

■ Features :

- Universal AC input / Full range
- Low leakage current <0.5mA
- Protections: Short circuit/Over load /Over voltage/Over temperature
- Cooling by free air convection
- 100% full load burn-in test
- Fix switching frequency at 67KHz
- Low cost
- High reliability
- 2 years warranty

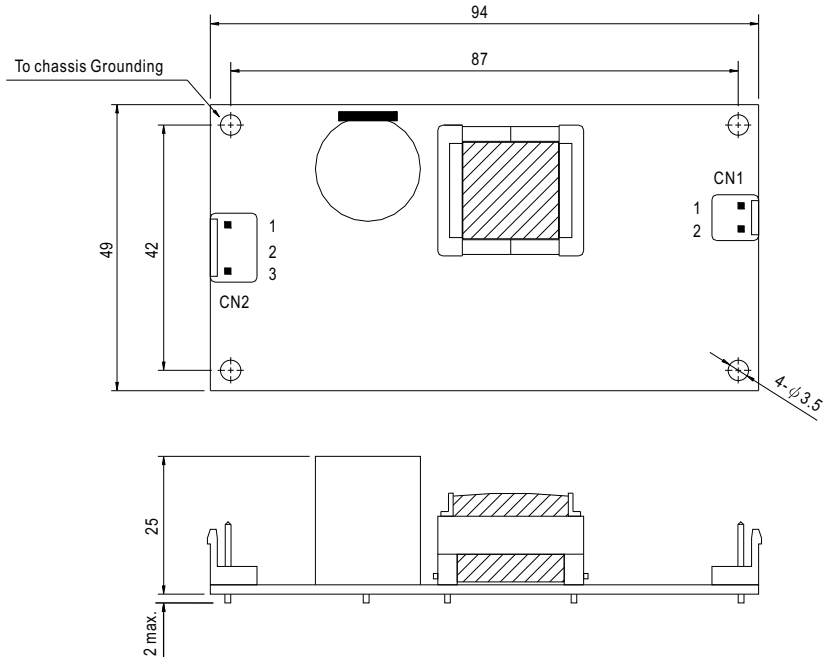


### SPECIFICATION

MODEL	PS-15-5	PS-15-12	PS-15-15	PS-15-24	PS-15-48	
OUTPUT	DC VOLTAGE	5V	12V	15V	24V	48V
	RATED CURRENT	2.8A	1.25A	1A	0.625A	0.313A
	CURRENT RANGE	0 ~ 2.8A	0 ~ 1.25A	0 ~ 1A	0 ~ 0.625A	0 ~ 0.313A
	RATED POWER	14W	15W	15W	15W	15W
	RIPPLE & NOISE (max.) Note.2	100mVp-p	120mVp-p	120mVp-p	150mVp-p	200mVp-p
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±0.5%	±0.5%
	SETUP, RISE TIME	5 ~ 24V:1200ms, 30ms      48V:1200ms, 75ms at full load				
HOLD UP TIME(Typ.)	100ms at full load					
INPUT	VOLTAGE RANGE	85 ~ 264VAC      120 ~ 370VDC				
	FREQUENCY RANGE	47 ~ 63Hz				
	EFFICIENCY(Typ.)	74%	77%	78%	79%	77%
	AC CURRENT (Typ.)	0.4A/115VAC      0.2A/230VAC				
	INRUSH CURRENT (Typ.)	COLD START 40A/230VAC				
	LEAKAGE CURRENT	<0.5mA / 240VAC				
PROTECTION	OVER LOAD	Above 105% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed				
	OVER VOLTAGE	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25V	27.6 ~ 32.4V	55.2 ~ 64.8V
	OVER TEMPERATURE	Tj 140°C typically (U1) Detect on main control IC Protection type : Hiccup mode, recovers automatically after fault condition is removed				
ENVIRONMENT	WORKING TEMP.	-10 ~ +60°C (Refer to output load derating curve)				
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-20 ~ +85°C, 10 ~ 95% RH				
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)				
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, Period for 60min.each along X, Y, Z axes				
SAFETY & EMC (Note 4)	SAFETY STANDARDS	EN60950-1 CB Approved by TUV				
	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 Light industry level, criteria A				
OTHERS	MTBF	681.7Khrs min. MIL-HDBK-217F(25°C)				
	DIMENSION	94*49*25mm (L*W*H)				
	PACKING	0.083Kg; 120pcs/10.96Kg				
NOTE	<ol style="list-style-type: none"> <li>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &amp; 47uf parallel capacitor.</li> <li>3. Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>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.</li> </ol>					

