated voltage ±10%			
	Rated Output Current			3.0A	1.3A	1.0A	0.7A
	Adjustable Output Current Range			0 to 100%			
	Maximum Output Power			15W	15.6W	15W	16.8W
	Ripple (mVp-p) (see Note 1, 4)			120mVp-p	170mVp-p	200mVp-p	300mVp-p
	Constant Voltage Accuracy	Static Input Range	85 to 132V AC	±3%			
		Static Load Range	0 to 100%				
		Time Driftt	10min. to 8 hours				
		Ambient Temperature Range	0 to +50°C				
Other	Output Holdup Time (see Note 1)			10ms (min)			
	Startup Time (see Note 1)			40ms (typ)			
	Leakage Current (see Note 1)			0.5mA (max)			
Additional Functions	Over Current Protection			Detection above 120% of rated current (output cutoff)			
	Over Voltage Protection			Detection above 120% of rated voltage (output cutoff)			
	Remote On/Off Control			Not provided			
	Remote Sensing			Not provided			
Environmental	Temperature		Operating Temperature	0 to 50°C (no cover)			
			Storage Temperature	-25 to +85°C			
	Relative Humidity		Operating Humidity	30 to 90% (no condensation)			
			Storage Humidity	30 to 90% (no condensation)			
Insulation	Insulation Withstand Voltage		Between Input and Output	2000 V AC for 1 minute, 2400 V AC for 1 second (Leakage current of 15 mA or less)			
			Between Input and Frame				
			Between Output and Frame	500 V AC for 1 minute, 600 V AC for 1 second (Leakage current of 15 mA or less)			
	Insulation Resistance		Between Input and Output	100 MΩ (measured with 500 V DC Megger)			
			Between Input and Frame				
			Between Output and Frame				
Applicable Standards	Safety Standards			UL and CSA certified			
	EMI Standards			Conforms to FCC Class B			
Structural Specifications	External Appearance			PCB type, input and output connectors (chassis and input/output terminal stand are optional)			
	Size (dimensions in mm)			70 x 92 x 20 (W x D x H)(with chassis)			
	Weight (without cover)			100 g (150 g with chassis)			

Note 1: Rated input/output conditions means that the switching power supply is operated under the rated input voltage, rated frequency, rated output voltage, and at an ambient temperature of 25°C and 60% humidity.
Note 2: At cold start. (More current may flow at restart.)
Note 3: All output characteristics are measured at a point 5 cm from the output connector, with a 63 V 47 µF electrolytic capacitor attached at that point.
Note 4: Ripple noise is measured with a 100 MHz oscilloscope, using a 1:1 probe.

30W				50W			
SSG 030-05	SSG 030-12	SSG 030-15	SSG 030-24	SSG 050-05	SSG 050-12	SSG 050-15	SSG 050-24
100-120V AC				100-120V AC			
85 to 132V AC				85 to 132V AC			
0.7A (typ)				1.3A (typ)			
50/60 Hz				50/60 Hz			
47 to 440 Hz				47 to 440 Hz			
75%	78%	78%	80%	75%	77%	79%	81%
30 A (max)				30 A (max)			
+5V	+12V	+15V	+24V	+5V	+12V	+15V	+24V
Rated voltage ±10%				Rated voltage ±10%			
6.0A	2.6A	2.0A	1.3A	10.0A	4.2A	3.4A	2.1A
0 to 100%				0 to 100%			
30W	30W	30W	31.2W	50W	50.4W	51W	50.4W
120mVp-p	150mVp-p	150mVp-p	200mVp-p	120mVp-p	150mVp-p	150mVp-p	200mVp-p
±3%				±3%			
16ms (min)				16ms (min)			
400ms (typ)				400ms (typ)			
0.4mA (max)				0.4mA (max)			
Detection above 120% of rated current (output cutoff)							
Detection above 120% of rated voltage (output cutoff)							
Not provided							
Not provided							
Operating Temperature 0 to 50°C (0 to 40°C with cover)							
-25 to +85°C							
30 to 90% (no condensation)							
2000 V AC for 1 minute, 2400 V AC for 1 second (Leakage current of 15 mA or less)							
500 V AC for 1 minute, 600 V AC for 1 second (Leakage current of 15 mA or less)							
100 MΩ (measured with 500 V DC Megger)							
UL and CSA certified							
Conforms to FCC Class B							
(input/output terminal stand and cover are optional)				(input/output terminal stand and cover are optional)			
75 x 120 x 25 (W x D x H)(with chassis)				90 x 135 x 25 (W x D x H)(with chassis)			
250 g (with chassis)				300 g (with chassis)			

