

Distributed by:

JAMECO[®]
ELECTRONICS

www.Jameco.com ♦ 1-800-831-4242

The content and copyrights of the attached
material are the property of its owner.

Jameco Part Number 694399



Declaration of RoHS Conformity

To minimize the environmental impact and take more responsibility to the earth we live, MEAN WELL hereby confirms that the following product series comply with Directive 2002/95/EC of the European Parliament - RoHS (Restriction of Hazardous Substances).

Content of Compliance

Lead	<0.1 % by weight (1000 ppm)
Mercury	<0.1 % by weight (1000 ppm)
Cadmium	<0.01 % by weight (100 ppm)
Hexavalent Chrome (Cr ⁺⁶)	<0.1 % by weight (1000 ppm)
PBBs	<0.1 % by weight (1000 ppm)
PBDEs	<0.1 % by weight (1000 ppm)

Product Series

Please refer to the attached list for details.

Delivery

The actual delivery date for RoHS compliance products will depend on our inventory status.

Please contact our sales representatives for details.

How to Recognize

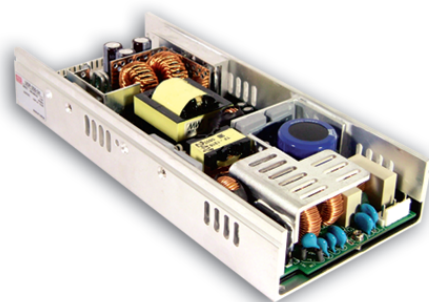
The serial number on each PSU originally was Cxxxxxxxx and right now will be changed to Rxxxxxxxx or Exxxxxxxx (or add "R" for serial number that only specify the production weeks) for RoHS compliance products for the ease of identification.

Jerry Lin / President
MEAN WELL Enterprises Co., Ltd.

Product Family	Series
G3	RS-25/35/50/75/100/150, RD-35/50/65/85/125, RID-50/65/85/125, RT-50/65/85/125, RQ-50/65/85/125
G2	S-25/40/60/100F/150/240, T-40, D/ID/T/IT/Q/IQ-60, D/T/Q-120, SC-150
PFC	SP-75/100/150/200/320/480/500/750, USP-225/350, TP-75/100/150, QP-100/150/200/320/375
AD	ADS-55/155, AD-55/155, ADD-55/155
CL/PL	CLG-60/100, PLN-30/60/100
DIN	MDR-20/40/60, DR-30/45/60/75/100/120, DRH-120, DRP-240/480/480S, DRT-240/480/960, DR-RDN20, DR-UPS40
Modular	MP-450/650/1K0, MS-75/150/300, MD-100
Parallel	PSP-500/600/1000/1500, RSP-1000/1500, RCP-1000, RCP-1U
Open Frame	NFM-05/10/15/20, PM-05/10/15/20, PS/PD-25, PS-35, PS/PD/PT-45, PS/PD/PT-65, RPD/RPT-65, PD-110, PQ-100, PPQ-100, PPS/PPT-125, LPS-50/75/100, LPP-100/150, ASP-150, PPS-200, PID-250, MPS-30, MPS/MPD/MPT-45, RPS/RPD/RPT-60, MPS/MPD/MPT-65, RPS/RPD/RPT-75, MPS/MPD/MPT/MPQ-120, MPS/MPD/MPT/MPQ-200
Charger	GC-30, PA/PB/PS-120, ESC/ESP-120, ESC/ESP-240, PB-300/360
Adaptor	GS-06/15/18/25, ES-18/25, P25, P30, P40, P50, P66, U65S, MES-30/50, ATX-100, AS-120P
PC/IPC Power	YP-350J, IPC-200/250/300
DC/DC Converter	SD-25/50/100/150/200/350, SDM30, ASD10H/15H, NSD10/15, SBT, SFT, DET, SRS, SUS, SPR, SPU, SCW, SLW, SKE SKA, DCW, DLW, DKE, DKA, TKA
Inverter	TN/TS-1500, A301/A302
Power Cord	YP** + YC**

**** For other products not listed above, please contact our sales representatives for availability**

2007.04 update



■ Features :

- Universal AC input / Full range
- Built in active PFC circuit compliance to EN61000-3-2
- Protections: Short circuit/Over load/Over voltage/Over temperature
- Free air convection for 300W and 350W with 23.5CFM forced air
- High power density 6.3w/in³
- ZVS technology to reduce power dissipation
- Active AC surge current limiting
- U-bracket low profile: 38mm
- 3 years warranty

