

**MODEL : RS-150-12**

**OUTPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 120 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 21 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 11.4 V- 13.2 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	11.19V- 13.75V/ 230VAC 11.19V- 13.75V/ 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: 0.05%- -0.05%	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: 0.05 %- 0 %	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/ 384 ms 115VAC/ 305 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	230 VAC/ 15 ms 115 VAC/ 15 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/ 29 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: 1200 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	273 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	109V~ 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	83 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	83.6 %	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 = 1.5 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 = 36 A/ 230 VAC	P
6	LEAKAGE CURRENT	< 2 mA/ 240 VAC	I/P:254 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.44 mA N-FG: 0.48 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	117 %/ 230 VAC 117 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 13.8V~ 16.2 V	I/P: 230 VAC I/P: 115 VAC O/P: MIN LOAD Ta:25°C	15.1 V/ 230 VAC 15.1 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	<p>MODEL : RS-150-5</p> <p>1. ROOM AMBIENT BURN-IN : 1 HRS I/P: 230 VAC O/P: FULL LOAD Ta= 27.2 °C</p> <p>2. HIGH AMBIENT BURN-IN : 3 HRS I/P: 230 VAC O/P: FULL LOAD Ta= 43.4 °C</p> <table border="1" data-bbox="496 546 1335 1043"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT Ta= 27.2°C</th> <th>HIGH AMBIENT Ta= 43.4°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>TF-096B LS</td><td>65.4°C</td><td>75.7°C</td></tr> <tr><td>2</td><td>BD1</td><td>KBJ608G 6A/800V LT</td><td>81.5°C</td><td>91.9°C</td></tr> <tr><td>3</td><td>C5</td><td>330U/200V RUB 105°C MXR</td><td>74.6°C</td><td>83.5°C</td></tr> <tr><td>4</td><td>T1 COIL</td><td>TF-1055 LS</td><td>93.9°C</td><td>109.8°C</td></tr> <tr><td>5</td><td>D61</td><td>SBL3040PT 30A/40V LT</td><td>99.5°C</td><td>119.8°C</td></tr> <tr><td>6</td><td>ZD1</td><td>PGKE400A PAN</td><td>90.6°C</td><td>102.7°C</td></tr> <tr><td>7</td><td>D4</td><td>HER208 2A/1KV REC</td><td>97.6°C</td><td>111.7°C</td></tr> <tr><td>8</td><td>Q1</td><td>2SK2082 9A/800V FUJI</td><td>84.4°C</td><td>100.1°C</td></tr> <tr><td>9</td><td>D60</td><td>SBL3040PT 30A/40V LT</td><td>98.5°C</td><td>117.8°C</td></tr> <tr><td>10</td><td>C10</td><td>100U/35V NCC 105°C KY</td><td>83.5°C</td><td>96.3°C</td></tr> <tr><td>11</td><td>C64</td><td>2200U/16V NCC 105°C KY</td><td>83.3°C</td><td>96.0°C</td></tr> <tr><td>12</td><td>L60</td><td>TR-408</td><td>103.0°C</td><td>120.6°C</td></tr> <tr><td>13</td><td>U1</td><td>1203 ON</td><td>93.2°C</td><td>107.5°C</td></tr> </tbody> </table>	NO	Position	P/N	ROOM AMBIENT Ta= 27.2°C	HIGH AMBIENT Ta= 43.4°C	1	LF1	TF-096B LS	65.4°C	75.7°C	2	BD1	KBJ608G 6A/800V LT	81.5°C	91.9°C	3	C5	330U/200V RUB 105°C MXR	74.6°C	83.5°C	4	T1 COIL	TF-1055 LS	93.9°C	109.8°C	5	D61	SBL3040PT 30A/40V LT	99.5°C	119.8°C	6	ZD1	PGKE400A PAN	90.6°C	102.7°C	7	D4	HER208 2A/1KV REC	97.6°C	111.7°C	8	Q1	2SK2082 9A/800V FUJI	84.4°C	100.1°C	9	D60	SBL3040PT 30A/40V LT	98.5°C	117.8°C	10	C10	100U/35V NCC 105°C KY	83.5°C	96.3°C	11	C64	2200U/16V NCC 105°C KY	83.3°C	96.0°C	12	L60	TR-408	103.0°C	120.6°C	13	U1	1203 ON	93.2°C	107.5°C			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 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	± 0.03 % (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: 3.97 mA I/P-FG: 3.64 mA O/P-FG: 3.1 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: 4G Ω I/P-FG: 3G Ω O/P-FG: 5G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	9 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-150-5 : SUPPOSE C64 IS THE MOST CRITICAL COMPONENT I/P: 230 VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 63770 HRS I/P: 230 VAC O/P:FULL LOAD Ta= 40 °C LIFE TIME= 33224 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) 560 V (2) 630 V (3) 684 V	P
2	Diode Peak <b>Voltage</b>	D60 Rated YG805C10 : 100 V/ 20 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) 56.8 V (2) 56.4 V (3) 53.8 V	P
3	Clamp Diode Peak <b>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) 608 V (2) 608 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) 193 V (2) 192 V (3) 192 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) 14.4 V (4) 14.4 V (5) 13.6 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

2003/12/12 A50-F023