



100W Single Output with PFC Function

SP-100 series



■ Features :

- Universal AC input / full range
- Built-in active PFC function, PF>0.93
- Protections: Short circuit / Overload / Over voltage
- Built-in constant current limiting circuit
- Remote ON-OFF control(Optional)
- LED indicator for power on
- 100% full load burn-in test
- Fixed switching frequency at PFC:67KHz PWM:134KHz
- 3 years warranty

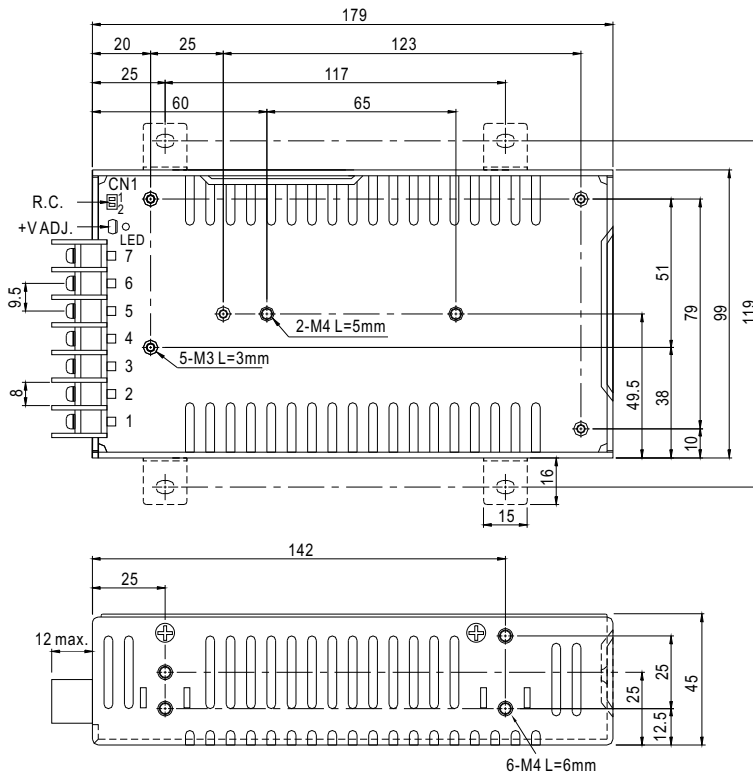


SPECIFICATION

MODEL		SP-100-3.3	SP-100-5	SP-100-7.5	SP-100-12	SP-100-13.5	SP-100-15	SP-100-24	SP-100-27	SP-100-48	
OUTPUT	DC VOLTAGE	3.3V	5V	7.5V	12V	13.5V	15V	24V	27V	48V	
	RATED CURRENT	20A	20A	13.5A	8.5A	7.5A	6.7A	4.2A	3.8A	2.1A	
	CURRENT RANGE	0 ~ 20A	0 ~ 20A	0 ~ 13.5A	0 ~ 8.5A	0 ~ 7.5A	0 ~ 6.7A	0 ~ 4.2A	0 ~ 3.8A	0 ~ 2.1A	
	RATED POWER	66W	100W	101.25W	102W	101.25W	100.5W	100.8W	102.6W	100.8W	
	RIPPLE & NOISE (max.) Note.2	100mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	150mVp-p	150mVp-p	250mVp-p	
	VOLTAGE ADJ. RANGE	3.14 ~ 3.63V	4.75 ~ 5.5V	7.13 ~ 8.25V	11.4 ~ 13.2V	12.8 ~ 14.9V	14.3 ~ 16.5V	22.8 ~ 26.4V	25.7 ~ 29.7V	45.6 ~ 52.8V	
	VOLTAGE TOLERANCE Note.3	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	1.0%	1.0%	1.0%	
	LINE REGULATION	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	
	LOAD REGULATION	1.0%	1.0%	1.0%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	
	SETUP, RISE TIME	600ms, 30ms at full load									
HOLD UP TIME (Typ.)	20ms at full load										
INPUT	VOLTAGE RANGE	85 ~ 264VAC 120 ~ 370VDC									
	FREQUENCY RANGE	47 ~ 63Hz									
	POWER FACTOR (Typ.)	PF>0.93/230VAC PF>0.98/115VAC at full load									
	EFFICIENCY (Typ.)	70%	76%	78%	80%	80%	82%	84%	83%	82%	
	AC CURRENT (Typ.)	1.7A/115VAC 0.8A/230VAC									
	INRUSH CURRENT (Typ.)	COLD START 30A/230VAC									
	LEAKAGE CURRENT	<2mA / 240VAC									
PROTECTION	OVERLOAD	105 ~ 150% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed									
	OVER VOLTAGE	3.63 ~ 4.46V	5.5 ~ 6.75V	8.25 ~ 10.13V	13.2 ~ 16.2V	14.85 ~ 18.23V	16.5 ~ 20.25V	26.4 ~ 32.4V	29.7 ~ 36.45V	52.8 ~ 64.8V	
FUNCTION	REMOTE CONTROL(OPTION)	CN1:4 ~ 10VDC POWER ON, <0 ~ 0.8VDC POWER OFF									
ENVIRONMENT	WORKING TEMP.	-10 ~ +60℃ (Refer to output load derating curve)									
	WORKING HUMIDITY	20 ~ 90% RH non-condensing									
	STORAGE TEMP., HUMIDITY	-20 ~ +85℃, 10 ~ 95% RH									
	TEMP. COEFFICIENT	0.05%/℃ (0 ~ 50℃)									
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes									
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved									
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC									
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC									
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B									
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3									
OTHERS	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, light industry level, criteria A									
	MTBF	211.3K hrs min. MIL-HDBK-217F (25℃)									
	DIMENSION	179*99*45mm (L*W*H)									
	PACKING	0.66Kg; 20pcs/14.3Kg/1.17CUFT									
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.										

