

MODEL : PID-250A

### OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1:120 mVp-p (Max) V2:50 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 74 mVp-p (Max) V2: 21 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 10.8 V~ 13.2 V CH1: 4.75 V~ 5.25 V	I/P: 230 VAC O/P:MIN LOAD Ta:25°C	10.43 V~ 13.77 V / CH1 4.56 V~ 6.23 V / CH2	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 3 %~ -3 % (Max) V2: 2 %~ -2 % (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.21 %~ -0.21 % V2: 0.2 %~ -0.2 %	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 %~ 0 %	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: 0.03 %~ -0.03 % V2: 0.12 %~ -0.12 %	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: 0.03 %~ -0.03 % V2: 0 %~ 0 %	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/ 918 ms 115VAC/ 1836 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/ 15 ms 115VAC/ 15 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/ 50 ms 115VAC/ 50 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: 1200 mVp-p V2: 1000 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	283 mVp-p / V1 400 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	55V~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= 0.94 / 230 VAC PF= 0.98 / 115 VAC	P
4	EFFICIENCY	83.5% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	83.8 %	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 = 1.13 A/ 230 VAC I = 2.25 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 60 A (TYP)  COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I = 55.5 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: 1.2 mA N-FG: 1.2 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: 130 %/ 230 VAC 130 %/ 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: 130 %/ 230 VAC 130 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 13.8V~ 16.2V CH2: 5.5V~ 6.75V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	CH1: 15.6 V/ 230 VAC 15.6 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

### CONTROL 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	SPECICATION	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																																																																																																																																
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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	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: 4.79 mA I/P-FG: 3.97 mA O/P-FG: 3.62 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: 12 GΩ I/P-FG: 8 GΩ O/P-FG: 30 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	SPECICATION	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	SPECICATION	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	SPECIFICATION	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) 720 V (2) 872 V  (1) 624 V (2) 612 V	P
2	Diode Peak <b>Voltage</b>	D101 Rated 30CPQ100 : 100V 30 A  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) 63.2 V (2) 68.4 V  (1) 32.8 V (2) 32.8 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) 646 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) 396 V (2) 390 V (3) 396 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) 15.03 V (2) 14.7 V (3) 15.03 V  (1) 25.6 V (2) 11.21 V (3) 25.6 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) 410 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
2007/7/31	PRODUCT SAMPLE W0706D34	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023