

MODEL : RD-35-3513

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 120 mVp-p (Max) V2: 120 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 4 mVp-p (Max) V2: 10 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1:11.5 V~ 15.5 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	10.91V~ 16.24 V/230 VAC 10.91V ~ 16.24 V/115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: -4 %~ 4 % (Max) V2: -4 %~ 4 % (Max)	I/P: 88VAC / 264 VAC O/P:FULL/ 0 % LOAD Ta:25°C	V1: 1 %~ -1 % V2: 1 %~ -1 %	P
4	LINE REGULATION	V1: -0.5 %~ 0.5 % (Max) V2: -0.5 %~ 0.5 % (Max)	I/P: 88VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0.3 %~ -0.3 % V2: 0.3 %~ -0.3 %	P
5	LOAD REGULATION	V1: -3 %~ 3 % (Max) V2: -3 %~ 3 % (Max)	I/P: 230 VAC O/P:FULL -MIN LOAD Ta:25°C	V1: 0.4 %~ -0.4 % V2: 0.4 %~ -0.4 %	P
6	CROSS REGULATION	V1: -3 %~ 3 % (Max) V2: -3 %~ 3 % (Max)	I/P: 230 VAC O/P: Testing O/P 60%LOAD Other O/P 40%LOAD Change Ta:25°C	V1: 0.6 %~ -0.6 % V2: 0.5 %~ -0.5 %	P
7	SET UP TIME	230 VAC/ 500 ms (Max) 115 VAC/ 1200 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 182 ms 115 VAC/ 228 ms	P
8	RISE TIME	230VAC/ 30ms (Max) 115VAC/ 30 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 7 ms 115 VAC/ 7 ms	P
9	HOLD UP TIME	230 VAC/ 50 ms(TYP) 115 VAC/ 16 ms(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 97 ms 115 VAC/ 21 ms	P
10	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: < 5 %	P
11	DYNAMIC LOAD	V1: 1350 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	59 mVp-p	P

