

MODEL : RS-15-12

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1:120 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25℃	V1: 55 mVp-p	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1:10.8 V~13.2V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	9.32 V~ 13.76 V/ 230 VAC 9.32 V~ 13.76 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 1 %~ -1% (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25℃	V1: 0.05 %~ -0.05 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 100VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0 %~ 0 %	P
5	LOAD REGULATION	V1: 0.5 %~-0.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0.05 %~ -0.05 %	P
6	SET UP TIME	230VAC: 1000 ms (Max) 115 VAC: 1000 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 5 ms 115VAC/ 6 ms	P
7	RISE TIME	230VAC: 30 ms (Max) 115VAC: 30 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 4 ms 115VAC/ 5 ms	P
8	HOLD UP TIME	230VAC: 70 ms (TYP) 115VAC: 15 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 87 ms 115VAC/ 18.4 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: <5 %	P
10	DYNAMIC LOAD	V1: 1200 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	154 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	85VAC~264 VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	56 V~264V	P
			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)	TEST: OK	
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	EFFICIENCY	81 % (TYP)	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	81.8 %	P
4	INPUT CURRENT	230V/ 0.25 A (TYP) 115V/ 0.35 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I = 0.18 A/ 230 VAC I = 0.31 A/ 115 VAC	P
5	INRUSH CURRENT	230V/ 65 A (TYP) COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 58 A/ 230 VAC	P
6	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P: 264 VAC O/P: Min LOAD Ta: 25°C	L-FG: 0.1 mA N-FG: 0.1 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	Above 105%	I/P: 230 VAC I/P: 115 VAC O/P: TESTING Ta: 25°C	169 %/ 230 VAC 139 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 13.8V~ 16.2V	O/P: DC SOURCE Ta: 25°C	15.3 V/ 60mA Shut off o/p voltage ,clamping by zener diode	P
3	OVER TEMPERATURE PROTECTION	SPEC: U1 Tj140°C typically detect on main control IC 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 Hiccup Mode	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																												
1	TEMPERATURE RISE TEST	MODEL : RS-15-5 1. ROOM AMBIENT BURN-IN : 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 28.8℃ 2. HIGH AMBIENT BURN-IN : 3 HRS I/P: 230VAC O/P: FULL LOAD Ta= 48.2℃ <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 28.8 ℃</th><th>HIGH AMBIENT Ta= 48.2 ℃</th></tr><tr><td>1</td><td>U1</td><td>TNY279PN</td><td>84.9℃</td><td>106.8℃</td></tr><tr><td>2</td><td>D1</td><td>FR107 1A/1KV</td><td>76.6℃</td><td>94.5℃</td></tr><tr><td>3</td><td>ZD1</td><td>P6KE250A</td><td>73.6℃</td><td>91.4℃</td></tr><tr><td>4</td><td>C5</td><td>33U/400V 105℃ KMG</td><td>59.8℃</td><td>77.6℃</td></tr><tr><td>5</td><td>BD1</td><td>KBP208G 2A/800V</td><td>63.9℃</td><td>81.4℃</td></tr><tr><td>6</td><td>LF1</td><td>LF-510</td><td>61.7℃</td><td>80.2℃</td></tr><tr><td>7</td><td>T1 COIL</td><td>TF-1641</td><td>83.4℃</td><td>101.6℃</td></tr><tr><td>8</td><td>C105</td><td>1000U/16V 105℃ ZLH</td><td>67.2℃</td><td>84.7℃</td></tr><tr><td>9</td><td>D100</td><td>STPS30L60CT 30A/60V</td><td>70.3℃</td><td>88.6℃</td></tr><tr><td>10</td><td>L100</td><td>DR011C</td><td>58.6℃</td><td>77.0℃</td></tr><tr><td>11</td><td>PCB</td><td>TI 與 C105 間</td><td>72.2℃</td><td>90.4℃</td></tr></table>			NO	Position	P/N	ROOM AMBIENT Ta= 28.8 ℃	HIGH AMBIENT Ta= 48.2 ℃	1	U1	TNY279PN	84.9℃	106.8℃	2	D1	FR107 1A/1KV	76.6℃	94.5℃	3	ZD1	P6KE250A	73.6℃	91.4℃	4	C5	33U/400V 105℃ KMG	59.8℃	77.6℃	5	BD1	KBP208G 2A/800V	63.9℃	81.4℃	6	LF1	LF-510	61.7℃	80.2℃	7	T1 COIL	TF-1641	83.4℃	101.6℃	8	C105	1000U/16V 105℃ ZLH	67.2℃	84.7℃	9	D100	STPS30L60CT 30A/60V	70.3℃	88.6℃	10	L100	DR011C	58.6℃	77.0℃	11	PCB	TI 與 C105 間	72.2℃	90.4℃	P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P: 120 % LOAD Ta:25℃	TEST : OK	P																																																												
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P: 100% LOAD Ta= -20℃	TEST : OK	P																																																												
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50℃ NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 50℃ HUMIDITY= 95 %R.H	TEST : OK	P																																																												
5	TEMPERATURE COEFFICIENT	± 0.03 %(0~50℃)	I/P: 230 VAC O/P:FULL LOAD	± 0.01 %(0~50℃)	P																																																												
6	VIBRATION TEST	1 Carton & 1 Set (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℃		TEST : OK	P																																																												

SAFETY TEST

NO	TEST ITEM	SPECICATION	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: 1.77 mA I/P-FG: 0.85 mA O/P-FG: 0.54 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: 12 GΩ I/P-FG: 1.4 GΩ O/P-FG: 10 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C / 70%RH	7 mΩ	P
4	APPROVAL	TUV: Certificate NO : R 50111751 UL: File NO : E183223			P

E.M.C TEST

NO	TEST ITEM	SPECICATION	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 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				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	RS-15-5 : SUPPOSE C105 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25°C LIFE TIME= 163780 HRS I/P: 230VAC O/P:FULL LOAD Ta= 50°C LIFE TIME= 33067 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 1608.8K HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	U1 Rated TNY279PN : 700V 1.2 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25°C	(1) 652 V (2) 652 V	P
2	Diode Peak Voltage	D100 Rated STPS20S100CT 20A/100V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25°C	(1) 80 V (2) 67 V	P
3	Clamp Diode Peak Voltage	D1 Rated FR107 1A/1KV	I/P:High-Line +3V = 267 V O/P: (1) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 612 V	P
4	Input Capacitor Voltage	C5 Rated 33u/400V 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) 376 V (2) 378 V (3) 378 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2007/6/1	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2007/7/6	PRODUCT SAMPLE W0706C14	PASS	VINCENT TSENG	MAX LIN
2007/8/30	PRODUCT SAMPLE W0708C17	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023