MODEL：S-210-48

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 200 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25℃	V1: 32 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 45.6V~ 52.8V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	42.7 V~ 53.8 V/ 230 VAC 42.7 V~ 53.8 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 1 %~ -1 % (Max)	I/P: 176 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25℃	V1: 0.25 %~ -0.25 %	P
4	LINE REGULATION	V1:0.5 %~ -0.5 % (Max)	I/P: 176VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0.15 %~ -0.15 %	P
5	LOAD REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0.25 %~ -0.25 %	P
6	SET UP TIME	230VAC: 1000 ms (Max) 115 VAC: 1000 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 405 ms 115VAC/ 405 ms	P
7	RISE TIME	230VAC: 20 ms (Max) 115VAC: 20 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 11 ms 115VAC/ 11 ms	P
8	HOLD UP TIME	230VAC: 20 ms (TYP) 115VAC: 20 ms(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 35 ms 115VAC/ 30 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: <5 %	P
10	DYNAMIC LOAD	V1: 4800 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	489 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	176VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	150 V~264V	P
			I/P: LOW-LINE-3V= 173 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: 176 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	P
3	EFFICIENCY	87 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	87.7 %	P
4	INPUT CURRENT	230V/ 2.5 A (TYP) 115V/ 4.2 A(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 2.4 A/ 230 VAC I = 4 A/ 115 VAC	P
5	INRUSH CURRENT	230V/ 50 A (TYP) 115V/ 35 A(TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 48 A/ 230 VAC I = 25 A/ 115 VAC	P
6	LEAKAGE CURRENT	< 3.5 mA / 240 VAC	I/P: 254 VAC O/P:Min LOAD Ta:25℃	L-FG: 0.75 mA N-FG: 0.75 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 %~ 150 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25℃	123 %/ 230 VAC 124 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 55.2V~ 64.8 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	60.3 V/ 230 VAC 60.3 V/ 115 VAC Hiccup Model	P
3	OVER TEMPERATURE PROTECTION	SPEC: RTH1≥ 85℃ O.T.P. NO DAMAGE	I/P: 264 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℃	NO DAMAGE Hiccup Mode	P

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： S-210-24 NO FAN
1. ROOM AMBIENT BURN-IN：1 HRS
I/P: 230VAC O/P: FULL LOAD Ta= 30.3 ℃
2. HIGH AMBIENT BURN-IN：2 HRS
I/P: 230VAC O/P: FULL LOAD Ta= 43.3 ℃</td><td>P</td></tr>
</table>

NO	Position	P/N	ROOM AMBIENT Ta= 30.3 ℃	HIGH AMBIENT Ta= 43.3 ℃
1	BD1	KBJ608G 6A/800V LT	74.9℃	84.5℃
2	LF1	TF-347	63.1℃	73.5℃
3	TRC1	BT-139F	74.0℃	83.7℃
4	C5	470U/200V RUB 85℃	61.3℃	71.1℃
5	Q2	K2082 9A/900V FUJI	70.6℃	81.3℃
6	U1	TI3844	75.7℃	84.5℃
7	D2	HER208 2A/800V REC	88.7℃	96.7℃
8	C9	47U/50V NCC 105℃ KY	63.6℃	71.6℃
9	L1 COIL	TF-287	76.8℃	86.1℃
10	T1 COIL	TF-394	81.4℃	88.5℃
11	D11	S20LC20U 10A/200V SHI	76.5℃	86.8℃
12	RTH1	5K	77.5℃	85.7℃
13	C33	1000U/35V NCC 105℃ KY	60.8℃	70.1℃
14			℃	℃
15			℃	℃

<table>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P: 230 VAC
O/P: 120 % LOAD
Ta:25℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P: 230 VAC
O/P: 100 % LOAD
Ta= -20 ℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 40 ℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 40℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>± 0.01 %(0~50℃)</td><td>P</td></tr>
<tr><td>6</td><td>VIBRATION TEST</td><td colspan="2">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℃</td><td>TEST：OK</td><td>P</td></tr>
</table>

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℃	I/P-O/P: 6.2 mA I/P-FG: 5.07 mA O/P-FG: 7.86 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℃	I/P-O/P: 10 GΩ I/P-FG: 10 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℃	9 mΩ	P

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 33 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 368447 HRS I/P: 230VAC O/P:FULL LOAD Ta= 40 ℃ LIFE TIME= 168310 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 244.7K HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) **Peak Voltage**	Q1 Rated 2SK2082 : 900V 9 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 792 V (2) 704 V (3) 812 V	P
2	Diode Peak **Voltage**	D12 Rated U16D40C : 400V 16A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 382 V (2) 330 V (3) 388 V	P
3	Clamp Diode Peak **Voltage**	D 2 Rated HER208 : 1KV 2A	I/P:High-Line +3V = 267 V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25℃	(1) 656 V (2) 720 V	P
4	**Input Capacitor Voltage**	C5 Rated : 470u / 200V/ 85℃	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℃	(1) 191 V (2) 191 V (3) 191 V (4) 191 V	P
5	**Control IC Voltage Test**	U1 Rated TL3844 : 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℃	(1) 23 V (2) 23 V (3) 23 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2005/4/26	RD SMAPLE	PASS	VINCENT TSENG	MAX LIN
2005/6/28	PRODUCT SMAPLE W0505B18	PASS	VINCENT TSENG	MAX LIN
2006/1/25	PRODUCT SMAPLE W0601B18	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023