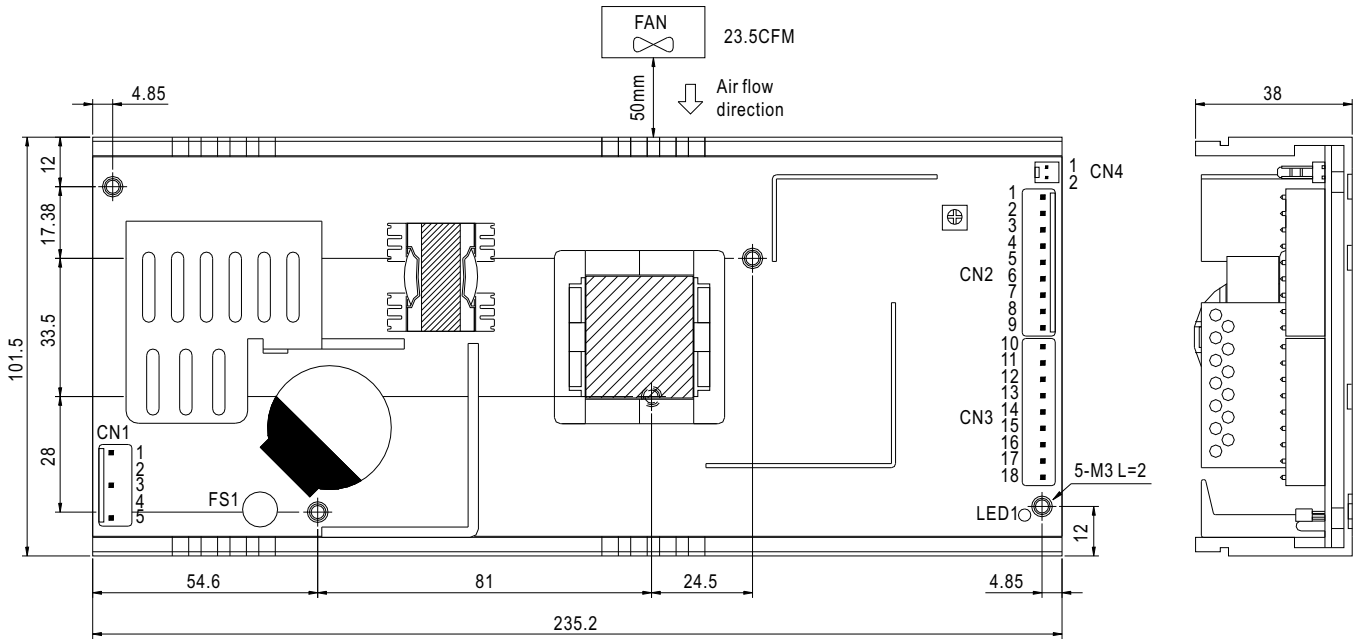


SPECIFICATION

MODEL		USP-350-3.3	USP-350-5	USP-350-12	USP-350-15	USP-350-24	USP-350-48
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	48V
	RATED CURRENT	70A	70A	29.2A	23.4A	14.6A	7.3A
	CURRENT RANGE (convection)	0 ~ 50A	0 ~ 50A	0 ~ 25A	0 ~ 20A	0 ~ 12.5A	0 ~ 6.25A
	CURRENT RANGE (23.5CFM FAN)	0 ~ 70A	0 ~ 70A	0 ~ 29.2A	0 ~ 23.4A	0 ~ 14.6A	0 ~ 7.3A
	RATED POWER (convection)	165W	250W	300W	300W	300W	300W
	RATED POWER (23.5CFM FAN)	231W	350W	350.4W	351W	350.4W	350.4W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	100mVp-p	100mVp-p	150mVp-p	150mVp-p
	VOLTAGE ADJ. RANGE	2.97 ~ 3.6V	4.5 ~ 5.5V	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V	43.2 ~ 52.8V
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%
	SETUP, RISE TIME	2000ms, 100ms/230VAC 4000ms, 100ms/115VAC at full load					
HOLD TIME (Typ.)	12ms/230VAC		16ms/230VAC		16ms/115VAC at full load		
INPUT	VOLTAGE RANGE Note.5	90 ~ 264VAC 127 ~ 370VDC					
	FREQUENCY RANGE	47 ~ 63Hz					
	POWER FACTOR (Typ.)	0.94/230VAC		0.95/230VAC		0.98/115VAC at full load	
	EFFICIENCY (Typ.)	78%		84%		88%	
	AC CURRENT (Typ.)	4A/115VAC 2A/230VAC					
	INRUSH CURRENT (Typ.)	22A/115VAC		44A/230VAC			
	LEAKAGE CURRENT	<2mA / 240VAC					
PROTECTION	OVER LOAD	105 ~ 120% rated output power		105 ~ 130% rated output power			
		Protection type : Constant current limiting, recovers automatically after fault condition is removed					
	OVER VOLTAGE	3.7 ~ 4.6V		5.7 ~ 7V		13.5 ~ 16.3V	
	Protection type : Hiccup mode, recovers automatically after fault condition is removed						
OVER TEMPERATURE	80°C (3.3V,5V,12V,15V,24V,48V) (TSW1 : Detect on heatsink of power transistor); 80°C ±5°C (3.3V,5V,12V,15V), 75°C ±5°C (24V,48V) (TSW2 : Detect on heatsink of power diode)						
	Protection type : Shut down o/p voltage with auto-recovery						
ENVIRONMENT	WORKING TEMP.	-10 ~ +65°C (Refer to output load derating curve)					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH					
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 45°C)					
	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					
EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, Light industry level, criteria A						
OTHERS	MTBF	106.3K hrs min. MIL-HDBK-217F (25°C)					
	DIMENSION	235.2*101.5*38mm (L*W*H)					
	PACKING	1.1Kg; 16pcs/18Kg/0.72CUFT					
NOTE	<ol style="list-style-type: none"> 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C 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. 5. Derating may be needed under low input voltages. Please check the derating curve for more details. 						