### Mechanical Specification

Unit:mm



AC Input Connector (CN2) : JST B3P-VH or equivalent

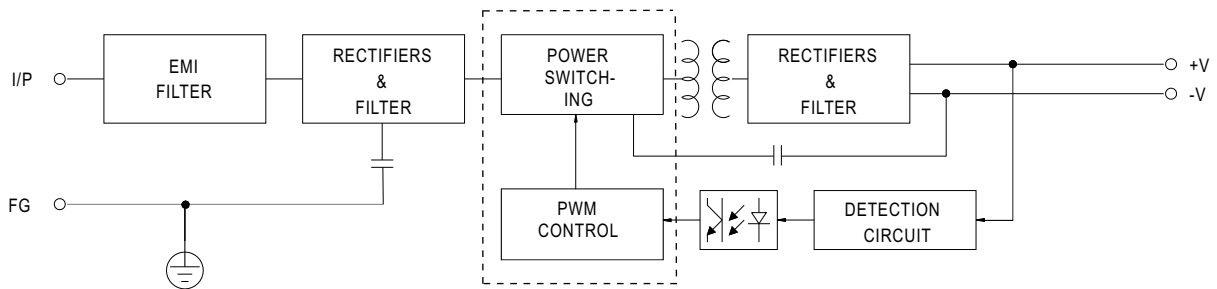
Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	No Pin		
3	AC/L		

DC Output Connector (CN1) : JST B2P-VH or equivalent

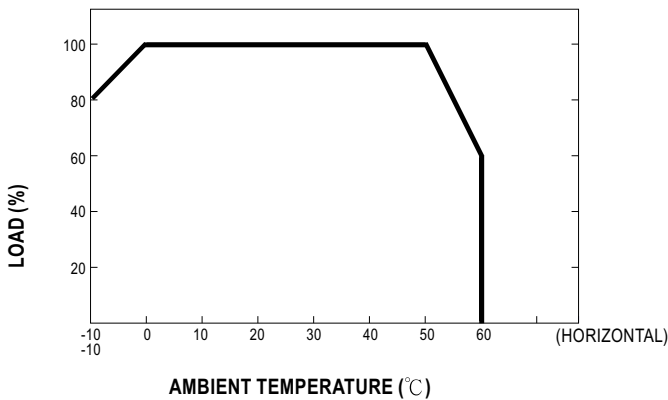
Pin No.	Assignment	Mating Housing	Terminal
1	+V	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	-V		

