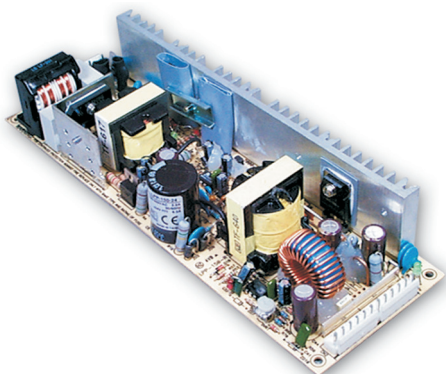




150W Single Output with PFC Function

LPP-150 series



■ Features :

- Universal AC input / Full range
- Built-in active PFC function, PF>0.96
- Protections: Short circuit / Overload / Over voltage
- Protections: Over temperature(option)
- Cooling by free air convection
- 100% full load burn-in test
- Fixed switching frequency at PFC: 67KHz PWM: 134KHz
- 3 years warranty

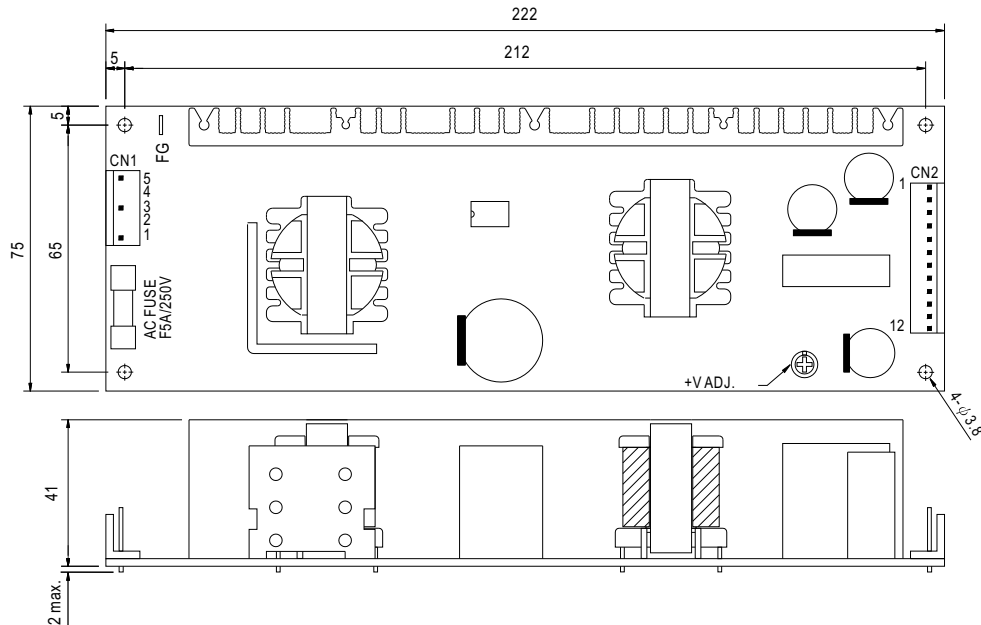


SPECIFICATION

MODEL		LPP-150-3.3	LPP-150-5	LPP-150-7.5	LPP-150-12	LPP-150-13.5	LPP-150-15	LPP-150-24	LPP-150-27	LPP-150-48	
OUTPUT	DC VOLTAGE	3.3V	5V	7.5V	12V	13.5V	15V	24V	27V	48V	
	RATED CURRENT	30A	30A	20A	12.5A	11.2A	10A	6.3A	5.6A	3.2A	
	CURRENT RANGE	0 ~ 30A	0 ~ 30A	0 ~ 20A	0 ~ 12.5A	0 ~ 11.2A	0 ~ 10A	0 ~ 6.3A	0 ~ 5.6A	0 ~ 3.2A	
	RATED POWER	99W	150W	150W	150W	151.2W	150W	150W	151.2W	153.6W	
	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%	±1.0%	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%	
	SETUP, RISE TIME	600ms, 30ms at full load									
HOLD UP TIME (Typ.)	30ms at full load										
INPUT	VOLTAGE RANGE	85 ~ 264VAC 120 ~ 370VDC									
	FREQUENCY RANGE	47 ~ 63Hz									
	POWER FACTOR	PF ≥ 0.96/230VAC PF ≥ 0.98/115VAC at full load									
	EFFICIENCY(Typ.)	66%	72%	76%	79%	80%	80%	83%	83%	83%	
	AC CURRENT (Typ.)	2.5A/115VAC 1.2A/230VAC									