Mechanical Specification

Case No. 915A Unit:mm



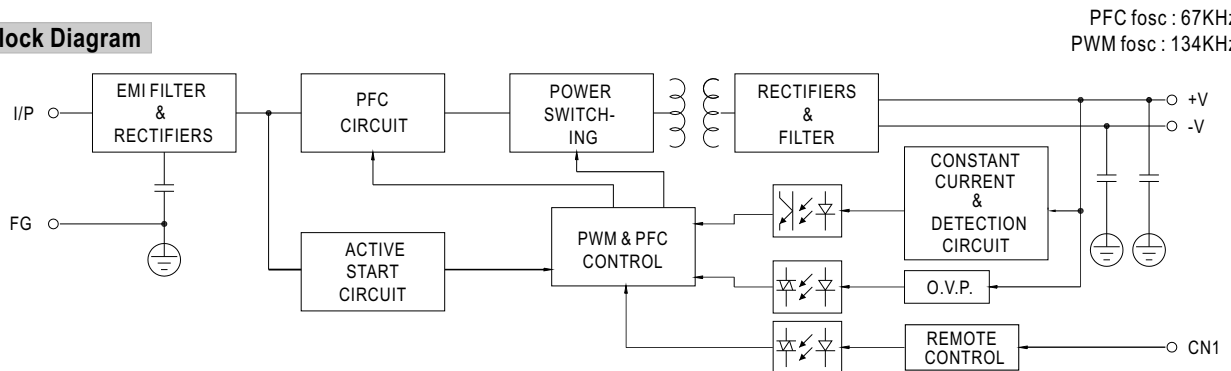
Terminal Pin No. Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	4,5	DC OUTPUT -V
2	AC/N	6,7	DC OUTPUT +V
3	FG $\perp$		

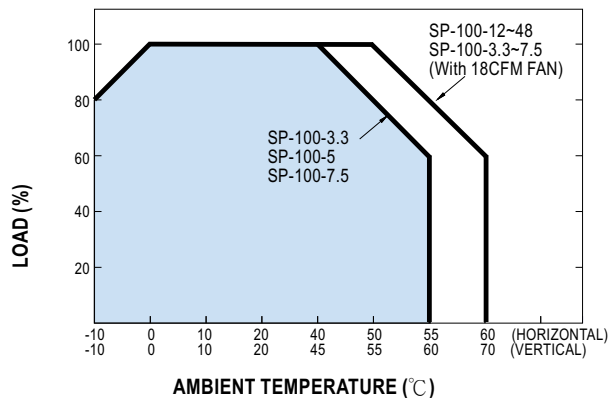
Remote ON/OFF(CN1): JST S2B-XH or equivalent(optional)