### Block Diagram

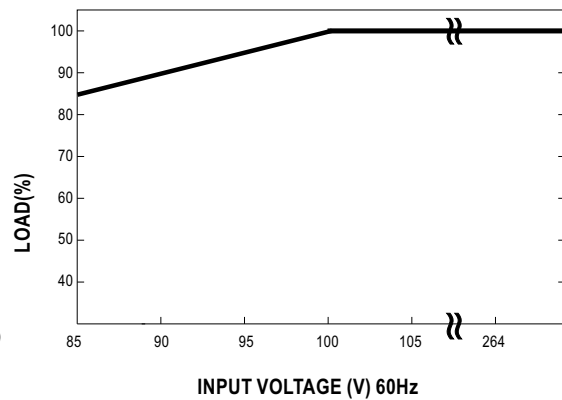
fosc : 67KHz



### Output Derating



### Static Characteristics



MODEL : PS-15-5

## OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 100 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 4 mVp-p (Max)	P
2	OUTPUT VOLTAGE TOLERANCE	V1: 2 %- -2 % (Max)	I/P: 100VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.38 %- 0 %	P
3	LINE REGULATION	V1: 1 %- -1% (Max)	I/P: 100VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0.12 %- 0 %	P
4	LOAD REGULATION	V1: 1 %- -1 % (Max)	I/P: 230 VAC O/P:FULL -MIN LOAD Ta:25°C	V1: 0.24 %- -0.12 %	P
5	SET UP TIME	230VAC: 1200 ms (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 825 ms	P
6	RISE TIME	230VAC: 30 ms (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 6 ms	P
7	HOLD UP TIME	230VAC: 100 ms (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 130 ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: <5 %	P
9	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	242 mVp-p	P

## INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	85VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	50V~264V	P
			I/P: LOW-LINE-3V= 82 V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN ( AC POWER ON/OFF NO DAMAGE )	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 85 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK	P
3	EFFICIENCY	74 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	74.42 %	P
4	INPUT CURRENT	230V/ 0.2 A (TYP) 115V/ 0.4 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 0.15 A/ 230 VAC I = 0.32 A/ 115 VAC	P
5	INRUSH CURRENT	230V/ 40 A (TYP) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I = 30 A/ 230 VAC	P
6	LEAKAGE CURRENT	< 0.5 mA / 240 VAC	I/P: 254 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.21 mA N-FG: 0.21 mA	P

## PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	Above 105%	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25°C	155 %/ 230 VAC 158 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 5.75 V~ 6.75 V	O/P:MIN LOAD Ta:25°C	6.02 V / 0.12A Other	P
3	OVER TEMPERATURE PROTECTION	Tj 140°C typically (U1) Detect on main control IC	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Hiccup Mode	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25°C	NO DAMAGE Hiccup Mode	P

## ENVIRONMENT TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : PS-15-5 1. ROOM AMBIENT BURN-IN : 1 HRS I/P: 230VAC O/P: FULL LOAD Ta= 24.9 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 48.9 °C			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P: 230 VAC O/P: 117% LOAD Ta:25°C	TEST : OK	P
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P: 80% LOAD Ta= -10°C	TEST : OK	P
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	P
5	TEMPERATURE COEFFICIENT	± 0.03 %(0-50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.01 %(0-50°C)	P
6	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency:10-500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25°C		TEST : OK	P

## SAFETY TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25°C	I/P-O/P: 1.03 mA I/P-FG: 0.88 mA O/P-FG: 0.126 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: 30 GΩ I/P-FG: 30 GΩ O/P-FG: 30 GΩ NO DAMAGE	P

### E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS	P

### M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C12 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P: FULL LOAD Ta= 25°C LIFE TIME= 397656 HRS I/P: 230VAC O/P: FULL LOAD Ta= 50°C LIFE TIME= 81312 HRS			P

### COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
2	Diode Peak Voltage	D11 Rated C82004P : 40 V 10A	I/P: High-Line +3V = 267 V O/P: (1) Full Load Turn on (2) Full Load (3) Output Short Ta: 25°C	(1) 30.6 V (2) 32.8 V (3) 27.2 V	P
3	Clamp Diode Peak Voltage	D1 Rated BYC-26C : 600V 1A	I/P: High-Line +3V = 267 V O/P: (1) Full Load (2) Dynamic Load 90%Duty/1KHz Ta: 25°C	(1) 386 V (2) 422 V	P
4	Input Capacitor Voltage	C5 Rated :47u / 400V/ 85°C	I/P: High-Line +3V = 267 V O/P: (1) Full Load Turn on /Off (2) Min load Turn on /Off (3) Full Load /Min load Change (4) Burn in 1hour Ta: 25°C	(1) 408 V (2) 386 V (3) 386 V (4) 390 V	P
5	Control IC Voltage Test	U1 Rated DM0625R : 20V	I/P: High-Line +3V = 267 V O/P: (1) Full Load Turn on /Off (2) Min load Turn on /Off (3) Full Load /Min load Change Ta: 25°C	(1) 16.3 V (2) 12.5 V (3) 16.4 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2005/7/8	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023