

**MODEL : RS-150-48**

**OUTPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 200 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 36 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 45.6 V- 52.8 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	43.29V- 54.17V/ 230VAC 43.29V- 54.17V/ 115VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: -1 %- 1 % (Max)	I/P: 176 VAC / 264 VAC O/P:FULL/ 0 % LOAD Ta:25°C	V1: 0.02 %- -0.02 %	P
4	LINE REGULATION	V1: -0.5 %- 0.5 % (Max)	I/P: 176 VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0 % - 0 %	P
5	LOAD REGULATION	V1: -0.5 %- 0.5 % (Max)	I/P:230 VAC O/P:FULL -MIN LOAD Ta:25°C	V1: 0.02 %- -0.02 %	P
6	SET UP TIME	230 VAC/800 ms (Max) 115 VAC/1200 ms (Max)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 466 ms 115VAC/ 440 ms	P
7	RISE TIME	230 VAC/20 ms (Max) 115 VAC/30 ms (Max)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 12 ms 115VAC/ 12 ms	P
8	HOLD UP TIME	230 VAC/ 28 ms (TYP) 115 VAC/ 20 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 33 ms 115VAC/ 28 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: < 5 %	P
10	DYNAMIC LOAD	V1: 4800 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	590 mVp-p	P

**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	176VAC~ 264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	120 V~ 264 V	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	47 HZ ~ 63 HZ NO DAMAGE OSC	I/P: 176 VAC ~ 264 VAC O/P:FULL-MIN LOAD Ta:25°C	TEST: OK	P
3	EFFICIENCY	87 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	87.6 %	P
4	INPUT CURRENT	230 V/ 2 A(TYP) 115 V/ 3 A(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 1.6 A/ 230 VAC I = 2.7 A/ 115 VAC	P
5	INRUSH CURRENT	230 V/ 40 A(TYP) COLD START	I/P:230 VAC O/P:FULL LOAD Ta:25°C	I = 35 A/ 230 VAC	P
6	LEAKAGE CURRENT	< 2 mA/ 240 VAC	I/P:254 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.6 mA N-FG: 0.5 mA	P

**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	110 %~ 150 %	I/P: 230 VAC I/P: 115 VAC O/P: TESTING Ta:25°C	118 %/ 230 VAC 118 %/ 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°C	62.5 V/ 230 VAC 62.5 V/ 115 VAC Hiccup Model	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