	INRUSH CURRENT (Typ.)	COLD START 40A/230VAC									
	LEAKAGE CURRENT	<3.5mA / 240VAC									
PROTECTION	OVERLOAD	105 ~ 150% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed									
	OVER VOLTAGE	3.63 ~ 4.45V 5.5 ~ 6.75V 8.25 ~ 10.1V 13.2 ~ 16.2V 14.85 ~ 18.2V 16.5~ 20.25V 26.4 ~ 32.4V 29.7 ~ 36.5V 52.8 ~ 64.8V Protection type : Shut down o/p voltage, re-power on to recover									
ENVIRONMENT	WORKING TEMP.	-10 ~ +60℃ with cooling FAN(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, period for 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									
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, light industry level, criteria A									
OTHERS	MTBF	191.8Khrs min. MIL-HDBK-217F (25℃)									
	DIMENSION	222*75*41mm (L*W*H)									
	PACKING	0.62Kg; 24pcs/16.6Kg/1.39CUFT									
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

Unit:mm



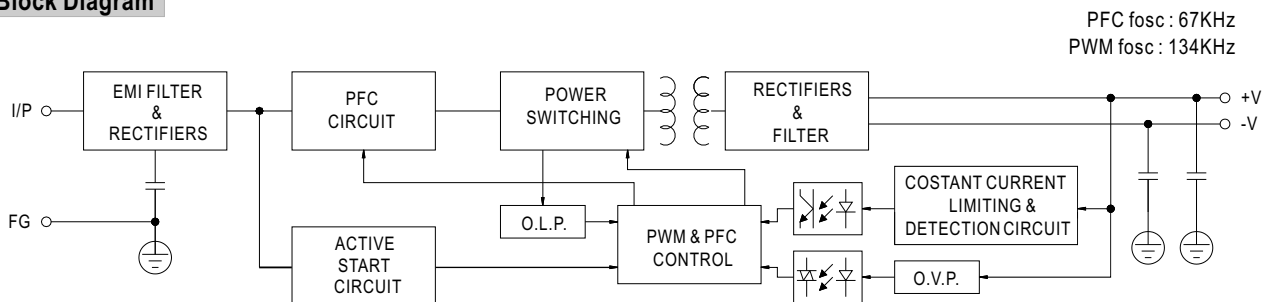
AC Input Connector (CN1) : JST B5P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/L	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2,4	No Pin		
3	AC/N		
5	FG		

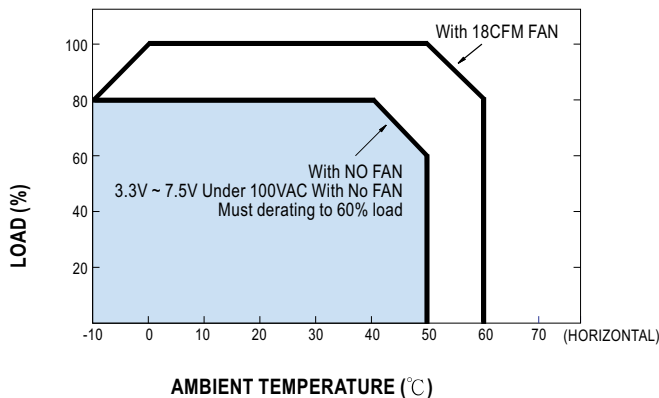
DC Output Connector (CN2) : JST B6P-VH*2 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1~6	-V	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
7~12	+V		

