



Test Report: SCP-50-12

50W Single Output Switching Power Supply

■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Control Function Test
Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test
E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1:120 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 15.8 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: -5%~15%	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	-8 %~ 21 %/ 230 VAC -8 %~ 21 %/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: -2 %~ 2 % (Max)	I/P : VAC / 264 VAC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : -0.13 %~ 0.04 %	P
4	LINE REGULATION	V1: -1 %~ 1 % (Max)	I/P : VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0 %~ 0 %	P
5	LOAD REGULATION	V1: -2 %~ 2 % (Max)	I/P : 230 VAC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : -0.08 %~ 0.08 %	P
6	SET UP TIME	230VAC : 500 ms (Max) 115VAC : 1200 ms(Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 182.480 ms 115VAC/ 178.465 ms	P
7	RISE TIME	230VAC : 30 ms (Max) 115VAC : 30 ms (Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 7.887 ms 115VAC/ 8.365 ms	P
8	HOLD UP TIME	230VAC : 50 ms (TYP) 115VAC : 16 ms (TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 82.370 ms 115VAC/ 17.368 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : 2.89 %	P
10	DYNAMIC LOAD	V1 : 1380 mVp-p	I/P : 230 VAC (1).O/P : FULL /Min LOAD 90%DUTY/ 1KHZ (2).O/P : FULL /Min LOAD 50%DUTY/ 120HZ Ta : 25°C	(1) 392 mVp-p (2) 225 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	85VAC~264VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C 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)	58.862V ~264V TEST : OK	P
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 115 VAC ~264 VAC O/P:FULL -MIN LOAD Ta:25°C	TEST : OK	P
3	EFFICIENCY	81% (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	82.478 %	P
4	INPUT CURRENT	230V/ 0.5 A (TYP) 115V/ 0.75 A (TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 0.513 A/ 230 VAC I = 0.8996 A/ 115 VAC	P
5	INRUSH CURRENT	230V/ 45 A (TYP) COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 37.054 A/ 230 VAC	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	4.3A~5.8ARATED OUTPUT POWER	I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C	5.03A/ 230VAC 4.97A/115VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1:15.9~18.6 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	17.3V/ 230VAC 17.3V/ 115VAC Shunt down Re- power ON	P
3	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

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT												
1	TEMP COMPENSATION	<table border="1"> <tr> <td>0°C</td> <td>25°C</td> <td>50°C</td> </tr> <tr> <td>14.4 ± 0.1V</td> <td>13.8 ± 0.1V</td> <td>13.2 ± 0.1V</td> </tr> </table>	0°C	25°C	50°C	14.4 ± 0.1V	13.8 ± 0.1V	13.2 ± 0.1V	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	<table border="1"> <tr> <td>0°C</td> <td>25°C</td> <td>50°C</td> </tr> <tr> <td>14.498V</td> <td>13.868V</td> <td>13.217V</td> </tr> </table>	0°C	25°C	50°C	14.498V	13.868V	13.217V	P
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2	NOLOADPOWERCONSUMPTION	<0.5W	I/P: 240 VAC O/P:NO LOAD Ta:25°C	0.18 W	P												
3	BATTERY POLARITY PROTECTIONS	BY FUSE	I/P: 230 VAC O/P:NO LOAD Ta:25°C	OK	P												
4	OUTPUT VOLTAGE L	Vo/p+(0-0.7V)	I/P: 230 VAC O/P:FULL/NO LOAD Ta:25°C	FULL LOAD: 14.270 V NO LOPAD: 14.022 V	P												

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 2SK2545:6A/600V	I/P : High-Line +3V = 267 V O/P : (1) Full Load Turn on (2) Output Short (3) Full load continue Ta : 25°C	(1) 548 V (2) 550 V (3) 548 V	P
2	Diode Peak Voltage	D100 Rated BYO28X-200:10A/200V	I/P : High-Line +3V = 267 V O/P : (1) Full Load Turn on (2) Output Short (3) Full load continue Ta : 25°C	(1) 103 V (2) 106 V (3) 103 V	P
3	Input Capacitor Voltage	C5 Rated: RUBYCON:100 μ /400V 105°C/PETSeries	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) 382 V (2) 384 V (3) 384 V	P
4	Control IC Voltage Test	U1 Rated NCP1203:16 V	I/P : High-Line +3V = 267 V O/P : (1) Full Load Turn on /Off (2) Min load Turn on /Off Change Ta : 25°C	(1) 13.2 V (2) 13.2 V	P

SAFETY & E.M.C. TEST

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 : 3.19 mA I/P-FG : 13.2 mA O/P-FG : 1.766 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100M Ω I/P-FG : 500VDC>100M Ω O/P-FG : 500VDC>100M Ω	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 : 30 G Ω I/P-FG : 30 G Ω O/P-FG : 30 G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 m Ω	40 A / 2min Ta : 25°C / 70%RH	11 m Ω	P
4	LEAKAGE CURRENT	EN 60950 2mA < 240VAC	I/P: 264 VAC O/P: Min LOAD Ta:25°C	L-FG 1.05mA N-FG 1.05mA	P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A 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	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	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
5	E.F.T	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				

RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																																				
2	TEMPERATURE RISE TEST	MODEL : SCP-50-12 1. ROOM AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta= 28.8°C 2. HIGH AMBIENT BURN-IN : 14HRS I/P : 230VAC O/P : FULL LOAD Ta= 55°C			P																																																																																																				
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3	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 142% LOAD Ta : 25°C	TEST : OK	P																																																																																																				
4	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100 % LOAD Ta= -30°C	TEST : OK	P																																																																																																				
5	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																																																																																																				
6	TEMPERATURE COEFFICIENT	± 0.03 %(0-50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.003%(0-50°C)	P																																																																																																				
7	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC		OK	P																																																																																																				

8.	THERMAL SHOCK TEST	1. Thermal shock Temperature : $-^{\circ}\text{C} \sim +^{\circ}\text{C}$ 2. Temperature change rate : $25^{\circ}\text{C} / \text{MIN}$ 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 230VAC/Full Load AC ON/OFF TEST turn on 58sec ; turn off 2sec	OK	P
9	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10-500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C	TEST : OK	P
10	CAPACITOR LIFE CYCLE	SUPPOSE C 106 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 50°C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50°C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50°C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50°C LIFE TIME	(1) 295617HRS (2) 51156HRS (3) 75484HRS (4) 103120HRS	P
11	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 495.7KHRS		P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2010/1/21	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG

2009/08/04 A50-F023