**ENVIRONMENT TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																
1	TEMPERATURE RISE TEST	MODEL : RS-150-24 1. ROOM AMBIENT BURN-IN : 14 HRS I/P: 230 VAC O/P: FULL LOAD Ta= 30.1 °C 2. HIGH AMBIENT BURN-IN : 3 HRS I/P: 230 VAC O/P: FULL LOAD Ta= 46.7 °C																																																																																			
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT Ta= 30.1 °C</th> <th>HIGH AMBIENT Ta= 46.7 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>LF-058</td><td>57.9°C</td><td>72.5°C</td></tr> <tr><td>2</td><td>BD1</td><td>RS606M 6A/800V REC</td><td>81.4°C</td><td>95.1°C</td></tr> <tr><td>3</td><td>C5</td><td>330U/200V RUB 105°C</td><td>70.8°C</td><td>83.5°C</td></tr> <tr><td>4</td><td>T1 CORE</td><td>TF-1058 LS</td><td>82.8°C</td><td>96.4°C</td></tr> <tr><td>5</td><td>T1 COIL</td><td>TF-1058 LS</td><td>83.6°C</td><td>96.6°C</td></tr> <tr><td>6</td><td>ZD1</td><td>P6KE300A PAN</td><td>85.3°C</td><td>98.5°C</td></tr> <tr><td>7</td><td>D60</td><td>D9202 20A/200V FUJI</td><td>83.5°C</td><td>96.6°C</td></tr> <tr><td>8</td><td>D1</td><td>HER208 2A/1KV REC</td><td>82.6°C</td><td>96.5°C</td></tr> <tr><td>9</td><td>U1</td><td>1203 ON</td><td>75.4°C</td><td>88.4°C</td></tr> <tr><td>10</td><td>Q1</td><td>2SK2082 9A/800V FUJI</td><td>76.0°C</td><td>91.4°C</td></tr> <tr><td>11</td><td>L60</td><td>TR-411</td><td>93.7°C</td><td>106.8°C</td></tr> <tr><td>12</td><td>C10</td><td>220U/35V NCC 105°C YXF</td><td>66.0°C</td><td>80.5°C</td></tr> <tr><td>13</td><td>C65</td><td>470U/35V NCC 105°C KY</td><td>58.6°C</td><td>72.4°C</td></tr> <tr><td>14</td><td>R71</td><td>680Ω /2W R/MO</td><td>112.7°C</td><td>125°C</td></tr> <tr><td>15</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	NO	Position	P/N	ROOM AMBIENT Ta= 30.1 °C	HIGH AMBIENT Ta= 46.7 °C	1	LF1	LF-058	57.9°C	72.5°C	2	BD1	RS606M 6A/800V REC	81.4°C	95.1°C	3	C5	330U/200V RUB 105°C	70.8°C	83.5°C	4	T1 CORE	TF-1058 LS	82.8°C	96.4°C	5	T1 COIL	TF-1058 LS	83.6°C	96.6°C	6	ZD1	P6KE300A PAN	85.3°C	98.5°C	7	D60	D9202 20A/200V FUJI	83.5°C	96.6°C	8	D1	HER208 2A/1KV REC	82.6°C	96.5°C	9	U1	1203 ON	75.4°C	88.4°C	10	Q1	2SK2082 9A/800V FUJI	76.0°C	91.4°C	11	L60	TR-411	93.7°C	106.8°C	12	C10	220U/35V NCC 105°C YXF	66.0°C	80.5°C	13	C65	470U/35V NCC 105°C KY	58.6°C	72.4°C	14	R71	680Ω /2W R/MO	112.7°C	125°C	15					P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P: 230 VAC O/P: 117%LOAD 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= -25 °C	TEST : OK	P																																																																																
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 45 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 45 °C HUMIDITY= 95 %R.H	TEST : OK	P																																																																																
5	TEMPERATURE COEFFICIENT	± 0.03 % (0-50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.01 % (0-50°C)	P																																																																																
6	VIBRATION TEST	1 Set Operating at I/P: 230 VAC NO LOAD (1) Waveform: Sine Wave (2) Frequency:10-500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:5G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25°C		TEST : OK	P																																																																																

**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: 4.4 mA I/P-FG: 3.62 mA O/P-FG: 2.98 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	I/P-O/P: 11G Ω I/P-FG: 8G Ω O/P-FG: 12G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	30 A / 2min Ta:25°C	6 mΩ	P
4	APPROVAL	TUV: Certificate NO : R50046942 UL: File NO : E183223			P

**E.M.C TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	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 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	RS-150-24 : SUPPOSE C 65 IS THE MOST CRITICAL COMPONENT I/P: 230 VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 304498 HRS I/P: 230 VAC O/P:FULL LOAD Ta= 45 °C LIFE TIME= 92438 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 244K HRS			P

**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q1 Rated 2SK2082 : 800V / 9 A	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 392 V (2) 622 V (3) 624 V	P
2	Diode <b>Peak Voltage</b>	D60 Rated FCF16A60 : 600V / 16 A	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 286 V (2) 354 V (3) 312 V	P
3	Clamp Diode <b>Peak Voltage</b>	D1 Rated HER208 :1K V / 2 A	I/P:High-Line +3V =267 V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 596 V (2) 596 V	P
4	<b>Input Capacitor Voltage</b>	C5 Rated : 330u /200 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) 191 V (2) 191 V (3) 191 V	P
5	<b>Control IC Voltage Test</b>	U1 Rated 1203 : 16 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) 15.2 V (4) 15.2 V (5) 14.1 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2004/3/19	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2004/7/8	PRODUCT SAMPLE A404B34	PASS	VINCENT TSENG	MAX LIN
2004/8/30	PRODUCT SAMPLE A408B09	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023