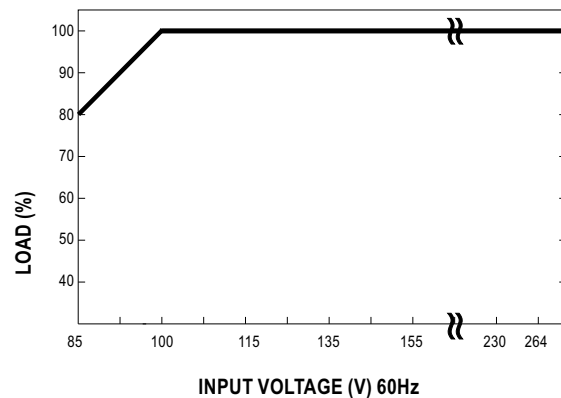
Block Diagram



Derating Curve



Output Derating VS Input Voltage



Quality Engineering Test Report

SERIES: LPP-150 150 WATTS SIGLE OUTPUT SWITCHING POWER SUPPLY

SAMPLE: A.LPP-150-3.3 3.3V / 30A D.LPP-150-12 12V /12.5A G.LPP-150-24 24V /6.3A

B.LPP-150-5 5V /30A E.LPP-150-13.5 13.5V /11.2A H.LPP-150-27 27V /5.6A

C.LPP-150-7.5 7.5V /20A F.LPP-150-15 15V /10A I.LPP-150-48 48V /3.2A

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
1	AC INPUT VOLTAGE RANGE	I/P:TESTING SPEC:85-264VAC O/P:FULL LOAD	B: 58V-267VAC	P
2	LINE REGULATION	I/P:85-264VAC SPEC: O/P:FULL LOAD A: $\pm 0.5\%$ B: $\pm 0.5\%$ C: $\pm 0.5\%$ D: $\pm 0.5\%$ E: $\pm 0.5\%$ F: $\pm 0.5\%$ G: $\pm 0.5\%$ H: $\pm 0.5\%$ I: $\pm 0.5\%$	A: 0% - -0.18% B: 0% - 0% C: 0.08% - 0.08% D: 0% - 0.04% E: 0.00% - 0.04% F: 0% - 0% G: 0% - 0% H: -0.2% - 0% I: -0.07% - 0.08%	P
3	LOAD REGULATION	I/P:230VAC SPEC: O/P:0% LOAD TO FULL LOAD A: $\pm 1\%$ B: $\pm 1\%$ C: $\pm 1\%$ D: $\pm 1\%$ E: $\pm 1\%$ F: $\pm 1\%$ G: $\pm 0.5\%$ H: $\pm 0.5\%$ I: $\pm 0.5\%$	A: 0% - 0% B: 0% - 0% C: -0.08% - 0% D: -0.14% - 0.09% E: 0.13% - -0.13% F: -0.204% - 0.165% G: -0.12% - 0% H: -0.2% - 0% I: -0.4% - 0.01%	P
4	OUTPUT VOLTAGE TOLERANCE	I/P:85~264VAC SPEC: O/P:0% LOAD TO FULL LOAD A: $\pm 2\%$ B: $\pm 2\%$ C: $\pm 2\%$ D: $\pm 2\%$ E: $\pm 2\%$ F: $\pm 2\%$ G: $\pm 1\%$ H: $\pm 1\%$ I: $\pm 1\%$	A: 0.39% ~ 0% B: 0.1% ~ 0% C: 0.09% ~ 0.18% D: 0% ~ 0.3% E: 0.0% ~ 0.27% F: 0.039% ~ 0.37% G: 0% ~ -0.12% H: 0.02% ~ 0.3% I: -0.02% ~ 0.47 %	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: 59mV B: 26mV C: 46mV D: 51mV E: 45mV F: 42mV G: 56mV H: 81mV I: 185mV	P
6	AC INPUT CURRENT	I/P:230VAC SPEC: 1.1A O/P:FULL LOAD (3.3V:0.8A)	B:0.919A	P
7	MAX. INRUSH CURRENT	I/P:230VAC SPEC: 40A O/P:FULL LOAD	B:23A	P