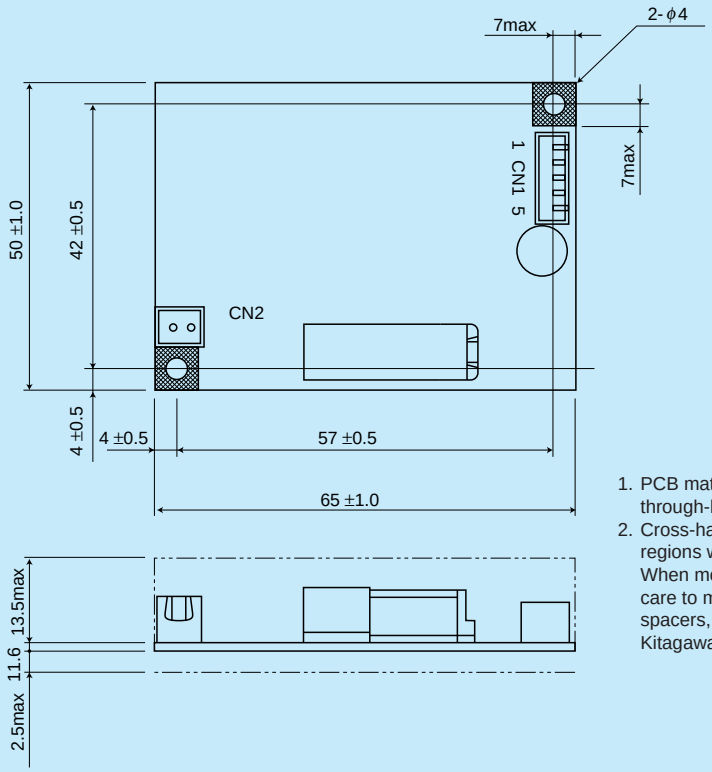
Item			Rating	100W			
			Conditions	SSG 100-05	SSG 100-12	SSG 100-15	SSG 100-24
Input	Rated Input Voltage			100-120V AC			
	Input Voltage Range			85 to 132V AC			
	Input Current (see Note 1)			2A (typ)			
	Rated Frequency			50/60 Hz			
	Frequency Range			47 to 440 Hz			
	Efficiency (typ) (see Note 1)			79%	83%	84%	86%
	Inrush Current (see Note 1, 2)			20 A (max)			
Output (see Note 3)	Rated Output Voltage			+5V	+12V	+15V	+24V
	Adjustable Output Voltage Range			Rated voltage ±10%			
	Rated Output Current			20.0A	8.5A	7.0A	4.5A
	Adjustable Output Current Range			0 to 100%			
	Maximum Output Power			100W	102W	105W	108W
	Ripple (mVp-p) (see Note 1, 4)			120mVp-p	180mVp-p	180mVp-p	240mVp-p
	Constant Voltage Accuracy	Static Input Range	85 to 132V AC	±3%			
		Static Load Range	0 to 100%				
		Time Driftt	10min. to 8 hours				
		Ambient Temperature Range	0 to +50°C				
Other	Output Holdup Time (see Note 1)			20ms (min)			
	Startup Time (see Note 1)			300ms (typ)			
	Leakage Current (see Note 1)			0.4mA (max)			
Additional Functions	Over Current Protection			Detection above 120% of rated current (output cutoff)			
	Over Voltage Protection			Detection above 120% of rated voltage (output cutoff)			
	Remote On/Off Control			Not provided			
	Remote Sensing			Provided			
Environmental	Temperature		Operating Temperature	Operating Temperature 0 to 50°C (0 to 40°C with cover)			
			Storage Temperature	-25 to +85°C			
	Relative Humidity		Operating Humidity	30 to 90% (no condensation)			
			Storage Humidity				
Insulation	Insulation Withstand Voltage		Between Input and Output	2000 V AC for 1 minute, 2400 V AC for 1 second (Leakage current of 15 mA or less)			
			Between Input and Frame				
			Between Output and Frame	500 V AC for 1 minute, 600 V AC for 1 second (Leakage current of 15 mA or less)			
	Insulation Resistance		Between Input and Output	100 MΩ (measured with 500 V DC Megger)			
			Between Input and Frame				
			Between Output and Frame				
Applicable Standards	Safety Standards			UL and CSA certified			
	EMI Standards			Conforms to FCC Class A			
Structural Specifications	External Appearance			(input/output terminal stand and cover are optional)			
	Size (dimensions in mm)			93 x 177 x 40 (W x D x H)(with chassis)			
	Weight (without cover)			470 g (with chassis)			

