

- Features :
- Universal AC input / Full range
  - Isolated output & GND for CH1,CH2
  - Built-in active PFC function, PF>0.92
  - Protections:Short circuit / Overload / Over voltage / Over temperature
  - Remote control for CH1
  - Peak load 170% for CH1 within 10 sec.
  - Cooling by free air convection
  - 100% full load burn-in test
  - 3 years warranty

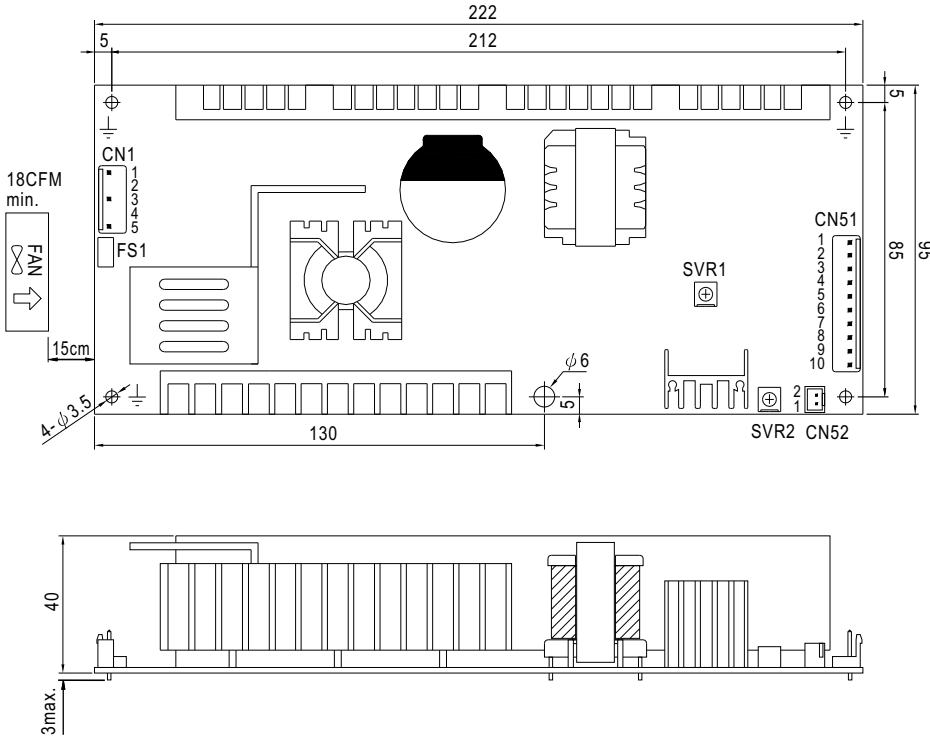


**SPECIFICATION**

MODEL	PID-250A		PID-250B		PID-250C		PID-250D			
OUTPUT	OUTPUT NUMBER	CH1	CH2	CH1	CH2	CH1	CH2	CH1	CH2	
	DC VOLTAGE	12V	5V	24V	5V	36V	5V	48V	5V	
	RATED CURRENT	15A(Peak 20A)	5A	9.4A(Peak 16.7A)	5A	6.3A(Peak 11.1A)	5A	4.7A(Peak 8.4A)	5A	
	CURRENT RANGE <small>Note.6</small>	0 ~ 15A (Peak 20A)	0 ~ 5A	0 ~ 9.4A (Peak 16.7A)	0 ~ 5A	0 ~ 6.3A (Peak 11.1A)	0 ~ 5A	0 ~ 4.7A (Peak 8.4A)	0 ~ 5A	
	RATED POWER	205W		250.6W		251.8W		250.6W		
	RIPPLE & NOISE (max.) <small>Note.2</small>	120mVp-p	50mVp-p	150mVp-p	50mVp-p	200mVp-p	50mVp-p	200mVp-p	50mVp-p	
	VOLTAGE ADJ. RANGE	10.8 ~ 13.2V	4.75 ~ 5.25V	21.6 ~ 26.4V	4.75 ~ 5.25V	32.4 ~ 39.6V	4.75 ~ 5.25V	43.2 ~ 52.8V	4.75 ~ 5.25V	
	VOLTAGE TOLERANCE <small>Note.3</small>	±3.0%	±2.0%	±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%	±0.5%	±0.5%	
	LOAD REGULATION	±1.0%	±2.0%	±1.0%	±2.0%	±1.0%	±2.0%	±1.0%	±2.0%	
SETUP, RISE TIME	2500ms, 60ms/115VAC		1200ms, 60ms/230VAC							
HOLD UP TIME (Typ.)	30ms at full load									
INPUT	VOLTAGE RANGE <small>Note.5</small>	90 ~ 264VAC		127 ~ 370VDC						
	FREQUENCY RANGE	47 ~ 63Hz								
	POWER FACTOR	PF ≥ 0.92/230VAC		PF ≥ 0.97/115VAC at full load						
	EFFICIENCY(Typ.)	83%		86%		86%		86%		
	AC CURRENT (Typ.)	3A/115VAC		1.5A/230VAC						
	INRUSH CURRENT (Typ.)	COLD START 58A/230VAC								