NO	TEST ITEM	TEST CONDITION / SPECIFICATION		RESULT	VERDICT
8	O/P VOLTAGE ADJ.RANGE	I/P:230VAC O/P:MIN. LOAD	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	A:3.07V~3.79V B:4.4V~5.87V C:6.40V~8.96V D:10.23V~13.7V E:10.6V~14.88V F:12.7V~17.4V G:19.7V~27.5V H:20.3V~30.1V I:40.6V~54.8V	P
9	SET UP TIME	I/P:230VAC O/P:FULL LOAD	SPEC:600ms	B:233mS	P
10	HOLD UP TIME	I/P:230VAC O/P:FULL LOAD	SPEC:20mS	B:35.9mS	P
11	EFFICIENCY	I/P:230VAC O/P: FULL LOAD	SPEC: A:66% B:72% C:76% D:79% E:80% F:80% G:83% H:83% I:83%	A: 67.75% B: 73.59% C: 79.0% D: 79.5% E: 81.5% F: 81.2% G: 83.2% H: 83.1% I: 84.8%	P
12	OVER LOAD PROTECTION	I/P:230VAC O/P:TESTING	SPEC:105%~150%	A: 128% B: 130% C: 133% D: 121% E: 111% F: 136% G: 132% H: 120% I: 134%	P
13	OVER VOLTAGE PROTECTION	I/P:230VAC O/P: TESTING	SPEC:110%~135% A:3.63~4.45 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: 4.09V B: 6.17V C: 9.00V D: 14.8V E: 17.8V F: 18.2V G: 30.0V H: 33.1V I: 56.0V	P
14	GROUND LEAKAGE CURRENT	I/P:240VAC	SPEC: L-FG--<3.5mA N-FG--<3.5mA	B: L-FG:0.64mA N-FG:0.42mA	P
15	GROUNDING CONTINUITY	SPEC: FG--CHASSIS<0.1Ohms/2min		I: -----	N
16	INSULATION RESISTANCE	SPEC: O/P-FG 500VDC / 100MOhms MIN. I/P-O/P 500VDC / 100MOhms MIN. I/P-FG 500VDC / 100MOhms MIN.		B: O/P-FG >100MOhms I/P-O/P >100MOhms I/P-FG >100MOhms	P