Mechanical Specification

Case No. 941A-D Unit:mm



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

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

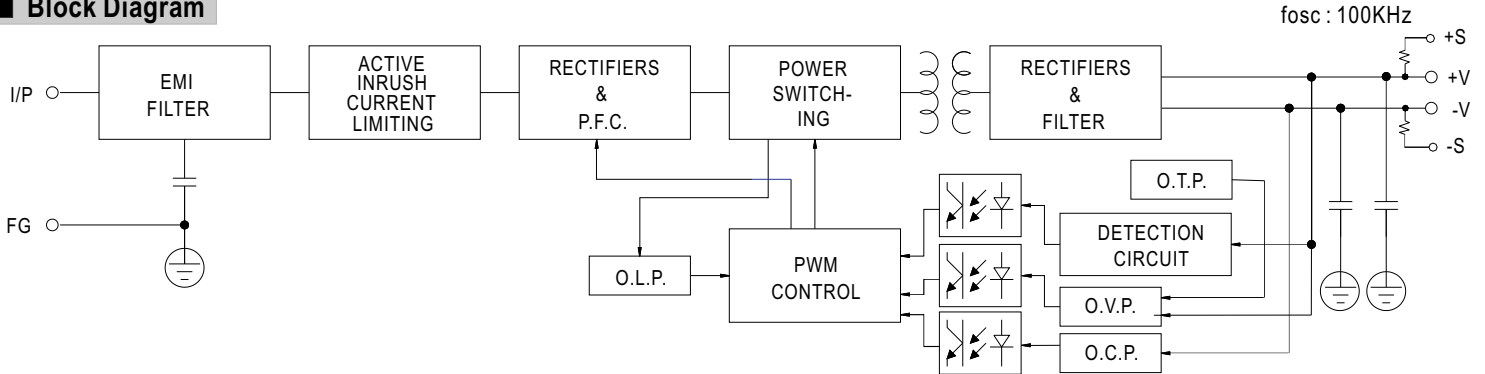
DC Output Connector (CN2,CN3) : JST B9P-VH*2 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1~9	-V	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
10~18	+V		

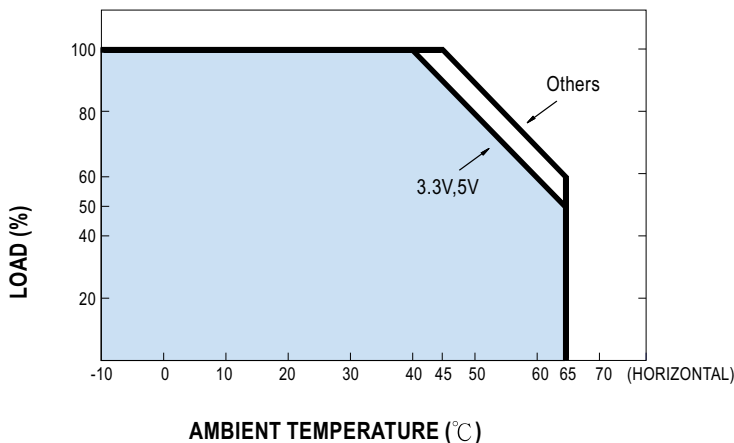
Remote Sense(CN4) : Molex 5045-02 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	RS+	Molex 5051 or equivalent	Molex 4809 or equivalent
2	RS-		