Note 1: Rated input/output conditions means that the switching power supply is operated under the rated input voltage, rated frequency, rated output voltage, and at an ambient temperature of 25°C and 60% humidity.
Note 2: At cold start. (More current may flow at restart.)
Note 3: All output characteristics are measured at a point 5 cm from the output connector, with a 63 V 47 µF electrolytic capacitor attached at that point.
Note 4: Ripple noise is measured with a 100 MHz oscilloscope, using a 1:1 probe.

150W			
SSG 150-05	SSG 150-12	SSG 150-15	SSG 150-24
100-120V AC			
85 to 132V AC			
3.5A (typ)			
50/60 Hz			
47 to 440 Hz			
79%	83%	84%	86%
20 A (max)			
+5V	+12V	+15V	+24V
Rated voltage ±10%			
30A	13A	10A	6.5A
0 to 100%			
150W	156W	150W	156W
120mVp-p	180mVp-p	180mVp-p	240mVp-p
±3%			
20ms (min)			
300ms (typ)			
0.4mA (max)			
Detection above 120% of rated current (output cutoff)			
Detection above 120% of rated voltage (output cutoff)			
Not provided			
Provided			
Operating Temperature 0 to 50°C (0 to 40°C with cover)			
-25 to +85°C			
30 to 90% (no condensation)			
2000 V AC for 1 minute, 2400 V AC for 1 second (Leakage current of 15 mA or less)			
500 V AC for 1 minute, 600 V AC for 1 second (Leakage current of 15 mA or less)			
100 MΩ (measured with 500 V DC Megger)			
UL and CSA certified			
Conforms to FCC Class A			
(input/output terminal stand and cover are optional)			
93 x 177 x 57 (W x D x H)(with chassis)			
450 g (with chassis)			

5 W (PCB type) (weight: 50 g)

Model
SSG005-05

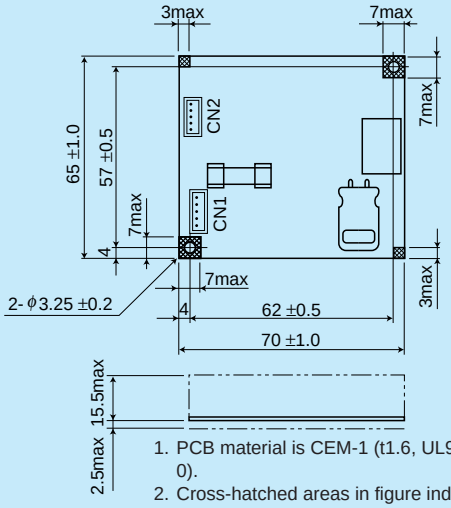


1. PCB material is CEM-3 (t1.6 double-sided through-hole, UL94V-0).
2. Cross-hatched areas in figure indicate regions where parts may not be mounted. When mounting the power supply, take care to maintain board distance. Plastic spacers, such as KGTS (manufactured by Kitagawa) may be used.