Pin No.	Assignment	Mating Housing	Terminal
1	RC+	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
2	RC-		

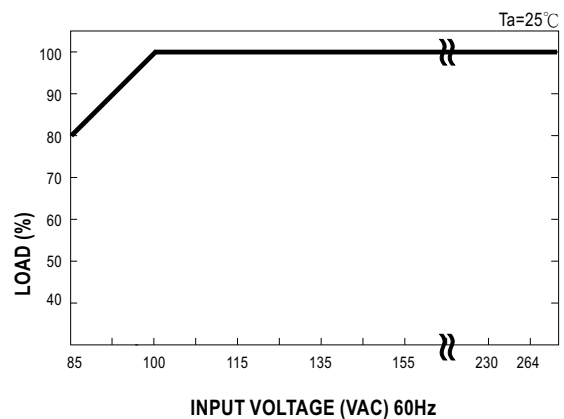
Block Diagram



Derating Curve



Output Derating VS Input Voltage



Quality Engineering Test Report

SERIES: SP-100 100 WATTS SIGLE OUTPUT SWITCHING POWER SUPPLY

SAMPLE: A.SP-100-3.3 3.3V / 20A D.SP-100-12 12V /8.5A G.SP-100-24 24V /4.2A
 B.SP-100-5 5V /20A E.SP-100-13.5 13.5V /7.5A H.SP-100-27 27V /3.8A
 C.SP-100-7.5 7.5V /13.5A F.SP-100-15 15V /6.7A I.SP-100-48 48V /2.1A

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
1	AC INPUT VOLTAGE RANGE	I/P:TESTING SPEC:85~264VAC O/P:FULL LOAD	F : 54V~267VAC	P
2	LINE REGULATION	I/P:85~264VAC SPEC: O/P:FULL LOAD A: ±0.5% B: ±0.5% C:±0.5% D: ±0.5% E: ±0.5% G:±0.5% H: ±0.5% I: ±0.5%	A: 0.18% ~ 0.18% B: -0.36% ~ 0.36% C: 0% ~ 0% D: 0% ~ 0% E: 0% ~ 0% F: 0% ~ 0% G: 0% ~ 0.02% H: 0% ~ 0% I: -0.01% ~ -0.01%	P
3	LOAD REGULATION	I/P:230VAC SPEC: O/P:0% LOAD A: ±1% TO FULL LOAD B: ±1% C: ±1% D: ±0.5% E: ±0.5% F: ±0.5% G: ±0.5% H: ±0.5% I: ±0.5%	A: 0.35% ~ 0.17% B: -0.12% ~ 0.12% C: -0.24% ~ 0.16% D: -0.04 % ~ 0% E: 0% ~ 0.042% F: -0.07% ~ 0.07% G: 0% ~ 0.020% H: 0.06% ~ -0.04% I: 0% ~ 0.024%	P
4	OUTPUT VOLTAGE TOLERANCE	I/P:85~264VAC SPEC: O/P:0% LOAD A: ±2% TO FULL LOAD B: ±2% C: ±2% D: ±2% E: ±2% F: ±2% G: ±1% H: ±1% I: ±1%	A: -1.19% ~ 0% B: 1% ~ 1.3% C: -0.4% ~ 0.07% D: 0% ~ -0.05% E: 0.50% ~ 0.45% F: 0.10% ~ 0.74% G: 0.70% ~ 0.75% H: 0.67% ~ 0.6% I: 0.46% ~ 0.41%	P
5	RIPPLE & NOISE	I/P:230VAC SPEC: O/P: FULL LOAD A:100mV B:100mV C:100mV D:100mV E:100mV F:100mV G :150mV H:150mV I:250mV	A: 37mV B: 92mV C: 76mV D: 52mV E: 65mV F: 58mV G: 66mV H: 50mV I: 87mV	P
6	AC INPUT CURRENT	I/P:230VAC SPEC: 0.75A(3.3v:0.06A) O/P:FULL LOAD	F:0.55A	P
7	MAX. INRUSH CURRENT	I/P:230VAC SPEC: 40A O/P:FULL LOAD	F:14.8A	P