LEAKAGE CURRENT	<3.5mA / 240VAC									
PROTECTION	OVERLOAD	CH1: 105 ~ 170% rated output power Normally work within 10 sec and then shut down, re-power on to recover Over 180% rated power or short circuit, constant current limiting within 10 sec and then shut down, re-power on to recover CH2: 101 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed								
	OVER VOLTAGE	13.8 ~ 16.2V	5.5 ~ 6.75V	27.6 ~ 32.4V	5.5 ~ 6.75V	40 ~ 48V	5.5 ~ 6.75V	54 ~ 64.8V	5.5 ~ 6.75V	
	OVER TEMPERATURE	105°C ±5°C detect on heatsink of power transistors Protection type : Shut down o/p voltage(CH1), recovers automatically after temperature goes down								
FUNCTION	REMOTE CONTROL	CN52 : Open=CH1 & CH2 power on ; Short = CH1 power off, CH2 power on; when CH2 is malfunction, CH1 will be shut down								
ENVIRONMENT	WORKING TEMP.	-20 ~ +70°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	±0.05%/°C (0 ~ 50°C )								
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min each along X, Y, Z axes								
SAFETY & EMC <small>(Note 4)</small>	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 25°C 70%RH								
	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, EN61000-6-2, heavy industry level, criteria A									
OTHERS	MTBF	150.4Khrs min. MIL-HDBK-217F (25°C)								
	DIMENSION	222*95*40mm open frame type (L*W*H), 250*105.4*53mm enclosed type (L*W*H)								
	PACKING	0.74Kg; 18pcs/14.3Kg/0.88CUFT								
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> <li>5. Derating may be needed under low input voltage. Please check the derating curve for more details.</li> <li>6. Peak current should reduce to 150% of rated value if the input voltage &lt;110VAC.</li> </ol>									