10 W (PCB type) (weight: 80 g) / 10 W (with chassis) (weight: 130 g)

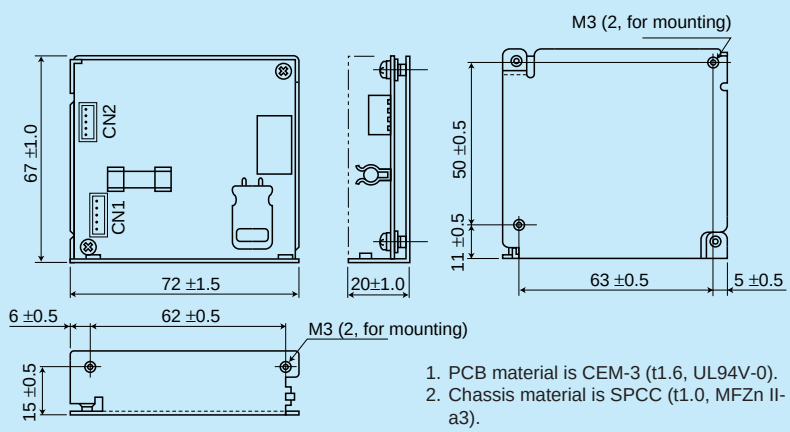
Model
SSG010-05
SSG010-12
SSG010-15
SSG010-24

10W (PCB type)



1. PCB material is CEM-1 (t1.6, UL94V-0).
2. Cross-hatched areas in figure indicate regions where parts may not be mounted.

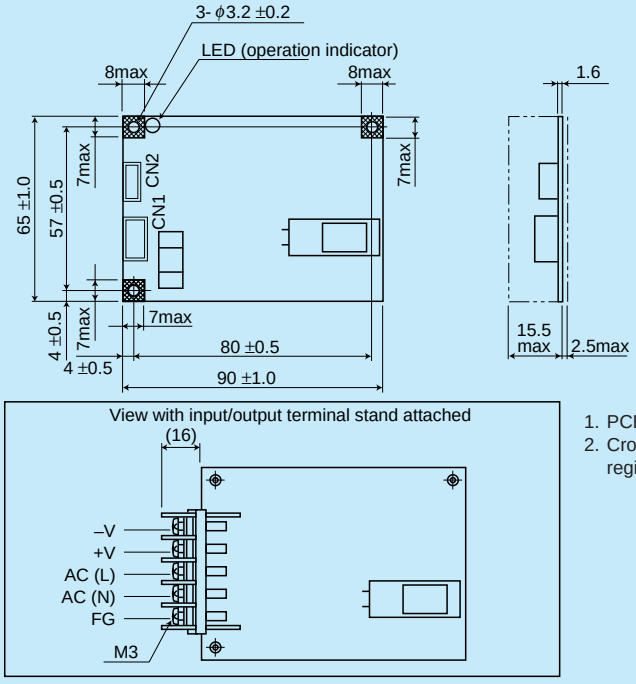
10W (with chassis)



1. PCB material is CEM-3 (t1.6, UL94V-0).
2. Chassis material is SPCC (t1.0, MFZn II-a3).
3. The chassis is optional.
4. Mounting screws should be shorter than 4 mm (including chassis thickness).

15 W (PCB type) (weight: 90 g)

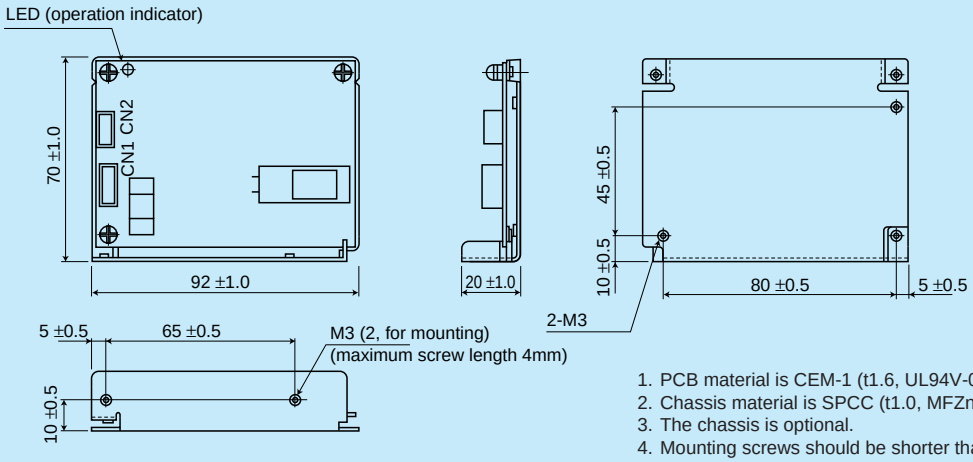
Model
SSG015-05
SSG015-12
SSG015-15
SSG015-24



1. PCB material is CEM-3 (t1.6, UL94V-0).
2. Cross-hatched areas in figure indicate regions where parts may not be mounted.