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
8	O/P VOLTAGE ADJ.RANGE	I/P:230VAC SPEC: +10%~-5% A:3.1V~3.6V B:4.7V~5.5V C:7.12V~8.25V D:11.4V~13.2V E:12.8 V~14.8V F:14.2V~16.5V G:22.8V~26.4V H:25.6V~29.7V I:45.6V~52.8V O/P:MIN. LOAD	A:3.08V~3.8V B:4.39V~5.54V C:6.33V~9.06V D:10.1V~13.6V E:11.55V~14.89V F:12.79V~17.63V G:19.6V~27.4V H:20.15V~30.09V I:40V~54.3V	P
9	SET UP TIME	I/P:230VAC O/P:FULL LOAD SPEC:600ms	F:56mS	P
10	HOLD UP TIME	I/P:230VAC O/P:FULL LOAD SPEC:20mS	F:34mS	P
11	EFFICIENCY	I/P:230VAC O/P: FULL LOAD SPEC: A:70% B:76% C:78% D:80% E:80% F:82% G:84% H:83% I:82	A: 70.20% B: 78.01% C: 78.76% D: 83.05% E: 83.64% F: 81.37% G: 86.20% H: 87.07% I: 87.13%	P
12	OVER LOAD PROTECTION	I/P:230VAC O/P:TESTING SPEC:105%~150%	A: 130% B: 112% C: 130% D: 122% E: 118% F: 148% G: 124% H: 128% I: 133%	P
13	OVER VOLTAGE PROTECTION	I/P:230VAC O/P: TESTING SPEC:110%~135% A3.63~4.45 V B:5.5~6.75V C:8.25~10.12V D:13.2~16.2V E:14.8~18.2V F:16.5~20.2V G:26.4~32.4V H:29.7~36.4V I:52.8~64.8V	A: 4.2V B: 5.79V C: 9.3V D: 14.3V E: 15.8V F: 19.0V G: 29.1V H: 31.8V I: 56.8V	P
14	GROUND LEAKAGE CURRENT	I/P:240VAC SPEC: L-FG--<2mA N-FG--<2mA	A: L-FG:0.6mA N-FG:0.48mA	P
15	GROUNDING CONTINUITY	SPEC: FG--CHASSIS<0.1Ohms/2min	A: 52mOhms	P
16	INSULATION RESISTANCE	SPEC: O/P-FG 500VDC / 100MOhms MIN. I/P-O/P 500VDC / 100MOhms MIN. I/P-FG 500VDC / 100MOhms MIN.	A: O/P-FG >100MOhms I/P-O/P >100MOhms I/P-FG >100MOhms	P