**Mechanical Specification**

Unit:mm



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

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

DC Output Connector (CN51) : JST B10P-VH or equivalent

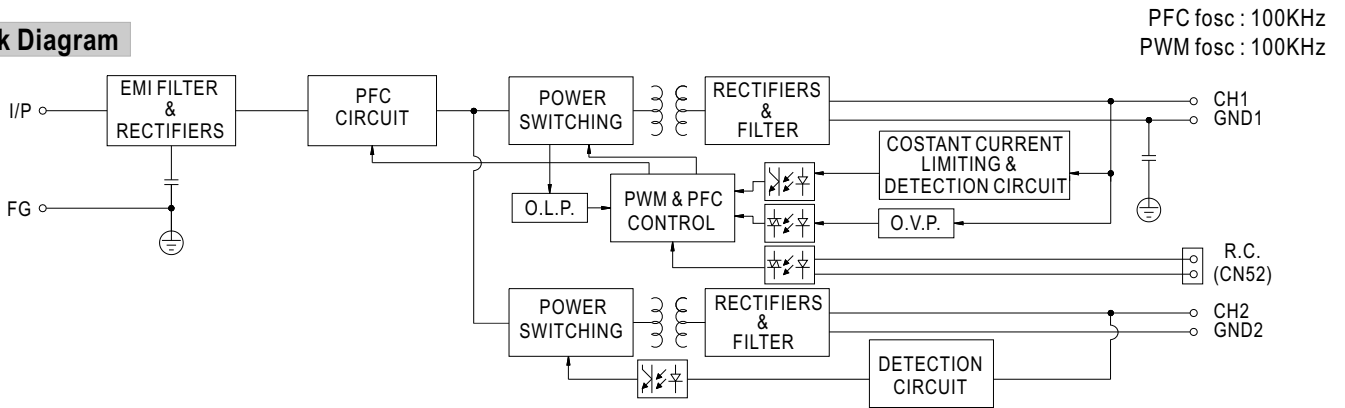
Pin No.	Assignment	Mating Housing	Terminal
1,2,3	COM1	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
4,5,6	V1		
7,8	COM2		
9,10	V2		

Remote ON/OFF Connector(CN52):JST B2B-XH or equivalent

Pin No.	Status	Mating Housing	Terminal
PIN1,2 (Short)	V1: OFF V2: ON	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
PIN1,2 (Open)	V1: ON V2: ON		

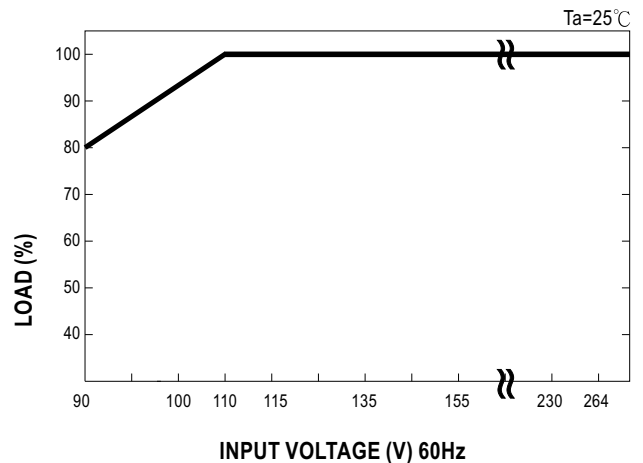
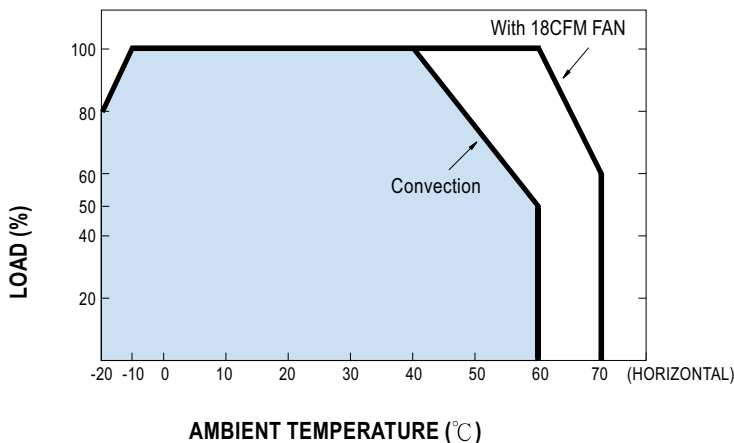
SVR1	For CH1
SVR2	For CH2