**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	88VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	43 V~ 264 V	P
			I/P: LOW-LINE-3V=85 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: 88 VAC ~ 264 VAC O/P:FULL-MIN LOAD Ta:25°C	TEST: OK	P
3	EFFICIENCY	80 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	81.8 %	P
4	INPUT CURRENT	230 V/ 0.55 A(TYP) 115 V/ 0.8 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 0.43 A/ 230 VAC I = 0.66 A/ 115 VAC	P
5	INRUSH CURRENT	230 V/ 36 A (TYP) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I = 27 A/ 230 VAC	P
6	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P: 254 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.3 mA N-FG: 0.3 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	141 %/230VAC 137 %/115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 16.87 V- 19.57 V	I/P: 230 VAC I/P: 115 VAC O/P: MIN LOAD Ta: 25°C	19.1 V/ 230 VAC 19.1 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	MODEL : RD-3513 1. ROOM AMBIENT BURN-IN : 1 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 29.6 °C 2. HIGH AMBIENT BURN-IN : 2.5 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 54.2 °C			P																																																																	
		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT Ta= 29.6 °C</th> <th>HIGH AMBIENT Ta= 54.2 °C</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>LF1</td> <td>TF-484</td> <td>48.7°C</td> <td>67.9°C</td> </tr> <tr> <td>2</td> <td>BD1</td> <td>KBP208G 2A/800V LT</td> <td>56.5°C</td> <td>75.6°C</td> </tr> <tr> <td>3</td> <td>C5</td> <td>82U/400V 105°C HU4</td> <td>46.5°C</td> <td>66.2°C</td> </tr> <tr> <td>4</td> <td>Q1</td> <td>K2545 6A/600V TOS</td> <td>59.0°C</td> <td>78.1°C</td> </tr> <tr> <td>5</td> <td>D1</td> <td>HER306 3A/600V REC</td> <td>64.2°C</td> <td>82.4°C</td> </tr> <tr> <td>6</td> <td>U1</td> <td>1203</td> <td>50.3°C</td> <td>70.0°C</td> </tr> <tr> <td>7</td> <td>C10</td> <td>100U/35V 105°C RUB YXF</td> <td>61.5°C</td> <td>79.2°C</td> </tr> <tr> <td>8</td> <td>D50</td> <td>BYQ28X-200 10A/200V PH</td> <td>67.0°C</td> <td>84.2°C</td> </tr> <tr> <td>9</td> <td>T1 COIL</td> <td>TF-1003 LS</td> <td>69.6°C</td> <td>86.6°C</td> </tr> <tr> <td>10</td> <td>D51</td> <td>F10P40FR 10A/400V N</td> <td>66.6°C</td> <td>83.6°C</td> </tr> <tr> <td>11</td> <td>C51</td> <td>470U/25V 105°C NCC KY</td> <td>64.3°C</td> <td>80.7°C</td> </tr> <tr> <td>12</td> <td>C56</td> <td>470U/25V 105°C NCC KY</td> <td>58.7°C</td> <td>76.8°C</td> </tr> </tbody> </table>	NO	Position		P/N	ROOM AMBIENT Ta= 29.6 °C	HIGH AMBIENT Ta= 54.2 °C	1	LF1	TF-484	48.7°C	67.9°C	2	BD1	KBP208G 2A/800V LT	56.5°C	75.6°C	3	C5	82U/400V 105°C HU4	46.5°C	66.2°C	4	Q1	K2545 6A/600V TOS	59.0°C	78.1°C	5	D1	HER306 3A/600V REC	64.2°C	82.4°C	6	U1	1203	50.3°C	70.0°C	7	C10	100U/35V 105°C RUB YXF	61.5°C	79.2°C	8	D50	BYQ28X-200 10A/200V PH	67.0°C	84.2°C	9	T1 COIL	TF-1003 LS	69.6°C	86.6°C	10	D51	F10P40FR 10A/400V N	66.6°C	83.6°C	11	C51	470U/25V 105°C NCC KY	64.3°C	80.7°C	12	C56	470U/25V 105°C NCC KY	58.7°C	76.8°C		
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P: 230 VAC O/P: 143 %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 50 °C NO DAMAGE	I/P: 272 VAC O/P: FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	P																																																																	
5	TEMPERATURE COEFFICIENT	± 0.03 %(0-50°C)	I/P: 230 VAC O/P: FULL LOAD	± 0.03 %(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: 3.0 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: 3.29 mA I/P-FG: 2.87 mA O/P-FG: 1.77 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: 4G Ω O/P-FG: 6GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	4 mΩ	P
4	APPROVAL	TUV: Certificate NO : R50046884 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	SUPPOSE C 56 IS THE MOST CRITICAL COMPONENT I/P: 230 VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 216919 HRS I/P: 230 VAC O/P:FULL LOAD Ta= 45 °C LIFE TIME= 79981 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 172.6K 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>	Q 1 Rated K2545 : 600 V 6 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) 424 V (2) 470 V (3) 536 V	P
2	Diode Peak <b>Voltage</b>	D 55 Rated 10P40FR : 400V 10 A  D 50 Rated BYQ28X-200 : 200V 10 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) 83.2 V (2) 101 V (3) 84.4 V  (1) 83.2 V (2) 102 V (3) 80.4 V	P
3	Clamp Diode Peak <b>Voltage</b>	D1 Rated HER306 : 600 V 3 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 456 V (2) 456 V	P
4	Input Capacitor <b>Voltage</b>	C 5 Rated : 82 u 400 V 105 °C	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) 380 V (3) 380 V	P
5	Control IC <b>Voltage Test</b>	U 1 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) 12.5 V (2) 12.6 V (3) 12.4 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2004/4/29	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2004/8/2	PRODUCT SAMPLE A405B15	PASS	VINCENT TSENG	MAX LIN
2004/9/22	PRODUCT SAMPLE W04A09A12	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023