15 W (with chassis) (weight: 150 g)

Model
SSG015-05
SSG015-12
SSG015-15
SSG015-24

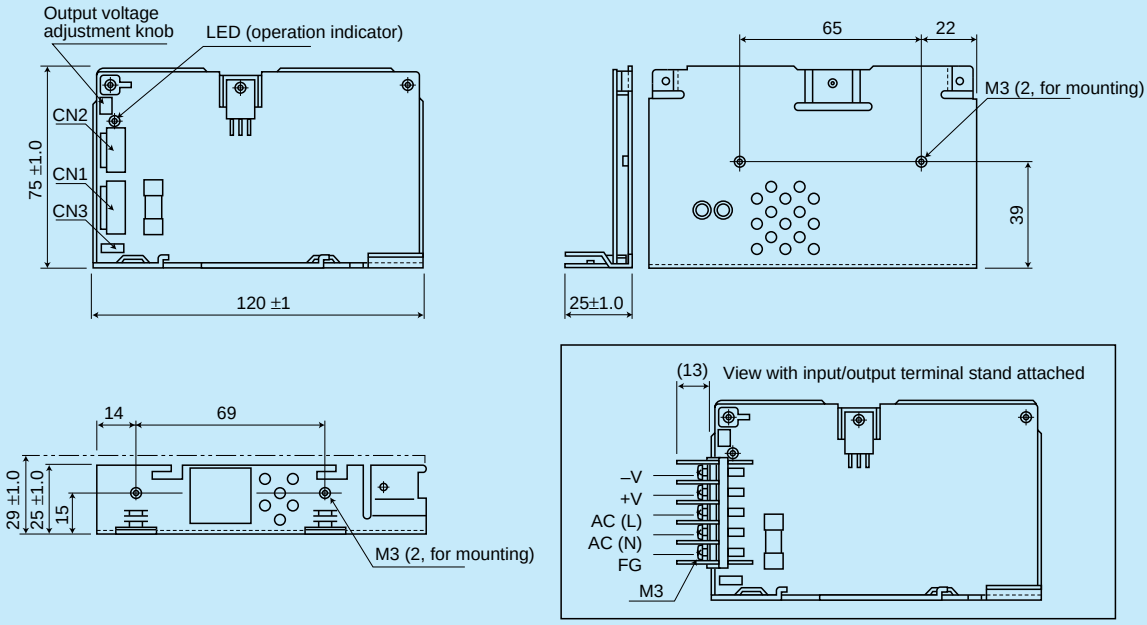


1. PCB material is CEM-1 (t1.6, UL94V-0).
2. Chassis material is SPCC (t1.0, MFZn II-a3).
3. The chassis is optional.
4. Mounting screws should be shorter than 4 mm (including chassis thickness).