**Block Diagram**



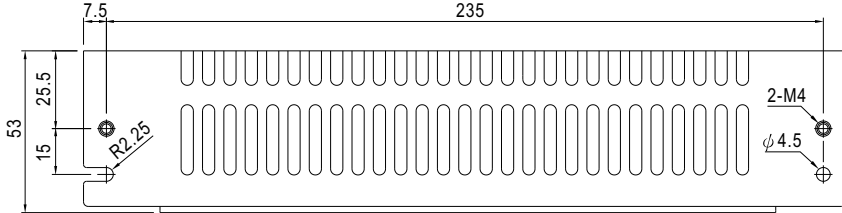
**Derating Curve**

**Output Derating VS Input Voltage**



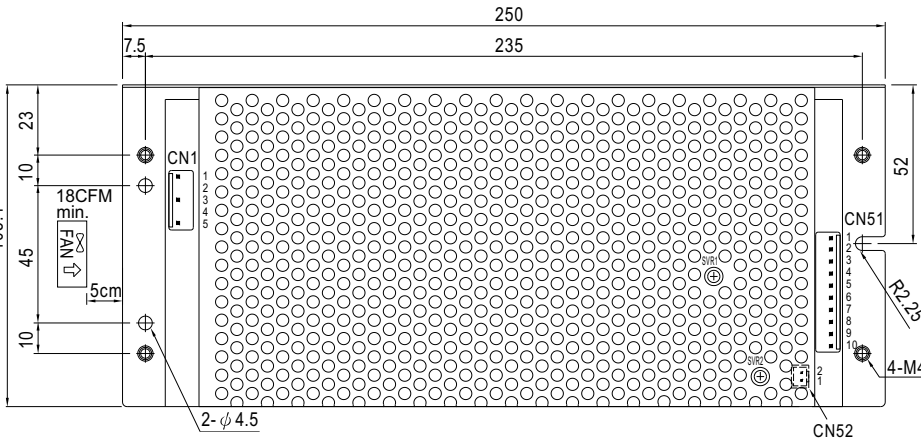
**■ Mechanical Specification**

Case No.965A Unit:mm



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

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



DC Output Connector (CN51) : JST B10P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2,3	COM1	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
4,5,6	V1		
7,8	COM2		
9,10	V2		

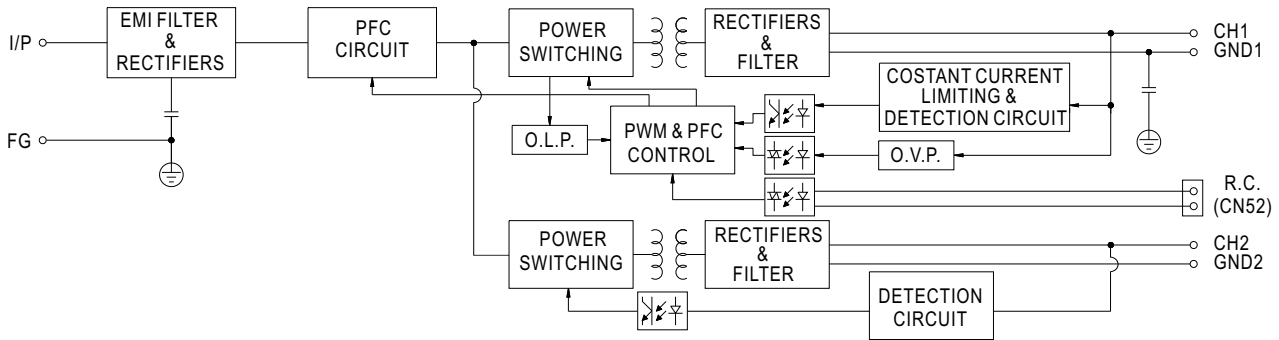
Remote ON/OFF Connector(CN52):JST B2B-XH or equivalent

Pin No.	Status	Mating Housing	Terminal
PIN1,2 (Short)	V1: OFF V2: ON	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
PIN1,2 (Open)	V1: ON V2: ON		

