



Test Report:RSP-100-3.3

100W 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 : 100 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 55 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 3.14 V ~ 3.63 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	3.055 V ~ 3.755 V / 230 VAC 3.055 V ~ 3.753 V / 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1 : -2 % ~ +2 % (Max)	I/P : 100 VAC / 264 VAC O/P : FULL / MIN LOAD Ta : 25°C	V1 : -0.93 % ~ 1.11 %	P
4	LINE REGULATION	V1 : -0.5 % ~ +0.5 % (Max)	I/P : 100 VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C	V1 : -0.18 % ~ 0.18 %	P
5	LOAD REGULATION	V1 : -1 % ~ +1 % (Max)	I/P : 230 VAC O/P : FULL ~ MIN LOAD Ta : 25°C	V1 : -0.75 % ~ 0.93 %	P
6	SET UP TIME	230VAC : 600 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC / 356 ms	P
7	RISE TIME	230VAC : 30 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC / 6.2 ms	P
8	HOLD UP TIME	230VAC : 16 ms (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC / 47.9 ms	P
9	OVER/UNDERSHOOT TEST	< ±10%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : <10 %	P
10	DYNAMIC LOAD	V1 : 660 mVp-p	I/P : 230 VAC (1).O/P : FULL /Min LOAD 90%DUTY/ 1KHZ (2).O/P : FULL /Min LOAD 90%DUTY/ 3KHZ (3).O/P : FULL /Min LOAD 90%DUTY/ 5KHZ (4).O/P : FULL /Min LOAD 50%DUTY/ 120HZ Ta : 25°C	(1) 540 mVp-p (2) 436 mVp-p (3) 456 mVp-p (4) 632 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	85VAC~264 VAC	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) NOR-LINE FULL LOAD	71.700 V-264V TEST : OK	P
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P : 85 VAC ~ 264 VAC O/P : FULL-MIN LOAD Ta : 25°C	TEST : OK	P
3	POWER FACTOR	0.93 / 230 VAC(TYP) 0.98 / 115 VAC(TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.948 / 230 VAC PF= 0.994 / 115 VAC	P
4	EFFICIENCY	83% (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	84.05 %	P
5	INPUT CURRENT	230V/ 0.55 A (TYP) 115V/ 1.1 A (TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 0.362 A/ 230 VAC I = 0.706 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 30 A (TYP) COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 22.9 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 2 mA/ 240VAC	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.45 mA N-FG : 0.43 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 % ~135 %	I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C	119.5 %/230VAC 119.5 %/115VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1 : 3.63 V ~4.46 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	4.072 V/230VAC 4.085 V/ 115 VAC Shut down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC : Shut down o/p voltage , recovers automatically after temperature goes down	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

CONTROL FUNCTION TEST

1	REMOTE CONTROL	CN1 POWER ON : < 0~0.8V" POWEROFF : 4~10 V"	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	POWER ON : < 0~0.8 V POWER OFF : 4~10 V	P
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COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q3 Rated : 500 V 19A	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue (4) Dynamic Load 90%Duty/1KHz (5) Dynamic Load 50%Duty/120Hz Ta : 25°C	(1) 396 V (2) 410 V (3) 392 V (4) 400 V (5) 404 V	P
2	Diode Peak Voltage	Q103 Rated : 40V 80 A	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue (4)NO LOAD TURN ON (5) Dynamic Load 90%Duty/1KHz ON/OFF (6) Dynamic Load 50%Duty/120Hz Ta : 25°C	(1) 18.5 V (2) 20.5 V (3) 18.8 V (4) 26.2 V (5) 36.5 V (6) 36.8 V	P
3	Clamp Diode Peak Voltage	D22 Rted : 600 V 1 A	I/P : High-Line +3V = 267 V O/P : (1) Dynamic Load 90%Duty/1KHz (2)Full load continue Ta : 25°C	(1) 408 V (2) 388 V	P
4	Input Capacitor Voltage	C 5 Rated : 68u /400V/105°C Surge Voltage:450V	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) 376 V (2) 376 V (3) 396 V	P
5	Control IC Voltage Test	U 1 Rated : 26 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) 14.7 V (2) 14.8 V (3) 15.7 V	P
6	PFC Transistor (D to S) or (C to E) Peak Voltage	Q 1 Rated : 500 V 19 A	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	(3) 384 V (4) 386 V (3) 388 V	P

■ SAFETY & E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 3.75 KVAC/min I/P-FG : 2KVAC/min O/P-FG : 0.5 KVAC/min	I/P-O/P : 4.2 KVAC/min I/P-FG : 2.4 KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C	I/P-O/P : 2.536 mA I/P-FG : 2.803 mA O/P-FG : 1.895 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 : 9999 MΩ I/P-FG : 9999 MΩ O/P-FG : 9999 MΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta : 25°C / 70%RH	5 mΩ	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 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				