30 W (weight: 250 g)

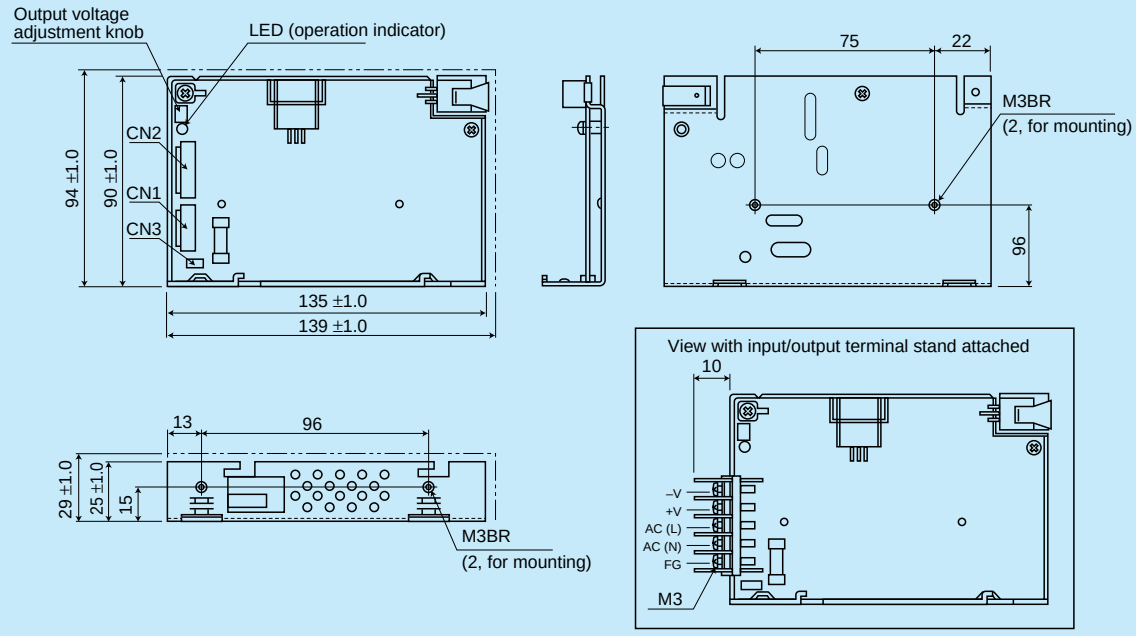
Model
SSG030-05
SSG030-12
SSG030-15
SSG030-24

1. Chassis material is aluminum t1.5.
2. Cover material is SPCC MFZnP II-a3 t0.8.
3. PCB material is CEM-3 t1.6, single-sided (UL94V-0).
4. Mounting screws should be shorter than 5 mm (including chassis thickness).



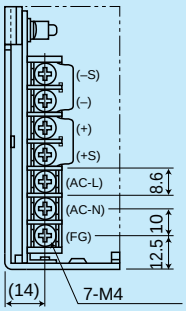
50 W (weight: 300 g)

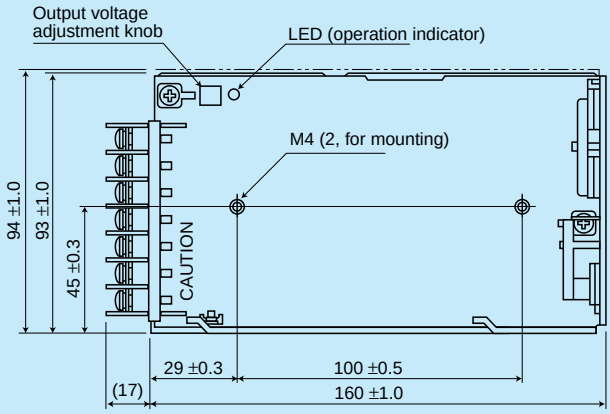
Model
SSG050-05
SSG050-12
SSG050-15
SSG050-24

