



# Test Report:RSP-75-05

---

75W 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 : 80 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 25 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 4.75 V ~ 5.5 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	4.237 V ~ 5.867 V / 230 VAC 4.245 V ~ 5.867 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 : -0.25 % ~ 0.38 %	P
4	LINE REGULATION	V1 : -0.5 % ~ +0.5 % (Max)	I/P : 100 VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0.12 % ~ 0.24 %	P
5	LOAD REGULATION	V1 : -1 % ~ +1 % (Max)	I/P : 230 VAC O/P : FULL ~ MIN LOAD Ta : 25°C	V1 : -0.24 % ~ 0.36 %	P
6	SET UP TIME	230VAC : 600 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC / 500 ms	P
7	RISE TIME	230VAC : 30 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC / 10.1 ms	P
8	HOLD UP TIME	230VAC : 16 ms (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC / 49.9 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 : 1000 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) 364 mVp-p (2) 362 mVp-p (3) 360 mVp-p (4) 676 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 ON: 2 SEC OFF: 2 SEC 12 HOURS	72 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= 0.972 / 230 VAC PF= 0.984 / 115 VAC	P
4	EFFICIENCY	82 % (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	82.35 %	P
5	INPUT CURRENT	230V/ 0.5 A (TYP) 115V/ 0.9 A (TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 0.409 A/ 230 VAC I = 0.816 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 35 A (TYP) COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 30.53 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 2 mA/ 240VAC	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.28 mA N-FG : 0.24 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	120 %/230VAC 118.6 %/115VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1 : 5.5 V ~ 6.75 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	6.53 V/230VAC 6.55 V/ 115 VAC Shut down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC : RTH2 : 95 ± 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 Constant Current Limiting	P

**CONTROL FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
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

**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 : 600 V 10 A	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) 424 V/A (2) 436 V/A (3) 420 V/A (4) 445 V/A (5) 446 V/A	P
2	Diode Peak Voltage	Q102 Rated : 55V 75 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  Ta : 25°C	(1) 32.6 V (2) 28.5 V (3) 30.5 V (4) 30.8 V	P
3	Clamp Diode Peak Voltage	D8 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) 392 V (2) 396 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) 396 V (2) 392 V (3) 404 V	P
5	Control IC Voltage Test	U 1 Rated : 38 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) 24.2 V (2) 23.8 V (3) 24.1 V	P
6	PFC Transistor ( D to S) or (C to E) Peak Voltage	Q 1 Rated : 600 V 10 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) 412 V (4) 408 V (3) 416 V	P