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																				
1	TEMPERATURE RISE TEST	MODEL : RSP-100-05 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=23.8℃ 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=45.9℃	<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 23.5℃</th> <th>HIGH AMBIENT Ta= 45.9℃</th> </tr> </thead> <tbody> <tr><td>1</td><td>U100</td><td>63.6℃</td><td>83.3℃</td></tr> <tr><td>2</td><td>LF1</td><td>50.5℃</td><td>69.9℃</td></tr> <tr><td>3</td><td>BD1</td><td>65.8℃</td><td>84.5℃</td></tr> <tr><td>4</td><td>Q1</td><td>62.0℃</td><td>83.8℃</td></tr> <tr><td>5</td><td>D1</td><td>54.5℃</td><td>74.5℃</td></tr> <tr><td>6</td><td>L1</td><td>73.7℃</td><td>93.3℃</td></tr> <tr><td>7</td><td>D5</td><td>56.1℃</td><td>76.1℃</td></tr> <tr><td>8</td><td>C5</td><td>49.5℃</td><td>69.2℃</td></tr> <tr><td>9</td><td>T2</td><td>53.7℃</td><td>75.2℃</td></tr> <tr><td>10</td><td>Q3</td><td>51.1℃</td><td>71.5℃</td></tr> <tr><td>11</td><td>Q4</td><td>50.1℃</td><td>70.3℃</td></tr> <tr><td>12</td><td>U1</td><td>51.5℃</td><td>70.6℃</td></tr> <tr><td>13</td><td>TSW1</td><td>63.9℃</td><td>82.3℃</td></tr> <tr><td>14</td><td>T1</td><td>76.7℃</td><td>95.7℃</td></tr> <tr><td>15</td><td>L100</td><td>85.4℃</td><td>105.8℃</td></tr> <tr><td>16</td><td>Q103</td><td>65.2℃</td><td>86.0℃</td></tr> <tr><td>17</td><td>Q101</td><td>60.8℃</td><td>81.2℃</td></tr> <tr><td>18</td><td>C105</td><td>69.6℃</td><td>88.4℃</td></tr> <tr><td>19</td><td>C202</td><td>63.9℃</td><td>83.6℃</td></tr> <tr><td>20</td><td>C18</td><td>56.8℃</td><td>76.1℃</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 23.5℃	HIGH AMBIENT Ta= 45.9℃	1	U100	63.6℃	83.3℃	2	LF1	50.5℃	69.9℃	3	BD1	65.8℃	84.5℃	4	Q1	62.0℃	83.8℃	5	D1	54.5℃	74.5℃	6	L1	73.7℃	93.3℃	7	D5	56.1℃	76.1℃	8	C5	49.5℃	69.2℃	9	T2	53.7℃	75.2℃	10	Q3	51.1℃	71.5℃	11	Q4	50.1℃	70.3℃	12	U1	51.5℃	70.6℃	13	TSW1	63.9℃	82.3℃	14	T1	76.7℃	95.7℃	15	L100	85.4℃	105.8℃	16	Q103	65.2℃	86.0℃	17	Q101	60.8℃	81.2℃	18	C105	69.6℃	88.4℃	19	C202	63.9℃	83.6℃	20	C18	56.8℃	76.1℃		P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 123 % LOAD Ta : 25℃	TEST : OK	P																																																																																				
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100 % LOAD Ta= -35℃	TEST : OK	P																																																																																				
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 45 ℃ NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta=47℃ HUMIDITY= 95 %R.H	TEST : OK	P																																																																																				
5	TEMPERATURE COEFFICIENT	± 0.05%/℃ (0-50℃)	I/P : 230 VAC O/P : FULL LOAD	± 0 %/℃ (0-50℃)	P																																																																																				

6	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -40°C~ +85°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
7	THERMAL SHOCK TEST	1. Thermal shock Temperature : -30°C~ +70°C 2. Temperature change rate : 25°C / 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
8	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
9	CAPACITOR LIFE CYCLE	SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25°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) 123157HRS (2) 38673HRS (3) 85864HRS (4) 176678HRS	P
10	MTBF	MIL-HDBK-217F NOTICE S2 PARTS COUNT TOTAL FAILURE RATE : 288.5 KHRS		P
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 30,000 hours @ TA 45°C		P

SAMPLE	TEST RESULT	TESTER	APPROVAL
PRODUCT SAMPLE	PASS	Shenym	Wangdezhaoh

2007/3/20 A50-S014