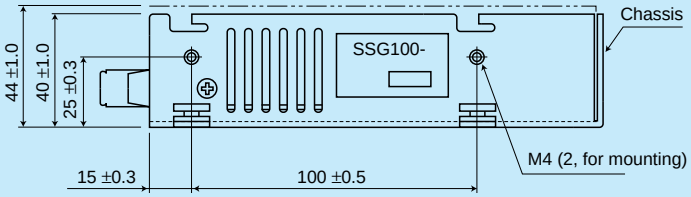


100 W (weight: 470 g)

Model
SSG100-05
SSG100-12
SSG100-15
SSG100-24

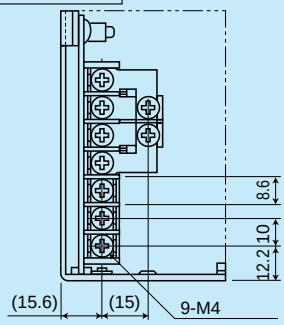


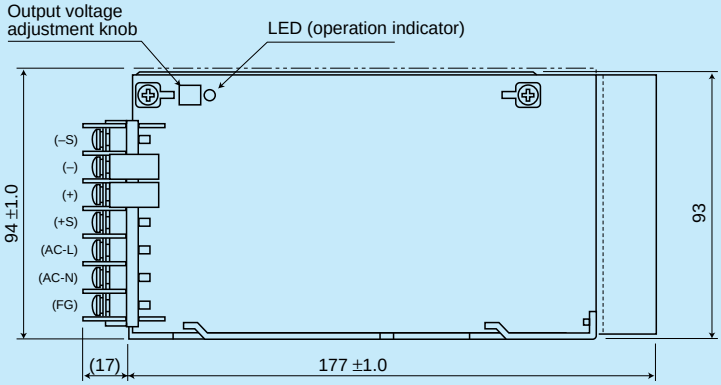


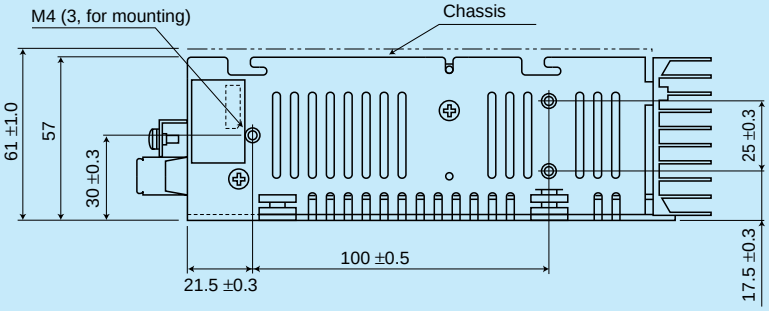


150 W (weight: 830 g)

Model
SSG150-05
SSG150-12
SSG150-15
SSG150-24







Connectors (for models SSG005, SSG010, and SSG015)

Model	Connector	Pin	Name	Corresponding Connector	Corresponding contacts
Input (for all models listed above)	CN1	1	FG	XHP-5 (JST)	SXH-001T-P0.6 (JST)
		2	NC		
		3	AC (N)		
		4	NC		
		5	AC (L)		
SSG005-05	CN2	1	+V	XHP-2 (JST)	SXH-001T-P0.6 (JST)
		2	0V		
SSG010 type SSG015 type	CN2	1, 2	+V	XHP-4 (JST)	SXH-001T-P0.6 (JST)
		3, 4	0V		

Connectors (for models SSG030, SSG050)

Model	Connector	Pin	Name	Corresponding Connector	Corresponding contacts
Input (for all models listed above)	CN1	1	FG	VHR-5N (JST)	SVH-21T-P1.1 (JST)
		2	NC		
		3	AC (N)		
		4	NC		
		5	AC (L)		
SSG030 type	CN2	1, 2	+V	VHR-4N (JST)	SXH-001T-P0.6 (JST)
		3, 4	0V		
	CN3	1	FG	FG#250 fastener recepticle	
SSG050 type	CN2	1 - 3	+V	VHR-6N (JST)	SXH-001T-P0.6 (JST)
		4 - 6	0V		
	CN3	1	FG	FG#250 fastener recepticle	

Terminal Stand (for models SSG030, SSG050, SSG100, and SSG150)

Model	Pin	Name	Corresponding crimp terminal
SSG030 type SSG050 type	1	FG	V1. 25-3 (JST) or equivalent
	2	AC (N)	
	3	AC (L)	
	4	+V	
	5	0V	
SSG100 type SSG150 type	1	FG	V2-4 (JST) or equivalent
	2	AC (N)	
	3	AC (L)	
	4	+S	
	5	+V	
	6	0V	
	7	-S	

Note: Check the diagram for each model to verify terminal arrangement.

Terminal names and functions

Input	AC (N)	AC input terminals. Connect the neutral line to AC (N). AC (L) has an input fuse.
	AC (L)	
	FG	Ground terminal. Connect to a ground wire.
Output	+V	DC output terminals. Use these terminals for connection to the load.
	0 V	
	+S	Remote sensing terminals. For remote sensing, connect these terminals to the sensing point.
	-S	