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT																																																								
17	DIELECTRIC / WITHSTAND VOLTAGE	SPEC : I/P - O/P : 3KVAC/ 60 sec (10mA CUT-OFF) I/P - FG : 1.5KVAC/60 sec (10mA CUT-OFF) O/P - FG : 0.5KVAC/60sec (10mA CUT-OFF)	B: I/P-O/P: 0.003mA I/P-FG: 3.57mA O/P- FG: 1.55mA	P																																																								
18	BURN-IN TEST	I/P: 230VAC O/P:FULL LOAD with cooling FAN TA:24.0℃ BURN-IN DURATION : 2.5 hrs	I: NON BREAK	P																																																								
19	ENVIRONMENT TEST	1.LOW TEMPERATURE TEST I/P : 230 VAC O/P : 80% LOAD AMBIENT TEMPERATURE : -9.5℃	I : AFTER 3.05 hrs POWER ON OK	P																																																								
		2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST I/P : 230VAC O/P : FULL LOAD AMBIENT TEMPERATURE : 54.2℃ with cooling FAN	I : AFTER 14 hrs NON BREAK																																																									
		3.HIGH HUMIDITY HIGH VOLTAGE ON/OFF TEST I/P : 272VAC O/P : FULL LOAD AMBIENT TEMPERATURE : 25℃ AMBIENT HUMIDITY : 95%	I : AFTER14 hrs POWER ON/OFFNON BREAK																																																									
20	TEMPERATURE RISE TEST Trise OF PARTS	I: I/P : 230VAC AFTER 2.5 hrs BURN-IN O/P : FULL LOAD TA : 24.0℃ with cooling FAN <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>41.5℃</td><td>17.5℃</td></tr><tr><td>Q2</td><td>MAIN TRANSISTOR</td><td>33.0℃</td><td>9℃</td></tr><tr><td></td><td>Q1</td><td>PFC TRANSISTOR</td><td>37.5℃</td><td>13.5℃</td></tr><tr><td rowspan="2"></td><td>T1</td><td>MAIN TRANSFORMER COIL</td><td>32.1℃</td><td>8.1℃</td></tr><tr><td>T1</td><td>MAIN TRANSFORMER CORE</td><td>32.2℃</td><td>8.2℃</td></tr><tr><td></td><td>D11</td><td>O/P DIODE</td><td>36.6℃</td><td>12.6℃</td></tr><tr><td></td><td>C42</td><td>O/P FILTER CAPACITOR</td><td>35℃</td><td>11℃</td></tr><tr><td rowspan="3"></td><td>L2</td><td>O/P CHOCK</td><td>27.4℃</td><td>3.4℃</td></tr><tr><td>C5</td><td>I/P FILTER CAPACITOR</td><td>25.7℃</td><td>1.7℃</td></tr><tr><td>LF1</td><td>LINE FILTER COIL</td><td>26.3℃</td><td>2.3℃</td></tr><tr><td></td><td>D2</td><td>PFC DIODE</td><td>39.4℃</td><td>15.4℃</td></tr></table>			POSITION	P/N	TEMP	Trise		BD1	BRIDGE DIODE	41.5℃	17.5℃	Q2	MAIN TRANSISTOR	33.0℃	9℃		Q1	PFC TRANSISTOR	37.5℃	13.5℃		T1	MAIN TRANSFORMER COIL	32.1℃	8.1℃	T1	MAIN TRANSFORMER CORE	32.2℃	8.2℃		D11	O/P DIODE	36.6℃	12.6℃		C42	O/P FILTER CAPACITOR	35℃	11℃		L2	O/P CHOCK	27.4℃	3.4℃	C5	I/P FILTER CAPACITOR	25.7℃	1.7℃	LF1	LINE FILTER COIL	26.3℃	2.3℃		D2	PFC DIODE	39.4℃	15.4℃	P
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21	LIFE CYCLE	SUPPOSE C42 IS THE MOST CRITICAL COMPONENT WITH COOLING FAN I/P : 230VAC O/P : FULL LOAD Ta : 25℃ Tc42 : 35℃ Life:785705hrs I/P : 230VAC O/P : FULL LOAD Ta : 50℃ Tc42 : 57.7℃ Life:162909hrs																																																										
22	CRITICAL COMPONENT RECORD (FOR QC INSPECTION REFERENCE ONLY)	I : FUSE :4A/250V GFE/GNA BRIDGE DIODE : KBJ608J 6A/800V LINE FILTER :LF201 TRANSFOMER :TF-642 OUTPUT DIODE :C16P40F 16A/400V OUTPUT CAPACITOR :ELNA 220uF/63V 105℃ RJH INPUT CAPACITOR :HITACHI 150uF/400V,85℃ HP3/USC P.C.B :LPP-150 CEM-1 20Z SS																																																										

DATE	SAMPLE	TEST RESULT	TEST	APPROVAL
19990923	RD SAMPLE 5V,12V,24V,48V	PASS	C.C.CHEN	MAX LIN
20000112	PRDUCTION SAMPLE A001A21 3.3V,5V,7.5V 12V,13.5V,15V 24V,27V,48V	PASS	C.C.CHEN	Max Lin
20000313	PRDUCTION SAMPLE A003A07 12V,48V	PASS	VINCENT	Max Lin
20000326	PRDUCTION SAMPLE A003C07 13.5V	PASS	VINCENT	Max Lin
20000707	PRDUCTION SAMPLE A007A06 15V	PASS	VINCENT	Max Lin
20020108	PRDUCTION SAMPLE A201A19 5V	PASS	VINCENT	Max Lin