SVR1	For CH1
SVR2	For CH2

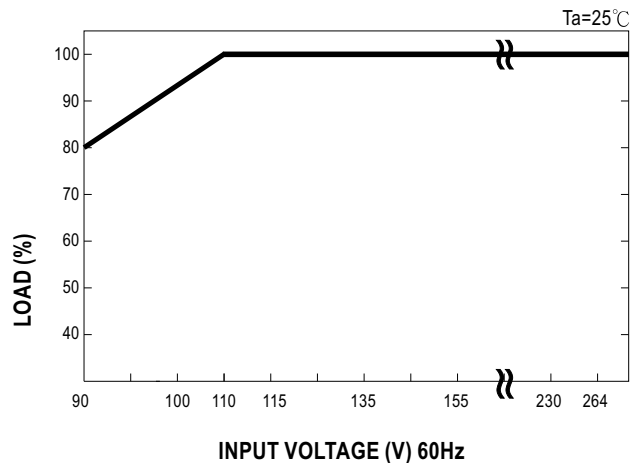
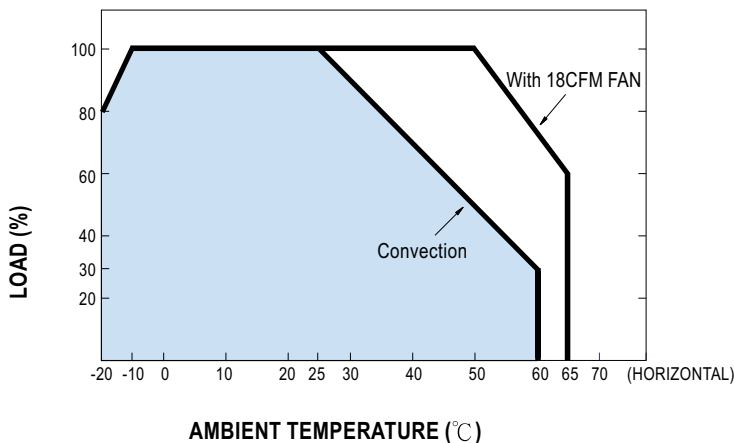
**■ Block Diagram**

PFC fosc : 100KHz



**■ Derating Curve**

**■ Output Derating VS Input Voltage**



MODEL : PID-250C

### OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1:200 mVp-p (Max) V2:50 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 40 mVp-p (Max) V2: 13 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 32.4 V~ 39.6 V CH1: 4.75 V~ 5.25 V	I/P: 230 VAC O/P:MIN LOAD Ta:25°C	31.79 V~ 41.44 V/ CH1 4.69 V~ 6.25 V/ CH2	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 2 %~ -2 % (Max) V2: 2 %~ -2 % (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.1 %~ -0.1 % V2: 0.6 %~ -0.6 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max) V2: 0.5 %~ -0.5 % (Max)	I/P: 100 VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0 %~ 0 % V2: 0.12 %~ -0.12 %	P
5	LOAD REGULATION	V1: 1%~ -1 % (Max) V2: 2 %~ -2 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.04 %~ -0.04 % V2: 0.24 %~ -0.24 %	P
6	CROSS REGULATION	V1: 1%~ -1 % (Max) V2: 2 %~ -2 % (Max)	I/P: 230 VAC O/P: Testing O/P 60%LOAD Other O/P 40%LOAD Change Ta:25°C	V1: 0.04 %~ -0.04 % V2: 0.24 %~ -0.24 %	P
7	SET UP TIME	230VAC: 1200 ms (Max) 115 VAC: 2500 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 654 ms 115VAC/ 1308 ms	P
8	RISE TIME	230VAC: 60 ms (Max) 115VAC: 60 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 31 ms 115VAC/ 31 ms	P
9	HOLD UP TIME	230VAC: 30 ms (TYP) 115VAC: 30 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 42 ms 115VAC/ 42 ms	P
10	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: <5 %	P
11	DYNAMIC LOAD	V1: 3600 mVp-p V2: 1000 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	428 mVp-p / V1 424 mVp-p / V2	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	59 V~264V	P
			I/P: LOW-LINE-3V= 87 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: 90VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.92 / 230 VAC(TYP) 0.97 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	PF= 0.949 / 230 VAC PF= 0.987 / 115 VAC	P
4	EFFICIENCY	86% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	87%	P
5	INPUT CURRENT	230V/ 1.5 A (TYP) 115V/ 3 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 1.33 A/ 230 VAC I = 2.67 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 58 A (TYP)  COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I = 30 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 3.5 mA / 240 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.7 mA N-FG: 0.7 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 %~ 170 % / CH1 101 %~ 150 % / CH2	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25°C	CH1: 122 %/ 230 VAC 122 %/ 115 VAC Normally work within 10sec and Then shutdown , re-power on to Recover Over 180% rated power or short Circuit ,constant current limiting Within 10 sec and then shutdown , Re-power on to recover  CH2: 136 %/ 230 VAC 136 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 40V~ 48V CH2: 5.5V~ 6.75V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	CH1: 45 V/ 230 VAC 45 V/ 115 VAC CH2: 6.3 V/ 0.15A  Shunt down o/p voltage , Re- power ON to recover for CH1 Hiccup Mode ,recovers Automatically after fault condition is removed for CH2 (by zener diode clamp)	P
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1: 105 ± 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 CH2 : Hiccup Mode CH1 : constant current limiting Within 10 sec and then shutdown	P

ONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	REMOTE CONTROL	CN52 OPEN:CH1&CH2 power on CN52 SHORT:CH1 power off,CH2 power on When CH2is malfunction , CH1 will be shut down	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	OK	P

### ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : PID-250B NO FAN / NO CASE 1. ROOM AMBIENT BURN-IN : 1 HRS I/P: 230VAC O/P: FULL LOAD Ta= 27.9 °C 2. HIGH AMBIENT BURN-IN : 1.5 HRS I/P: 230VAC O/P: FULL LOAD Ta= 41.9 °C			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P: 230 VAC O/P: V1=10.5A V2=5.5A 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 40 NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 40°C HUMIDITY= 95 %R.H	TEST : OK	P
5	TEMPERATURE COEFFICIENT	± 0.05 %(0-50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.005 %(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: 4.95 mA I/P-FG: 4.11 mA O/P-FG: 3.33 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 / 70%RH	I/P-O/P: 3 GΩ I/P-FG: 1.5 GΩ O/P-FG: 9 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	6 mΩ	P
4	APPROVAL	TUV: Certificate NO : R 50102435 UL: File NO : E183223			P

### E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS D	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	EN5502 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 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 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	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 C103 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 734767 HRS I/P: 230VAC O/P:FULL LOAD Ta= 40 °C LIFE TIME= 257943 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 150.4KHRS			P



## COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) <b>Peak Voltage</b>	Q3 Rated STW9NK90Z : 8A/900V  U3 Rated STRW6251 : 650 V 2.7 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25°C	(1) 845 V (2) 880 V  (1) 615 V (2) 610 V	P
2	Diode Peak <b>Voltage</b>	D101 Rated STTH2003CT 20A/300V  D201 Rated MBR2045CT : 45V 20 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25°C	(1) 217 V (2) 220 V  (1) 34.6 V (2) 31.4 V	P
3	Clamp Diode Peak <b>Voltage</b>	D8 Rated HER208 : 1000V 2A	I/P:High-Line +3V = 267 V O/P: (1) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 506 V	P
4	<b>Input Capacitor Voltage</b>	C5 Rated : 220u / 400V/ 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 Ta:25°C	(1) 398 V (2) 394 V (3) 398 V	P
5	<b>Control IC Voltage Test</b>	U1 Rated CM6800GIP : 18V  U3 Rated STRW6251 : 32V	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) 15.15 V (2) 14.89 V (3) 15.15 V  (1) 25.64 V (2) 11.09 V (3) 25.64 V	P
6	P.F.C Transistor (D to S) or (C to E) <b>Peak Voltage</b>	Q2 Rated IRFP460A : 500 V 20 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25°C	(1) 426 V (2) 406 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2007/1/5	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2007/3/6	PRODUCT SAMPLE W0701C33	PASS	VINCENT TSENG	MAX LIN
2007/9/27	PRODUCT SAMPLE W0709C30	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023