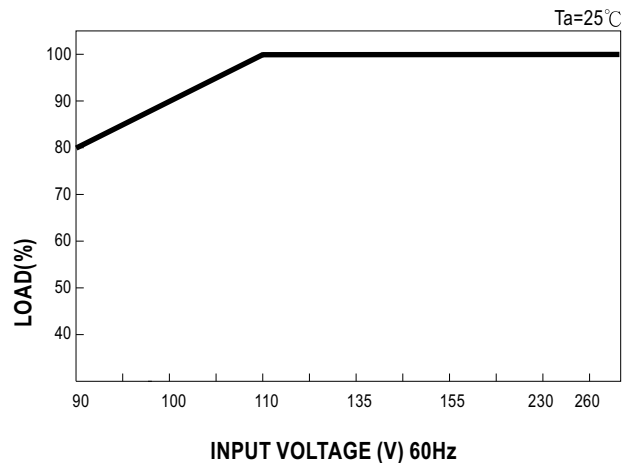
Block Diagram



Derating Curve



Static Characteristics (5V)



MODEL : USP-350-3.3

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 80 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 56 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 2.97 V~ 3.6 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	2.79 V~ 3.78 V/ 230 VAC 2.79 V~ 3.78 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 2 %~ -2 % (Max)	I/P: 110 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.6 %~ -0.6 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 110 VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0.2 %~ -0.2 %	P
5	LOAD REGULATION	V1: 2 %~ -2 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.6 %~ -0.6 %	P
6	SET UP TIME	230VAC: 2000 ms (Max) 115 VAC: 4000 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 856 ms 115VAC/ 1600 ms	P
7	RISE TIME	230VAC: 100 ms (Max) 115VAC: 100 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 40 ms 115VAC/ 41 ms	P
8	HOLD UP TIME	230VAC: 12 ms (TYP) 115VAC: 12 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 23 ms 115VAC/ 12 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: <5 %	P
10	DYNAMIC LOAD	V1: 660 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	382 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	83V~264V	P
			I/P: LOW-LINE-3V= 107V HIGH-LINE+3%=272 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: 90 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.94 / 230 VAC(TYP) 0.98 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	PF= 0.959 / 230 VAC PF= 1 / 115 VAC	P
4	EFFICIENCY	78 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	79.6 %	P
5	INPUT CURRENT	230V/ 2 A (TYP) 115V/ 4 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 1.35 A/ 230 VAC I = 2.64 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 44 A (TYP) 115V/ 22 A (TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 38 A/ 230 VAC I = 18 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P: 254 VAC O/P:Min LOAD Ta:25°C	L-FG: 1.5 mA N-FG: 1 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105%~120 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25°C	108 %/ 230 VAC 108 %/ 115 VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1: 3.7 V~ 4.6V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	4.03 V/ 230 VAC 4.03 V/ 115 VAC Hiccup Model	P
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1: 80 ± 5°C O.T.P. TSW2: 80± 5°C O.T.P NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Shut down o/p voltage , recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25°C	NO DAMAGE Constant Current Limiting	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : USP-350-5 WITH FAN 1. ROOM AMBIENT BURN-IN : 1 HRS I/P: 230VAC O/P: FULL LOAD Ta= 32.5 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 48.7 °C			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P: 110 % LOAD Ta:25°C	TEST : OK	P
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P: 100% LOAD Ta= -10 °C	TEST : OK	P
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 45 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 45 °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	SPECIFICATION	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: 10.33 mA I/P-FG: 8.66 mA O/P-FG: 7.31 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: 5 GΩ I/P-FG: 8 GΩ O/P-FG: 7 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	3 mΩ	P
4	APPROVAL	TUV: Certificate NO : R50067651 UL: File NO : E183223			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	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
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C107 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta=25 °C LIFE TIME= 4891114 HRS I/P: 230VAC O/P:FULL LOAD Ta=40 °C LIFE TIME= 170535 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 106.3K HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q 4 Rated IRFP460A : 500V 20A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 404 V (2) 400 V (3) 400 V	P
2	Diode Peak Voltage	Q102 Rated IPP05N03L : 30V 80A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 22 V (2) 19 V (3) 21 V	P
3	Input Capacitor Voltage	C 5 Rated : 200 u / 450 V / 105°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) 404 V (2) 416 V (3) 414 V (4) 410 V	P
4	Control IC Voltage Test	U 5 Rated 3845 : 30 V	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) 15.5 V (2) 15.3 V (3) 15.3 V	P
5	PFC Power Transistor (D to S) or (C to E) Peak Voltage	Q3 Rated 16N50C3 : 560V 16A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 432 V (2) 448 V (3) 420 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2005/4/8	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2005/7/29	PRODUCT SAMPLE W0505A34	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023