■ SAFETY & E.M.C. TEST

**SAFETY TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 4KVAC/min I/P-FG : 2KVAC/min O/P-FG : 0.5 KVAC/min	I/P-O/P: 4.4 KVAC/min I/P-FG : 2.4 KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C	I/P-O/P : 3.185 mA I/P-FG : 2.753 mA O/P-FG : 1.253 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-75-05 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=28.2°C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=40.2°C	<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 28.2°C</th> <th>HIGH AMBIENT Ta= 40.2°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>U100</td><td>70.8°C</td><td>83.1°C</td></tr> <tr><td>2</td><td>U1</td><td>63.8°C</td><td>77.5°C</td></tr> <tr><td>3</td><td>D3</td><td>64.9°C</td><td>75.3°C</td></tr> <tr><td>4</td><td>ZDNR1</td><td>51.2°C</td><td>62.3°C</td></tr> <tr><td>5</td><td>LF1</td><td>54.1°C</td><td>64.7°C</td></tr> <tr><td>6</td><td>BD1</td><td>71.1°C</td><td>80.4°C</td></tr> <tr><td>7</td><td>Q1</td><td>60.1°C</td><td>72.0°C</td></tr> <tr><td>8</td><td>L3</td><td>69.1°C</td><td>79.0°C</td></tr> <tr><td>9</td><td>D2</td><td>64.6°C</td><td>77.9°C</td></tr> <tr><td>10</td><td>C5</td><td>60.1°C</td><td>70.6°C</td></tr> <tr><td>11</td><td>T2</td><td>62.0°C</td><td>76.9°C</td></tr> <tr><td>12</td><td>Q3</td><td>70.3°C</td><td>83.3°C</td></tr> <tr><td>13</td><td>Q4</td><td>82.4°C</td><td>95.8°C</td></tr> <tr><td>14</td><td>T1coil</td><td>103.4°C</td><td>115.4°C</td></tr> <tr><td>15</td><td>T1core</td><td>95.7°C</td><td>107.2°C</td></tr> <tr><td>16</td><td>C105</td><td>84.7°C</td><td>96.5°C</td></tr> <tr><td>17</td><td>Q101</td><td>79.1°C</td><td>90.1°C</td></tr> <tr><td>18</td><td>Q102</td><td>72.8°C</td><td>83.9°C</td></tr> <tr><td>19</td><td>C61</td><td>60.0°C</td><td>71.4°C</td></tr> <tr><td>20</td><td>RTH2</td><td>86.0°C</td><td>96.8°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 28.2°C	HIGH AMBIENT Ta= 40.2°C	1	U100	70.8°C	83.1°C	2	U1	63.8°C	77.5°C	3	D3	64.9°C	75.3°C	4	ZDNR1	51.2°C	62.3°C	5	LF1	54.1°C	64.7°C	6	BD1	71.1°C	80.4°C	7	Q1	60.1°C	72.0°C	8	L3	69.1°C	79.0°C	9	D2	64.6°C	77.9°C	10	C5	60.1°C	70.6°C	11	T2	62.0°C	76.9°C	12	Q3	70.3°C	83.3°C	13	Q4	82.4°C	95.8°C	14	T1coil	103.4°C	115.4°C	15	T1core	95.7°C	107.2°C	16	C105	84.7°C	96.5°C	17	Q101	79.1°C	90.1°C	18	Q102	72.8°C	83.9°C	19	C61	60.0°C	71.4°C	20	RTH2	86.0°C	96.8°C		P
NO	Position	ROOM AMBIENT Ta= 28.2°C	HIGH AMBIENT Ta= 40.2°C																																																																																						
1	U100	70.8°C	83.1°C																																																																																						
2	U1	63.8°C	77.5°C																																																																																						
3	D3	64.9°C	75.3°C																																																																																						
4	ZDNR1	51.2°C	62.3°C																																																																																						
5	LF1	54.1°C	64.7°C																																																																																						
6	BD1	71.1°C	80.4°C																																																																																						
7	Q1	60.1°C	72.0°C																																																																																						
8	L3	69.1°C	79.0°C																																																																																						
9	D2	64.6°C	77.9°C																																																																																						
10	C5	60.1°C	70.6°C																																																																																						
11	T2	62.0°C	76.9°C																																																																																						
12	Q3	70.3°C	83.3°C																																																																																						
13	Q4	82.4°C	95.8°C																																																																																						
14	T1coil	103.4°C	115.4°C																																																																																						
15	T1core	95.7°C	107.2°C																																																																																						
16	C105	84.7°C	96.5°C																																																																																						
17	Q101	79.1°C	90.1°C																																																																																						
18	Q102	72.8°C	83.9°C																																																																																						
19	C61	60.0°C	71.4°C																																																																																						
20	RTH2	86.0°C	96.8°C																																																																																						
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 129 % LOAD Ta : 25°C	TEST : OK	P																																																																																				
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100 % LOAD Ta= -30°C	TEST : OK	P																																																																																				
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40 °C 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%/°C (0-50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0 %/°C (0-50°C)	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 : -25°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) 55947HRS (2) 30075HRS (3) 43880HRS (4) 161478HRS	P
10	MTBF	MIL-HDBK-217F NOTICE S2 PARTS COUNT TOTAL FAILURE RATE : 296.7 KHRS		P
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 30,000 hours @ TA 40°C		P

SAMPLE	TEST RESULT	TESTER	APPROVAL
PRODUCT SAMPLE	PASS	Shenym	Wangdz

2007/3/20 A50-S014