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17	DIELECTRIC / WITHSTAND VOLTAGE	SPEC : I/P- O/P: 3000VAC/ 60 sec (10mA CUT-OFF) I/P - FG: 1500VAC/ 60 sec (10mA CUT-OFF) O/P - FG: 500VAC/60sec (10mA CUT-OFF)	:F I/P-O/P : 4.00mA I/P-FG : 3.38mA O/P- FG : 3.56mA	P																																																									
18	BURN-IN TEST	I/P: 230VAC O/P:FULL LOAD with cooling FAN TA:26.7°C BURN-IN DURATION : 13.5 hrs	B: NON BREAK	P																																																									
19	ENVIRONMENT TEST	1.LOW TEMPERATURE TEST I/P : 230 VAC O/P : 80% LOAD AMBIENT TEMPERATURE : -10.1°C	B : AFTER 2 hrs POWER ON OK	P																																																									
		2.HIGH AMBIENT TEMPERATURE TEST I/P : 230VAC O/P: FULL LOAD TEMPERATURE : 40.3°C with cooling FAN	B : AFTER 2.5hrs NON BREAK																																																										
		3.HIGH HUMIDITY HIGH VOLTAGE ON/OFF TEST I/P : 272VAC O/P : FULL LOAD AMBIENT TEMPERATURE : 25°C AMBIENT HUMIDITY : 95%	I : AFTER 14.5 hrs POWER ON/OFF NON BREAK																																																										
20	TEMPERATURE RISE TEST Trise OF PARTS	B: I/P : 230VAC AFTER 13 hrs BURN-IN O/P : FULL LOAD TA : 26.2°C <table><tr><td></td><td>POSITION</td><td>P/N</td><td>TEMP</td><td>Trise</td></tr><tr><td rowspan="2"></td><td>BD1</td><td>BRIDGE DIODE</td><td>51.5°C</td><td>25.3°C</td></tr><tr><td>Q2</td><td>MAIN TRANSISTOR</td><td>60.0°C</td><td>33.8°C</td></tr><tr><td></td><td>Q1</td><td>PFC TRANSISTOR</td><td>43.9°C</td><td>17.7°C</td></tr><tr><td rowspan="2"></td><td>T1</td><td>MAIN TRANSFORMER COIL</td><td>60.5°C</td><td>34.3°C</td></tr><tr><td>T1</td><td>MAIN TRANSFORMER CORE</td><td>65.9°C</td><td>39.7°C</td></tr><tr><td></td><td>D19</td><td>O/P DIODE</td><td>61.9°C</td><td>35.7°C</td></tr><tr><td></td><td>C42</td><td>O/P FILTER CAPACITOR</td><td>60.3°C</td><td>34.1°C</td></tr><tr><td rowspan="3"></td><td>L2</td><td>O/P CHOCK</td><td>76.8°C</td><td>50.6°C</td></tr><tr><td>C5</td><td>I/P FILTER CAPACITOR</td><td>43.6°C</td><td>17.4°C</td></tr><tr><td>LF1</td><td>LINE FILTER COIL</td><td>42.1°C</td><td>15.9°C</td></tr><tr><td></td><td>D2</td><td>PFC DIODE</td><td>36.9°C</td><td>10.7°C</td></tr></table>				POSITION	P/N	TEMP	Trise		BD1	BRIDGE DIODE	51.5°C	25.3°C	Q2	MAIN TRANSISTOR	60.0°C	33.8°C		Q1	PFC TRANSISTOR	43.9°C	17.7°C		T1	MAIN TRANSFORMER COIL	60.5°C	34.3°C	T1	MAIN TRANSFORMER CORE	65.9°C	39.7°C		D19	O/P DIODE	61.9°C	35.7°C		C42	O/P FILTER CAPACITOR	60.3°C	34.1°C		L2	O/P CHOCK	76.8°C	50.6°C	C5	I/P FILTER CAPACITOR	43.6°C	17.4°C	LF1	LINE FILTER COIL	42.1°C	15.9°C		D2	PFC DIODE	36.9°C	10.7°C	P
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21	LIFE CYCLE	SUPPOSE C42 IS THE MOST CRITICAL COMPONENT I/P : 230VAC O/P : FULL LOAD Ta : 25°C Tc42 : 59.1°C Life:143581hrs I/P : 230VAC O/P : FULL LOAD Ta : 40°C Tc42 : 72.2°C Life:57909hrs			P																																																								
22	CRITICAL COMPONENT RECORD (FOR QC INSPECTION REFERENCE ONLY)	B : FUSE :4A/250V GFE/GMA BRIDGE DIODE : D3SB60 4A/800V GL LINE FILTER :TF-479 ET-24 10mH TRANSFOMER :TF-594 EI-33 OUTPUT DIODE :CTB34M 30A/40V ESAD83004 OUTPUT CAPACITOR :N.C.C 2200uF/10V 105°C RJH INPUT CAPACITOR :HITACHI 100uF/400V,85°C HP3/USC P.C.B :SP-100 CEM-3 20Z SS																																																											

DATE	SAMPLE	TEST RESULT	TEST	APPROVAL
19990904	RD SAMPLE	PASS	H.C.LIOU	Max Lin
19991014	PRODUCTION SAMPLE 3.3V,5V,7.5V 12V,13.5V,15V 24V,27V,48V	PASS	C.C.CHEN	Max Lin
20000619	PRODUCTION SAMPLE A006B09 3.3V,7.5V	PASS	VINCENT	Max Lin
20000828	PRODUCTION SAMPLE A008C04 12V	PASS	VINCENT	Max Lin
20020103	PRODUCTION SAMPLE A112D23 13.5V	PASS	VINCENT	Max Lin